

3.9 BIOLOGICAL RESOURCES

This section evaluates potential impacts on the existing biological resources including wetlands, vegetation and wildlife found within the proposed project area. It provides a summary of study methods and discussion of federal and state regulations governing the protection of biological resources. Further details are contained in the *Biological Technical Report for the SMART Passenger Rail Project* (Garcia and Associates, 2005) and the Wetlands Report (Appendix H).

Throughout this section, the term project corridor or study area refers to the entire railroad right-of-way from Cloverdale to Larkspur plus segments of the proposed bicycle/pedestrian pathway that are adjacent to the right-of-way. The proposed project study area also includes those areas outside the right-of-way where sensitive biological resources could potentially be affected.

3.9.1 Regulatory Setting

Numerous federal, state and local agencies and regulations work to protect biological resources. Listed below are those agencies and regulations that protect wetlands, watercourses, vegetation, and wildlife resources.

Wetlands and Watercourses

The following federal and state laws and regulations pertain to wetlands and waters. Wetland resources are regulated by several agencies within Sonoma and Marin counties; however, the scope and jurisdiction of each agency varies.

Federal Regulations

Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Under Section 404 of the CWA, the U.S. Army Corps of Engineers (ACOE) regulates the discharge of dredged or fill material into "Waters of the United States" including wetlands. Section 10 of the Rivers and Harbors Act specifically regulates construction activities in "navigable waters" including tidal waters.

Section 401 of the Clean Water Act. This section of the CWA requires a water quality certification from the state for all nationwide or individual permits issued by the ACOE under Section 404 of the CWA. The Regional Water Quality Control Board (RWQCB) is the state agency in charge of issuing Section 401 water quality certification of waiver.

State/Regional Regulations

McAteer-Petris Act. This act established the Bay Conservation and Development Commission (BCDC) to regulate construction activities within the San Francisco Bay. BCDC jurisdiction generally extends to all areas of the Bay that are subject to tidal action, including sloughs and marshlands, salt ponds, and managed wetlands. Areas of the project corridor subject to BCDC jurisdiction include crossings of tidal channels.

California Fish and Game Code (CFG) Section 1600 et seq. The California Department of Fish and Game (CDFG) regulates activities that would substantially alter the channel, bed, or bank of, a lake, river, or stream. Section 1602 of the CFGC requires notification to the CDFG for stream alteration activities, and may require a streambed alteration agreement with attached conditions to protect water quality and biological resources.

Porter-Cologne Water Quality Act. Section 13263 of this act authorizes the RWQCB to regulate discharges of waste and fill material to waters of the state, including "isolated" waters and wetlands, through the issuance of waste discharge requirements.

Vegetation and Wildlife

The following federal, state, and local laws, regulations, and policies apply to vegetation and wildlife resources within the project area.

Federal Regulations

Federal Endangered Species Act of 1973 (ESA), as Amended (Public Law 93-295). The ESA establishes protection for species that are listed as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS). Sections 9 and 4(d) of the ESA prohibit "take" of endangered and threatened animal species. The USFWS has jurisdiction over wildlife and resident fish; the National Marine Fisheries Service (NOAA Fisheries) has jurisdiction over anadromous fish. For plants, the ESA prohibits the removal or destruction of any endangered plant on federal land as well as destruction of an endangered plant species in non-federal areas in knowing violation of any state law. Section 7 of the ESA mandates that all federal agencies consult with the USFWS to ensure that federal agencies' actions do not jeopardize the continued existence of a listed species or adversely modify critical habitat for listed species. Critical habitat is present within the project corridor for the following species:

- Central California Coast coho salmon (*Oncorhynchus kisutch*) - Federal Threatened (Proposed Endangered), State Endangered. Coho salmon within the Central California Coast Evolutionarily Significant Unit (ESU) are federally listed as threatened. This ESU encompasses all naturally-spawned populations in rivers and tributaries from the San Lorenzo River in Santa Cruz County north to Punta Gorda in Mendocino County. Critical habitat is designated for this ESU throughout its geographic range. The corresponding state-designated "Northern California population" of coho salmon is state-listed as endangered from San Francisco Bay north to Punta Gorda. In the vicinity of the proposed project corridor, coho salmon are limited to very small runs that migrate through the Russian River to spawning and rearing grounds in some of its tributaries.
- California Coastal chinook salmon (*Oncorhynchus tshawytscha*) – Federal Threatened. The California Coastal ESU of chinook salmon includes all naturally spawned populations from the Russian River watershed north to Redwood Creek in Humboldt County. Critical habitat is designated for this ESU in all occupied stream reaches in its geographic range, including the proposed project study area.
- Central California Coast steelhead (*Oncorhynchus mykiss*) – Federal Threatened. The Central California Coast ESU of steelhead is a federally listed threatened species. This ESU includes all naturally spawned populations of steelhead in coastal drainages from the Russian River basin south to Santa Cruz County, and in the San Francisco/San Pablo Bay basin as far east as the Napa River. Critical habitat is designated for this ESU in all occupied stream reaches in its geographic range, including those within the proposed project corridor.
- California tiger salamander (CTS) (*Ambystoma californiense*) – Federal Threatened, California Species of Special Concern. The Sonoma County population of CTS is an isolated and genetically distinct population of this species that occurs only in the Santa Rosa Plain. Critical habitat has been proposed for CTS within Sonoma County (Federal Register/ Vol. 70, No. 147, August 2, 2005, Proposed Rules). Proposed Critical Habitat includes the project corridor from Skillman Lane (northwest of Petaluma) to Windsor Creek. Details of CTS habitat within the corridor, including maps, are included in the Follow-up Site Assessment (Garcia and Associates, 2004), which is an appendix to the Biological Technical Report.

Federal Migratory Bird Treaty Act (MBTA). The MBTA prohibits take of most species of birds and their active nests, eggs, and nestlings, without a permit from the USFWS. Activities that cause abandonment of a nest are also considered non-permitted take, prohibited by the MBTA.

State Regulations

California Endangered Species Act of 1984 (CESA) (Sections 2050-2098 of the California Fish and Game Code). The CESA prohibits the take of state-listed endangered and threatened species unless specifically authorized by the CDFG. The CDFG administers the CESA and authorizes take through

permits or memorandums of understanding issued under Section 2081 of the CFGC. Section 2090 of CFGC requires state agencies to comply with threatened and endangered species protection and recovery and to promote conservation of these species.

California Fish and Game Code Sections 3511, 4700, 5050, and 5515 (Fully Protected Species).

The CFGC designates certain animal species as "fully protected" under sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish). Fully protected species may not be taken or possessed at any time and no permits may be issued for incidental take of these species.

California Fish and Game Code Bird Protections. Section 3503 of the CFGC prohibits taking, possession or destruction of the nest or eggs of most bird species unless authorized by the CDFG. Section 3503.5 prohibits the taking of any birds of prey, their nests or eggs.

Sections 1602 of the California Fish and Game Code. Under Section 1602 of the CFGC, the CDFG determines whether proposed stream alteration activities could adversely affect fish or wildlife resources, and may require a streambed alteration agreement with attached conditions to protect fish and wildlife species and associated aquatic and riparian habitats.

Native Plant Protection Act of 1973 (NPPA) (Sections 1900-1913 of the California Fish and Game Code). The NPPA includes provisions that prohibit the taking of endangered or rare native plants from the wild and a salvage requirement for landowners. The CDFG administers the NPPA and generally regards as "rare" many plant species included on lists 1A, 1B and 2 of the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (CNPS, 2001).

CEQA Oak Woodlands Bill (Senate Bill 1334). This bill amended CEQA, effective January 1, 2005, to require counties to determine whether a project subject to CEQA may lead to a significant environmental impact as a result of the conversion of oak woodlands. If there may be a significant effect, mitigation measures must be employed to reduce the impact and promote oak woodland conservation.

County Regulations and Policies

Sonoma County General Plan. The Resource Conservation Element (Part 6, Section 5) of the *Sonoma County General Plan* sets forth policies to promote and maintain the county's natural biotic resources. These include objectives to encourage protection of important woodland resources, identify and protect valley oak habitat areas, reduce the spread of exotic plant species, protect important wildlife habitats, identify and protect rare and endangered species, and mitigate any adverse impacts on these species. Part 6, Section 6 includes policies to protect and conserve freshwater fishery resources.

Sonoma County Tree Ordinances. Chapter 26, Article 67 of the Sonoma County Code, Valley Oak Habitat Combining District, provides for the protection and enhancement of valley oaks and valley oak woodlands and establishes guidelines for compensating for the removal of valley oaks. Sonoma County Code Chapter 26D, Heritage or Landmark Trees, provides for protection of individual trees that qualify for heritage or landmark status.

Sonoma County Zoning Code Article 88, section 26-88-010(m) Tree Protection Ordinance. This ordinance requires projects to be designed to minimize the destruction of protected trees that meet size criteria specified in the ordinance. Protected trees are Big Leaf Maple (*Acer macrophyllum*), Black Oak (*Quercus kelloggii*), Blue Oak (*Quercus douglasii*), Coast Live Oak (*Quercus agrifolia*), Interior Live Oak (*Quercus wislizenii*), Madrone (*Arbutus menziesii*), Oracle Oak (*Quercus morehus*), Oregon Oak (*Quercus garryana*), Redwood (*Sequoia sempervirens*), Valley Oak (*Quercus lobata*), California Bay (*Umbellularia California*), and their hybrids.

Marin Countywide Plan 2004. The Environmental Quality Element of the *Marin Countywide Plan 2004* sets forth general policies to protect the county's biological resources including plant and wildlife species and habitats (Policy EQ-2.87) stream habitats (Policy EQ-2.13), and special-status species (Policy EQ-2.88).

Marin County Tree Ordinance. Chapter 22.27 of the Marin County Code establishes regulations for the preservation and protection of native trees. A tree removal permit is required from Marin County for removal of native trees that meet size criteria specified in the ordinance. Compensation for removal of native trees generally requires planting of replacement trees of appropriate, using native species.

Cloverdale General Plan Policy and Program Document. Cloverdale's General Plan establishes as a goal (Goal B) preservation and enhancement of Cloverdale's natural environment. Under this goal, the City will implement a tree conservation ordinance to both preserve and protect the area's existing trees and also guide future landscaping and restoration. The ordinance shall provide for the replacement of all trees removed that are deemed significant (e.g. oaks greater than 10-inches in diameter at breast height (DBH) or conifers greater than 15 inches DBH).

City of Healdsburg General Plan Policy Document. Goal E sets a goal protecting Healdsburg's natural vegetation and diverse wildlife. As a policy, the City will continue to implement and enforce its Heritage Tree Ordinance. The City protects so-called heritage trees, defined in the City's Zoning Ordinance as any tree with a diameter of 30" measured two feet above ground level. The provisions of the Zoning Ordinance pertaining to heritage trees regulate the removal of such trees by requiring the approval of permits prior to removal or encroachment in areas immediately surrounding such trees.

Town of Windsor General Plan. Windsor has plans and policies (Policy D.1) which "protect unique and sensitive biotic features such as rare and endangered plants, dense oak woodlands, and vernal pools, and encourage sensitive design in these areas." Policy D.1.6 further focuses on tree preservation: "the Town should encourage the preservation of oak woodlands and significant stands of oaks and heritage trees". Chapter 27.36, Tree Preservation and Protection, of the Windsor Zoning Ordinance implements these policies.

Santa Rosa 2020: General Plan. The plan has three relevant policies:

- OSC-D: Conserve wetlands, vernal pools, wildlife ecosystems, rare plant habitats and waterways.
- OSC-E-1 Preserve trees and other vegetation, including wildflowers, both as individual specimens and as parts of larger plant communities.
- OSC-E-2 Preserve and regenerate native oak trees.

City of Rohnert Park General Plan. Rohnert Park through its goals and policies (EC-B) protects "special status species and supporting habitats within Rohnert Park, including species that are State or federally listed as Endangered, Threatened, or Rare". EC-D sets as a goal "to maintain existing native vegetation and encourage planting of native plants and trees". Policy EC-12 also calls for the establishment of a Heritage Tree Preservation Ordinance.

City of Cotati General Plan. Within the City of Cotati, the focus is on conservation through its Land Use Code, which includes provisions for tree preservation and protection and wetland protection and restoration.

City of Petaluma General Plan. The City of *Petaluma General Plan* also focuses on conservation, with goals to retain waterways and adjacent land in their natural state and to Protect and preserve natural resources in the Petaluma Planning Referral Area. Petaluma also has a Heritage Tree Ordinance, which requires a permit to remove trees in the public right-of-way (usually trees in the planter strip between the curb and sidewalk).

City of Novato General Plan. The *City of Novato General Plan* has goals to conserve and where appropriate restore the natural environment and strive for high quality in the built environment that complements the natural environment. The plan includes specific programs to protect wetlands (EN Program 10.1, 10.2), native plant and animal species (EN Program 10.2) and trees (EN Program 23.1, 24.1, 25.3).

San Rafael General Plan 2020. The plan provides for protection of environmental resources (CON-1), such as ridgelines, wetlands, diked baylands, creeks and drainage ways, shorelines and habitat for threatened and endangered species. CON-9 sets a goal to protect habitats that are sensitive, rare, declining, unique or represent a valuable biological resource.

City of Larkspur General Plan 1990 – 2010. Policy b calls for preservation of the desirable features of the built environment as well as the remaining natural environment - trees, marshes, creeks, hillsides - as components of Larkspur's community character and identity. Through the Larkspur Zoning Ordinance – Title 12, the City protects the environment by restricting and regulating the removal and/or excessive pruning of mature or “heritage” trees.

3.9.2 Study Methods

Wetlands

Wetland resources were delineated using the routine wetland determination methods described in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (ACOE, 1987). These methods include a preliminary review of available information from the project area to characterize the vegetation, soils, and hydrology of the area, followed by field reconnaissance to map wetland resources within the project corridor. Field surveys were conducted from March to July 2003 in concert with the plant community mapping, and additional areas were surveyed in April 2004 and April 2005. Wetland areas were identified based on vegetation, soils, and hydrology. Unvegetated waters including ponds, rivers, and streams were mapped as Waters of the U.S. Further details of the wetland study methods are included in Appendix H.

Vegetation

Field surveys were conducted during 2003 and 2004 to characterize vegetation and assess the potential for occurrence of special-status plant species within the proposed project study area. These studies included plant community mapping and a special-status plant survey. Plant communities were mapped in the field, digitized, and analyzed with geographic information systems (GIS) to determine their extent within the project corridor. The communities were classified based on Holland (1986) and Sawyer and Keeler-Wolf (1995). Areas covered in the plant community survey included the entire proposed project corridor from Cloverdale to Larkspur, proposed new station and maintenance facility sites, and off-right-of-way portions of the proposed bicycle/pedestrian pathway.

A focused field survey for special-status plants was conducted from May to July 2003. The survey area was the existing railroad right-of-way, which varies in width but averages approximately 60 feet wide. Surveys also included the proposed improvement locations outside of the project right-of-way. The surveys were conducted following protocol developed by James Nelson for the CDFG (2000). Plants were identified to the lowest taxonomic level (genus or species) necessary for rare plant identification. The scientific nomenclature follows the *Jepson Manual* (Hickman, 1993). As of 2005, one season of special-status plant surveys (consisting of one visit) has been performed along portions of the proposed project corridor noted above. Under the Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed Plants on the Santa Rosa Plain (USFWS, 1996), a minimum of two years (three visits each year) of negative data is required to establish absence of federally listed plant species in this area. Pursuant to recommended mitigation (see Section 3.9.7), protocol surveys would be required prior to implementation of the project.

Wildlife

Prior to conducting field surveys, biological databases and literature sources were reviewed concerning the habitats, geographic ranges and documented occurrences of special-status wildlife taxa in the vicinity of the project corridor. A list of special-status fish and wildlife species with potential to occur in the study area was compiled from the USFWS species list for the project area, review of the California Natural

Diversity Database (CNDDDB) (CDFG, 2003), conversations with NOAA Fisheries and CDFG biologists, and other relevant sources.

General wildlife habitat surveys were conducted by walking the entire railroad right-of-way from May to June 2003 and in February and April 2004. Their purpose was to characterize terrestrial and aquatic wildlife habitats, evaluate habitat suitability for special-status species, and assess other important wildlife resources such as potential nesting sites and migration corridors. The surveys were focused in a corridor extending approximately 100 feet on both sides of the railroad tracks. Surveys for bats and bat habitat, which focused on existing bridges, trestles, overpasses, abandoned buildings, and proposed station sites, were conducted in June 2003. Wildlife species observed in the study area are listed in Appendix G.

Following direction from the USFWS (C. Brown, personal communication, 2004), additional field studies were performed for the California red-legged frog (CRLF) (*Rana aurora draytonii*) and California tiger salamander (CTS) (*Ambystoma californiense*) along segments of the project corridor where these species could occur. For CRLF, a detailed habitat evaluation was performed in February and April 2004 and protocol surveys were conducted in June 2004 at Miller Creek (milepost [MP] 22.1). For CTS, a detailed habitat study was performed in March 2004 along non-urban segments of the project corridor between southern Windsor and northern Petaluma. Its purpose was to characterize and map suitable breeding, upland, and dispersal habitats for CTS along and adjacent to the corridor.

3.9.3 Environmental Setting

The proposed project corridor extends approximately 70 miles from Cloverdale in Sonoma County to the Larkspur Ferry Terminal in Marin County. This area encompasses a wide range of biological and physical conditions, and supports many different land uses. Natural communities include coastal wetlands, oak woodlands, riparian communities, mixed scrub and annual grasslands. The proposed project corridor is primarily located within valleys and lowlands that are bounded to the west by the outer Coast Ranges and to the east by the inner Coast Ranges (north of Petaluma) and the San Francisco Bay (south of Petaluma).

The northern section of the proposed project corridor, from Cloverdale to Windsor, is hotter and drier than the areas to the south. Where natural communities are found along the corridor, they tend to be dry oak woodlands and scrub, with some areas of non-native grassland.

The region between Windsor and Petaluma (Coastal Plain-Santa Rosa Plain) is a broad northwest-southeast-oriented valley. This area is a combination of developed urban centers, suburban neighborhoods and rural areas, some of which are currently undergoing development at a rapid rate. Scattered natural plant communities found along the corridor are primarily non-native grassland, oak woodland, scrub, freshwater marshes and seasonal wetlands. Vernal pools also occur within and adjacent to the project corridor in this region. In Petaluma, the corridor approaches the northern reach of the tidal marshlands of San Pablo Bay.

From the southern end of Petaluma to Marin County Civic Center, the corridor crosses an area that is less developed and primarily dominated by coastal salt marsh and brackish marsh. This entire region (San Pablo Bay Flats) is within ten feet of mean sea level on a broad plain north and west of San Pablo Bay. It is strongly influenced by tides and generally has cooler, moister air than the surrounding uplands.

From northern San Rafael to Larkspur, the project corridor passes through hills and valleys that are primarily urban and suburban. Small, scattered patches of oak woodland, often with a narrow band of freshwater seasonal wetland beneath them, are found along the railroad corridor through this section. Coastal influences are present but mitigated by hills that separate the railroad from San Pablo Bay.

Plant Communities and Wildlife Habitats

Eighteen plant community types were identified and mapped within the proposed project corridor. These include six wetland types, three types of aquatic habitats (waters), two riparian types, and seven upland plant communities. The extent (acres) of each of these communities in the project corridor is shown in Table 3.9-1. Table 3.9-2 shows estimated acreages of plant communities for portions of new station and maintenance facility sites located outside the proposed project right-of-way.

The classification of wildlife habitats generally corresponds to that used for plant communities in this section. In some cases, a wildlife habitat type includes more than one plant community where those communities provide similar habitat characteristics and support a similar assemblage of wildlife species. Plant communities and associated wildlife habitats are described briefly below; a complete list of plant communities found within the project corridor is included in Appendix F.

**TABLE 3.9-1
TYPE AND EXTENT OF PLANT COMMUNITIES
WITHIN THE PROJECT CORRIDOR¹**

	Cloverdale to Larkspur
Plant Community	(acres)
Coastal Salt Marsh	12.3
Coastal Brackish Marsh	6.4
Coastal Freshwater Marsh	9.3
Coastal Freshwater Seasonal Wetland	38.3
Vernal Pool	0.9
Blackberry Wetland	0.7
Total Wetlands	67.9
Perennial Watercourse	3.2
Seasonal Watercourse	1.9
Open Water	1.9
Total Waters	7.0
Riparian Scrub	6.1
Riparian Woodland	5.1
Total Riparian	11.2
Oak Woodland	26.0
Blackberry Scrub	6.1
Mixed Scrub	15.2
Non-native Grassland	16.6
Vineyard	2.0
Ruderal	464.1
Developed/Landscaped	18.6
Total Upland	548.6
Grand Total	634.7

Note: ¹ Includes the railroad right-of-way, station sites that are within the right-of-way, and proposed bicycle/pedestrian pathway within and adjacent to the right-of-way.

**TABLE 3.9-2
EXTENT OF PLANT COMMUNITIES AT NEW STATION AND MAINTENANCE FACILITY SITES¹**

	New Stations (Outside Right-of-Way)^{2,3}	Cloverdale Maintenance Facility	Windsor Maintenance Facility
Plant Community	(acres)	(acres)	(acres)
Coastal Salt Marsh	-	-	-
Coastal Brackish Marsh	-	-	-
Coastal Freshwater Marsh	< 0.1	-	-
Coastal Freshwater Seasonal Wetland	0.5	-	-
Vernal Pool	-	-	-
Blackberry Wetland	-	-	-
Total Wetlands	0.5	0	0
Perennial Watercourse	0.1	-	-
Seasonal Watercourse	-	-	0.2
Open Water	-	-	0.2
Total Waters	0.1	0	0.4
Riparian Scrub	-	-	0.6
Riparian Woodland	-	-	-
Total Riparian	0	0	0.6
Oak Woodland	-	-	-
Blackberry Scrub	-	-	-
Mixed Scrub	-	-	-
Non-native Grassland	2.6	-	-
Vineyard	-	-	-
Ruderal	3.1	-	-
Developed/Landscaped	1.5	39.5	27.7
Total Upland	7.2	39.5	27.7
Grand Totals	7.8	39.5	28.7

Note: ¹ Acreages were calculated from estimated facility footprints based on conceptual plans of October 2003 and *Working Paper #5: Detailed Project Design Options* (Parsons Brinckerhoff Quade & Douglas, Inc., 2003) which reflected a worst case scenario. Actual acreages may be less than listed above, due to refinement of project design.

² Acreages for the portions of these sites within the existing railroad right-of-way are included in Table 3.9-1.

³ Includes nine proposed new station sites at Windsor, Santa Rosa-Jennings Avenue, Rohnert Park, Cotati, Petaluma-Corona Road, North Novato, South Novato, Marin County Civic Center, and Larkspur.

Coastal Salt Marsh

Coastal salt marsh is found along the shores of bays and estuaries and is influenced by ocean tides. Most salt marshes include some meandering tidal channels (Holland, 1986). The salt marshes around the San Francisco Bay are typically divided into three zones: a regularly inundated lower margin dominated by cord grass (*Spartina* spp.); a mid-elevation section covered with pickleweed (*Salicornia virginica*) and saltgrass (*Distichlis spicata*); and an upland interface with more diverse vegetation. Coastal salt marsh in the project corridor occurs frequently between southern Petaluma and northern San Rafael. Salt marshes are valuable and productive habitats for wildlife. They are used as nurseries for many species of marine and estuarine fishes and provide important roosting and feeding grounds for many birds.

Coastal Brackish Marsh

Coastal brackish marsh is similar to coastal salt marsh in structure and species composition, but is more variable due to freshwater inflows. These marshes are generally inundated seasonally and can be influenced by ocean tides. Salinity in a brackish marsh can vary considerably throughout the year. Brackish marshes support a combination of plant species found in freshwater and saline marshes and seasonal wetlands. Examples include saltgrass, pickleweed, sedges (*Carex* spp.), cattails (*Typha* spp.), and salt marsh bulrush (*Scirpus maritimus*). Along the project corridor, brackish marshes often occur adjacent to salt marshes near freshwater inputs from rivers such as the Petaluma River. Brackish marshes provide high habitat value for wildlife and tend to support similar species as salt or freshwater marshes, depending on salinity and vegetation.

Coastal Freshwater Marsh

Coastal freshwater marshes occur where fresh water creates inundated or saturated soil conditions for most or all of the year. These marshes are generally composed of stands of perennial emergent plants such as cattails, bulrushes (*Scirpus* spp.), rushes (*Juncus* spp.) and sedges. Within the project corridor, coastal freshwater marshes occur extensively in lowlands under natural conditions, and to a more limited extent along ditches, drains, and channels. Coastal freshwater marshes are among the most productive wildlife habitats in California. They are essential habitats for amphibians, aquatic reptiles, waterfowl, wading birds, and some songbirds. Many wildlife species depend on freshwater marshes for their entire life cycles; others use them as temporary refuges or migratory stopover areas.

Coastal Freshwater Seasonal Wetland

Coastal freshwater seasonal wetlands occur in low-lying areas that are inundated or saturated for a portion of the growing season. Soil conditions are generally dry from late summer through fall and vegetation can be highly variable. Common plant species include ryegrass (*Lolium* spp.), Harding grass (*Phalaris aquatica*), nutsedges (*Cyperus* spp.), rushes, and a variety of herbaceous plants. In the project corridor, these seasonal wetlands often occur in a narrow band along either side of the railroad bed which can extend for miles in some areas. These wetlands support wildlife species adapted to seasonally fluctuating wet and dry conditions. When water is present, these habitats can support an abundance of aquatic invertebrates and provide breeding sites for frogs, toads, and salamanders. In winter and spring, seasonal wetlands also provide foraging habitat for a variety of resident and migratory birds.

Vernal Pool

Vernal pools are seasonally inundated depressions in relatively impermeable soils that support a distinct flora of endemic species. Characteristic plant species include goldfields (*Lasthenia* spp.), downingias (*Downingia* spp.), popcorn flowers (*Plagiobothrys* spp.), meadowfoams (*Limnanthes* spp.) and button-celeries (*Eryngium* spp.). Vernal pools occur on the Santa Rosa Plain in association with annual grassland communities. Within the project corridor, a single vernal pool occurs south of Windsor between Shiloh Road and Aviation Boulevard (MP 60.7) and several pools occur north of Santa Rosa between Fulton Road and Dennis Lane (MP 57.6-57.9). Vernal pools provide similar habitat values to wildlife as other types of seasonal wetlands.

Blackberry Wetland

Dense thickets of blackberries are common throughout the project corridor, usually dominated by the non-native Himalayan blackberry (*Rubus discolor*). Blackberry wetlands occur along ditches and streams, and are common along the right-of-way between Cloverdale and Novato. The vining nature of blackberry enables them to extend well beyond a wetland area. Blackberry thickets provide moderate value for wildlife. They offer cover for small mammals and are used by a variety of birds for perching, foraging, and nesting sites.

Perennial and Seasonal Watercourse

The project corridor crosses numerous rivers, creeks, and minor watercourses between Cloverdale and Larkspur. Seasonal and perennial watercourses include both high gradient streams flowing over coarse substrates and low gradient streams with fine silt substrates. Along the project corridor, these watercourses usually occur in association with riparian woodland, riparian scrub and blackberry scrub. Rivers and creeks in the proposed project area provide essential habitat for fishes, amphibians, and numerous aquatic invertebrates. Most of the watercourses in the project area harbor resident fish populations and several of the larger streams support runs of salmonid fish, which use the stream reaches within the corridor as migratory linkages to and from upstream spawning areas.

Open Water

Open water areas include unvegetated standing waters with the proposed project corridor, usually associated with ponds and creeks bisected by the right-of-way. Generally, the depth of water precludes establishment of emergent vegetation. Open waters integrate with coastal freshwater marsh, coastal salt marsh, and coastal brackish marsh. Ponds and other still water bodies provide habitat for amphibians, aquatic reptiles, and a variety of water birds. Open water areas also provide drinking water and refuge sites for numerous terrestrial wildlife species.

Riparian Scrub

Riparian scrub is a shrub-dominated community that grows along the banks of watercourses and in some other areas with high water tables. Willow (*Salix* spp.) shrubs generally dominate riparian scrub; other occasional species include big-leaf maple (*Acer macrophyllum*), California buckeye (*Aesculus californica*), and California bay (*Umbellularia californica*). Within the proposed project corridor, riparian scrub is limited to streams and drainage ditches and is often well developed under railroad trestles and bridges. Riparian plant communities provide high habitat value for wildlife. They can provide important nesting habitat for birds, offer cover and refuge sites for amphibians, reptiles and small mammals, and serve as important movement corridors for wildlife. Riparian vegetation also provides beneficial shading and instream cover for fishes and other aquatic species.

Riparian Woodland

Riparian woodland occurs along the banks of perennial and seasonal watercourses. It is similar to riparian scrub, but includes a tree canopy over the associated watercourse. Characteristic tree species include mature willows, big-leaf maple, California buckeye, California bay, box elder (*Acer negundo* var. *californicum*), and cottonwoods (*Populus* spp.). Riparian woodland can also include a variety of oak trees. Within the proposed project corridor, the highest quality riparian woodlands occur between Cloverdale and Santa Rosa along perennial watercourses such as Mark West Creek. Riparian woodlands have similar habitat values for wildlife as riparian scrub, and the larger tree canopy can provide valuable nesting and foraging sites for raptors and other birds.

Oak Woodland

Oak woodlands occur on floodplains and steep slopes bordering the right-of-way. These woodlands are composed of monotypic or mixed stands of oaks including coast live oak (*Quercus agrifolia*), Oregon white oak (*Q. garryana*), and other oak species. Oak woodlands occur in the proposed project corridor between Windsor and Santa Rosa, where they are interspersed with riparian woodland and other communities. Within the right-of-way, tree canopies are managed by SMART to avoid interference with the rail line. Oak woodlands provide high value for wildlife. They offer nesting and perching sites for birds, an abundant food source in acorns, and cover for larger mammals. Although there are not extensive forests along the project corridor, oak trees growing next to the train tracks provide islands of habitat where surrounding lands have been converted to pastures and vineyards.

Blackberry Scrub

The blackberry scrub habitat includes all the areas that are dominated by Himalayan blackberry shrubs not occurring in wetlands. Blackberry scrub and blackberry wetland provide similar habitat characteristics and values for wildlife.

Mixed Scrub

Mixed scrub occurs throughout the proposed project corridor and has a variable composition. Characteristic species include coyote brush (*Baccharis pilularis*), California coffeeberry (*Rhamnus californica*), and toyon (*Heteromeles arbutifolia*). Some mixed scrub areas have heavy concentrations of exotic invasive shrubs. Mixed scrub is commonly found on berms and other raised areas along the length of the project corridor. These communities provide moderate value for wildlife. Native shrubs provide foraging, perching and nesting sites for some birds and cover for small mammals.

Non-native Grassland

This common and widespread plant community is composed of mixtures of non-native and native annual grasses and herbs. Non-native grassland is common in the vicinity of the proposed project corridor, but is limited in extent within the right-of-way due to previous ground disturbance. Non-native grasslands generally provide moderate value for wildlife. They can support a variety of small mammals and provide foraging habitat for raptors and other birds. Rodent burrows in grasslands can also be important refuge sites for some amphibians and reptiles.

Vineyard

The proposed project corridor runs through or adjacent to vineyards in many areas, particularly in the Alexander Valley north of Healdsburg. In most of this area, the actual corridor has not been planted; however, there are small sections in which the vineyards encroach into the right-of-way. Vineyards have relatively low habitat value for wildlife compared with surrounding natural habitats.

Ruderal

Ruderal vegetation is characterized by weedy species that readily colonize disturbed areas such as railroad berms, vacant lots, roadsides, and vineyard edges. Species composition is variable but consists mostly of non-native, annual grasses and herbs. This is the dominant vegetation type throughout most of the proposed project corridor. Ruderal areas are generally low value habitats for wildlife. However, some of these areas can provide marginal wildlife habitat depending on the vegetation and other habitat features present.

Developed/Landscaped

This community type includes all paved areas such as parking lots and roads crossed by the right-of-way, city parks, schools, landscaped areas, and residential lawns and backyards. Vegetation in these areas includes a wide variety of trees and shrubs planted and maintained as landscaping. Areas with landscaping vegetation can provide moderate value for wildlife. Planted trees, shrubs and lawns can provide habitat for a variety of backyard birds and other animal species that can coexist with humans.

Wildlife Corridors

Wildlife corridors connect two or more areas of wildlife habitat. They facilitate animal movement between different sections of a landscape and are essential for maintaining connectivity in an ecoregion. The California Wilderness Coalition (CWC) (2001) lists highways and roads, urbanization, habitat gaps, and agriculture/ranching as the primary barriers to wildlife movement statewide. These barriers have separated large areas of habitat into smaller fragments, resulting in reduced connectivity for native plant and animal populations. Within the project corridor, existing or potential barriers to habitat connectivity include Highway 101 and other roads, urbanization, agriculture (predominantly vineyards), grazing, invasive species, diminished water quality, and fencing. Highway 101 runs roughly parallel to the railroad alignment along the entire length of the corridor, crossing it nine times between Cloverdale and

the Larkspur Ferry Terminal. It is a primary barrier to animal movement in the project vicinity, with only its under- and overpasses providing narrow passageways for animals migrating in an east-west direction.

The CWC (2001) has identified three existing corridors or linkages that facilitate animal movement within and around the project corridor. They are the Russian River watershed, Sonoma Mountains – Burdell Mountain linkage, and the Bay Wetlands linkage. The Russian River is adjacent to the right-of-way between Cloverdale and Lytton and passes under the rail line south of Healdsburg. Tributaries to the Russian River extend as far south as Cotati. The Sonoma Mountains – Burdell Mountain linkage crosses the project corridor between Petaluma and Novato. The Bay Wetlands linkage is located mostly to the east of the project corridor around the San Francisco/San Pablo Bay, but approaches it in some locations in central and northern Marin County.

Sensitive Natural Communities in the Study Area

Wetlands and Waters

Wetlands are among the most productive ecosystems in the world. An immense variety of species of microbes, plants, insects, amphibians, reptiles, birds, fish, and mammals can be part of a wetland ecosystem. Many species of birds and mammals rely on wetlands for food, water, and shelter, especially during migration and breeding.

Wetlands are defined based on federal regulations as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (ACOE, 1987). Swamps, marshes and bogs are classified as wetlands, as are seasonally saturated or inundated areas such as seeps, springs and vernal pools. Wetlands are identified using three parameters: vegetation, soils and hydrology. In most cases, jurisdictional wetlands are dominated by hydrophytic (i.e., wetland) vegetation, occur on hydric soils, and are supported by wetland hydrology.

As used in this report, “waters” includes both navigable waters and other non-wetland Waters of the United States. These are unvegetated areas composed of open water for a portion of the year and that meet the following criteria as described in 33CFR328.3 of the Code of Federal Regulations:

- All navigable 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;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, sloughs, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters;
- All impoundments of navigable waters otherwise defined as waters of the United States; and
- Tributaries of waters described above.

Six types of wetland plant communities totaling 67.9 acres were identified within the proposed project corridor (Table 3.9-1). These wetland types include coastal salt marsh, coastal brackish marsh, coastal freshwater marsh, coastal seasonal wetland, vernal pool, and blackberry wetland. An additional 0.5 acre of wetlands was identified at portions of proposed station sites outside the project corridor (Table 3.9-2).

Three categories of non-wetland waters totaling 7.0 acres were identified within the proposed project corridor (Table 3.9-1) and 0.1 acre at station sites outside the right-of-way (Table 3.9-2). These include seasonal watercourses, perennial watercourses and open water. Watercourses in the study area range from small, ephemeral creeks and ditches to high-order perennial streams, most notably the Russian River and Petaluma River. In addition, several watercourses in the southern portion of the project corridor receive tidal inflow, including Gallinas Creek, Novato Creek and the Petaluma River and its lower tributaries. Watercourses within the project corridor are identified and described in more detail in the Wetlands Report (Appendix H).

Other Sensitive Communities

Other sensitive biological communities in the project corridor include riparian scrub, riparian woodland and oak woodlands. Riparian plant communities are considered sensitive by the resource agencies because of their high value to wildlife, importance to stream bank stability and water quality, and because of the substantial loss and degradation of these communities statewide. Oak woodlands are considered sensitive by the CDFG because of their wildlife habitat value and the ongoing decline of these communities due to both habitat conversion and disease.

Special Status Species Potentially Present in the Study Area

The determination of whether a species is special-status is established by the USFWS and CDFG. Special-status classifications include species that are:

- Listed, proposed, or candidates for listing as threatened or endangered under the federal Endangered Species Act;
- Listed or candidates for listing as threatened or endangered under the California Endangered Species Act;
- Designated as rare by the State of California under the Native Plant Protection Act;
- Designated as “Special Concern” or “Fully Protected” species by the CDFG;
- Considered “species of concern” by the USFWS

In addition to the classifications above, protection of other species is provided through determination of special-status by the California Native Plant Society (CNPS), CEQA, or by specific ordinance.

- Included on lists 1a, 1b or 2 of the CNPS Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2001);
- Considered sufficiently rare to qualify for consideration under CEQA (CEQA Guidelines Section 15380); or
- Protected by other applicable federal, state or local ordinances.

The following section summarizes special-status plant and animal species that could occur within the proposed project corridor; complete lists of plant and wildlife species observed in the project corridor are provided in Appendices F and G. Special status species with potential to occur in the project area and vicinity are listed in Tables 3.9-3 and 3.9-4 for plants and animals, respectively.

Special Status Plants

Of the species included in Table 3.9-3, the focused botanical survey identified potential habitat only for those species detailed in the following text. Potential habitat for vernal pool species was located on railroad margins within the Santa Rosa Plain (MP 46.8 - 65.1). Vernal pools surveyed were determined to have suitable habitat for Sonoma sunshine, dwarf downingia (*Downingia pusilla*), Burke’s goldfields (*Lasthenia burkei*), legenere (*Legenere limosa*), Sebastopol meadowfoam (*Limnathes vinculans*), Baker’s navarretia (*Navarretia leucocephala* ssp. *bakeri*), many-flowered navarretia (*Navarretia leucocephala* ssp. *plieantha*), and marsh microseris (*Microseris paludosa*). However, despite a seasonally appropriate survey of suitable habitats, none of the special-status vernal pool species were found. Two populations of Burke’s goldfields were located near MP 60.1, just north of Windsor, approximately 100 feet outside the proposed project corridor.

Potential habitat for Pt. Reyes bird’s beak (*Cordylanthus maritimus* ssp. *palustris*), soft bird’s beak (*Cordylanthus mollis* ssp. *mollis*) and California cord grass (*Spartina foliosa*) was identified in salt marsh located between Petaluma and Novato. Surveys of salt marsh habitats were conducted at the seasonally appropriate time, but no populations of sensitive salt marsh species were located. Suitable outcrop and oak woodlands, considered potential habitat for Clara Hunt’s milkvetch (*Astragalus clarianus*) and Colusa layia (*Layia septentrionalis*), were surveyed, but no populations were found.

**TABLE 3.9-3
SPECIAL STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR³ IN THE PROJECT AREA**

Common Name	Scientific Name	Status ^{1,2} (Fed./State/ CNPS)	Habitat	Potential to Occur
Franciscan onion	<i>Allium peninsulare</i> var. <i>franciscanum</i>	SLC/-/1B	Dry, wooded hillsides near Petaluma.	Low
Bent-flowered fiddleneck	<i>Amsinckia lunaris</i>	SLC/-/1B	Foothill grasslands and oak woodlands.	Very Low
Clara Hunt's milkvetch	<i>Astragalus clarianus</i>	FE/ST/1B	Foothill woodlands and chaparral; endemic to Napa and Sonoma counties	Medium
Alkali milk-vetch	<i>Astragalus tener</i> var. <i>tener</i>	FSC/-/1B	Grassy, alkali flats near Petaluma.	Low
Big-scale balsamroot	<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>	FSC/-/1B	Open grassy slopes and woodlands.	Low
Sonoma sunshine (= Baker's stickyseed)	<i>Blennosperma bakeri</i>	FE/SE/1B	Vernal pools. Reported from two locations in the Santa Rosa Plain within 100 m of the study area, south of Windsor (MP 57.5, 57.7)	High
Narrow-anthered California brodiaea	<i>Brodiaea californica</i> var. <i>leptandra</i>	SLC/-/1B	Open forests and chaparral, often on serpentine. Collections known near Windsor and Healdsburg.	Medium
Bolander's reed grass	<i>Calamagrostis bolanderi</i>	SLC/-/4	Marshes, seeps and bogs. Known from marshes near Sebastopol.	Low
Thurber's reed grass	<i>Calamagrostis crassiglumis</i>	FSC/-/2	Coastal scrub, marshes and swamps. Sonoma Co. in the Pitkin Marsh.	Low
Swamp harebell	<i>Campanula californica</i>	FSC/-/1B	Coastal forest, marshes and swamps. Sonoma Co. in the Pitkin Marsh.	Low
White sedge	<i>Carex albida</i>	FE/SE/1B	Interior marshes and swamps. Sonoma Co. in the Pitkin Marsh only, other populations believed extirpated.	Low
Deceiving sedge	<i>Carex saliniformis</i>	SLC/-/1B	Coastal prairie, meadows, marshes, and swamps. Reported from Laguna de Santa Rosa.	Low
Coast Indian paintbrush	<i>Castilleja affinis</i> ssp. <i>affinis</i>	SLC/-/-	Chaparral, coastal scrub and wooded slopes. Reported near Santa Rosa and Healdsburg.	Low

Common Name	Scientific Name	Status ^{1,2} (Fed./State/ CNPS)	Habitat	Potential to Occur
Point Reyes bird's beak	<i>Cordylanthus maritimus ssp. palustris</i>	FSC/-/1B	Coastal salt marsh. Reported from San Quentin, San Rafael, Novato Creek and Petaluma River salt marshes.	High
Soft bird's beak	<i>Cordylanthus mollis ssp. mollis</i>	FE/SR/1B	Coastal salt marsh. Scattered populations from north San Francisco Bay. Believed extirpated in Petaluma River salt marsh.	Low
Dwarf downingia	<i>Downingia pusilla</i>	-/-/2	Mesic grassland and vernal pools. Numerous populations known in Santa Rosa Plain from Sebastopol to Windsor.	High
Round-leaved filaree	<i>Erodium macrophyllum</i>	-/-/2	Grassland and valley woodlands. Questionable if occurs in Sonoma Co.	Low
Fragrant fritillary	<i>Fritillaria liliacea</i>	FSC/-/1B	Coastal prairie, grasslands, heavy soils/serpentine. Known from Santa Rosa and Petaluma River quads with extirpated population in Cotati quad.	Low
Diablo helianthella	<i>Helianthella castanea</i>	FSC/-/1B	Chaparral, oak woodlands, grasslands. Population from San Rafael quad extirpated, not known from Sonoma Co.	Low
Thin-lobed horkelia	<i>Horkelia tenuiloba</i>	SLC/-/1B	Oak woodlands, grasslands, sandy soils. Recorded in the Laguna de Santa Rosa in Sebastopol, Guerneville and Healdsburg quads.	Low
Burke's goldfields	<i>Lasthenia burkei</i>	FE/SE/1B	Meadows, seeps, vernal pools, especially in the Santa Rosa Plain. Populations within 200 feet of the study area near Windsor.	High
Colusa layia	<i>Layia septentrionalis</i>	FSC/-/1B	Dry, rocky, open woodlands, chaparral or grasslands, often on serpentine soils	High
Legenere	<i>Legenere limosa</i>	FSC/-/1B	Vernal pools. A population known from Sebastopol quad, not known from Marin Co.	Medium
Sebastopol meadowfoam	<i>Limnanthes vinculans</i>	FE/SE/1B	Meadows, seeps and vernal pools. Small scattered populations in the Santa Rosa Plain	High

Common Name	Scientific Name	Status ^{1,2} (Fed./State/ CNPS)	Habitat	Potential to Occur
Marsh microseris	<i>Microseris paludosa</i>	SLC/-/1B	Grasslands and vernal pools. Known populations near Windsor and one in the Laguna de Santa Rosa.	Medium
Baker's navarretia	<i>Navarretia leucocephala</i> <i>ssp. bakeri</i>	FSC/-/1B	Vernal pools. Numerous populations near Windsor and through the Santa Rosa Plain.	Medium
Many-flowered navarretia	<i>Navarretia leucocephala</i> <i>ssp. plieantha</i>	FE/SE/1B	Vernal pools. Known populations near Windsor and one in Laguna de Santa Rosa.	Low
White-rayed pentachaeta	<i>Pentachaeta bellidiflora</i>	FE/SE/1B	Grasslands, often serpentine. Extirpated from Marin Co. Not known from Sonoma Co.	Very low
Hairless popcorn-flower	<i>Plagiobothrys glaber</i>	FSC/-/1A	Alkali meadows/seeps, salt marsh. Extirpated from Marin Co. Not known from Sonoma Co.	Very low
Petaluma popcorn-flower	<i>Plagiobothrys mollis</i> var. <i>vestitus</i>	FSC/-/1A	Unknown habitat, possibly salt marsh. One collection known from Sonoma Co. Considered extinct.	Very low
North Coast semaphore grass	<i>Pleuropogon hooverianus</i>	FSC/ST/1B	Freshwater marsh, meadows, vernal pools, woodlands. One population known from the Santa Rosa Plains.	Low
Hickman's cinquefoil	<i>Potentilla hickmanii</i>	FE/SE/1B	Freshwater marsh, meadows, vernal pools, woodlands. One population south of Sebastopol thought to be extinct.	Low
California beaked rush	<i>Rhynchospora californica</i>	FSC/-/1B	Freshwater marsh, meadows, vernal pools, woodlands. Scattered populations in the Santa Rosa Plain.	Low
Round-headed beaked rush	<i>Rhynchospora globularis</i> var. <i>globularis</i>	-/-/2	Freshwater swamps. Scattered populations in the Santa Rosa Plain. Possibly only western North America populations.	Low
California cord grass	<i>Spartina foliosa</i>	SLC/-/-	Salt marsh. Populations reported from San Rafael, Black Point, and Petaluma River estuary.	Medium

Common Name	Scientific Name	Status ^{1,2} (Fed./State/ CNPS)	Habitat	Potential to Occur
Santa Cruz microseris	Stebbinsoseris decipiens	FSC/-/1B	Oak woodland, grassland, chaparral. One population known from the San Rafael quad.	Low
Showy Indian clover	Trifolium amoenum	FE/-/1B	Coastal bluff, grassland, chaparral, serpentine soils. One population known from Marin Co. Rediscovered in Sonoma Co.	Low
Saline clover	Trifolium depauperatum var. hydrophilium	FSC/-/1B	Salt marsh, open alkali areas, vernal pools. Santa Rosa quad, possibly extirpated in many areas.	Very Low

Note: ¹ Status Definitions:

- FE Listed as Endangered under the federal Endangered Species Act
- FT Listed as Threatened under the federal Endangered Species Act
- FSC USFWS "species of concern"
- SE Listed as Endangered under the California Endangered Species Act
- ST Listed as Threatened under the California Endangered Species Act
- SC Candidate for listing as Endangered or Threatened under the California Endangered Species Act
- SR Designated as Rare under the California Native Plant Protection Act
- SLC Sacramento Fish and Wildlife Office "species of local concern"

² Status designations based on USFWS species list for the project area (Ref. no. 1-1-03-SP-1758) and CDFG *Special Plants List* (October 2003).

³ Based on the species identified in the CNDDDB records, the range of habitats present, and the geographical range of these species, a determination was made as to which special-status species could occur in the project corridor.

**TABLE 3.9-4
SPECIAL STATUS ANIMAL SPECIES WITH POTENTIAL TO OCCUR³ IN THE PROJECT AREA**

Common Name	Scientific Name	Status ^{1,2} (Fed./State)	Habitat	Potential to Occur
Invertebrates				
California linderiella	<i>Linderiella occidentalis</i>	FSC/-	Moderately clear vernal pools, ephemeral ponds and lakes.	High
California freshwater shrimp	<i>Syncaris pacifica</i>	FE/SE	Low-elevation, low-gradient perennial streams with undercut banks, exposed roots, and overhanging woody debris or vegetation. Endemic to Marin, Napa, and Sonoma Co.	Low
Myrtle's silverspot butterfly	<i>Speyeria zerene myrtleae</i>	FE/-	Coastal prairie or dune habitats sheltered from wind within 3 miles of the coast. Host plants are violets, typically <i>Viola adunca</i> .	Very Low
Fishes				
Coho salmon – Central California ESU/ Northern California population	<i>Oncorhynchus kisutch</i>	FT/SE	Anadromous; migrates through and spawns in coastal rivers and streams from Santa Cruz to Mendocino County	High
Chinook salmon California Coastal ESU	<i>Oncorhynchus tshawytscha</i>	FT/-	Anadromous; coastal rivers and streams of northern California from Russian River to Redwood Creek	High
Sacramento River Winter-run ESU	"	FE/SE	Anadromous; migrates through San Francisco Bay and Delta, spawns in upper Sacramento River.	Low
Central Valley Spring-run ESU	"	FT/ST	Anadromous; migrates through SF Bay and Delta, spawns in upper Sacramento River and its tributaries.	Low
Central Valley Fall/ Late Fall-run ESU	"	FC/CSC	Anadromous; migrates through SF Bay and Delta, spawns in upper Sacramento and San Joaquin rivers and their major tributaries	Low
Steelhead – Central California Coast ESU	<i>Oncorhynchus mykiss</i>	FT/-	Anadromous; coastal rivers, streams and creeks from Santa Cruz County north to Russian River basin.	High; observed in survey
Tidewater goby	<i>Eucyclogobius newberryi</i>	FE/CSC	Shallow coastal lagoons, brackish marshes and lower stream reaches with still water; ranges from San Diego to Humboldt County	Very Low
Pacific lamprey	<i>Lampetra tridentata</i>	FSC/-	Anadromous adults enter freshwater streams in spring and summer to spawn. Young remain in gravel of stream bottom for several years before migrating to the ocean.	High

Common Name	Scientific Name	Status ^{1,2} (Fed./State)	Habitat	Potential to Occur
Russian River tule perch	<i>Hysterocarpus traskii poma</i>	FSC/-	Russian River and its tributaries in Sonoma County. Clear, flowing water and abundant cover, submerged tree branches, and overhanging vegetation.	Moderate
Longfin smelt	<i>Spirinchus thaleichthys</i>	FSC/-	Bays, estuaries, sloughs, and streams near the sea. Occurs along the northern and eastern San Pablo Bay.	Low
Sacramento splittail	<i>Pogonichthys macrolepidotus</i>	FSC/CSC	Slow-moving sections of rivers and sloughs, flooded vegetation	Moderate
Amphibians				
California tiger salamander	<i>Ambystoma californiense</i>	FT/CSC	Breeds in seasonal ponds and pools. Spends most of the year in rodent burrows or other subterranean refuges in grassland and oak savanna habitats.	High
California red-legged frog	<i>Rana aurora draytonii</i>	FT/CSC	Ponds, pools of streams, freshwater marshes with submerged and emergent vegetation. May move through and take temporary refuge in upland habitats near aquatic sites.	Moderate
Foothill yellow-legged frog	<i>Rana boylei</i>	FSC/CSC	Found in or near rocky streams in a variety of habitats including valley foothill riparian, conifer forests, mixed chaparral, coastal scrub, and wet meadows.	Low
Reptiles				
Northwestern pond turtle	<i>Emys [= Clemmys] marmorata marmorata</i>	FSC/CSC	Freshwater ponds, marshes, rivers, streams, and irrigation ditches.	High: observed in survey
California horned lizard	<i>Phrynosoma coronatum frontale</i>	FSC/-	Scrubland, grassland, coniferous forests, and broadleaf woodlands.	Low
Birds				
American bittern	<i>Botaurus lentiginosus</i>	FSC/-	Freshwater and brackish marshes. Usually nests in tall emergent vegetation.	Moderate
Cooper's hawk	<i>Accipiter cooperi</i>	-/CSC	Woodlands, forests and streamside groves. Nests in broad-leaved riparian trees, mature oaks and conifers.	Moderate
Sharp-shinned hawk	<i>Accipiter striatus</i>	-/CSC	Mixed woodlands and forests. Nests in conifers or deciduous trees in dense woodlands or mountain forests.	Low
Golden eagle	<i>Aquila chrysaetos</i>	-/CSC, CFP	Hilly terrain, open country. Usually nests on a cliff ledge, but also in large trees. Needs open areas such as grasslands for hunting.	Low

Common Name	Scientific Name	Status ^{1,2} (Fed./State)	Habitat	Potential to Occur
Ferruginous hawk (wintering)	<i>Buteo regalis</i>	FSC/–	Semi-arid, open habitats such as prairies and grasslands. Usually nests in conifers, but will also use cliffs, banks, or buttes.	Low
Northern harrier	<i>Circus cyaneus</i>	–/CSC	Open fields, marshes, grasslands and savannas. Nests on elevated ground or in thick vegetation near ground.	High
White-tailed kite	<i>Elanus leucurus</i>	FSC/CFP	Forages in grassland, marshes and open fields with deciduous trees. Nests in trees.	High
Osprey	<i>Pandion haliaetus</i>	–/CSC	Coasts and inland lakes and rivers. Nests in tall snags, dead-topped trees, cliffs, or human-made structures.	Low
Peregrine falcon	<i>Falco peregrinus anatum</i>	FD/SE (nesting), CFP	Nests on cliff ledges in open habitats, from seacoasts to high mountains. Sometimes uses ledges of tall buildings and bridges.	Low
California black rail	<i>Laterallus jamaicensis</i>	FSC/ST, CFP	Saline, brackish, and freshwater marshes. Requires dense emergent vegetation where it can conceal its nest above ground.	High
California clapper rail	<i>Rallus longirostris obsoletus</i>	FE/SE, CFP	Coastal salt and brackish marshes and tidal sloughs. Nests in cordgrass, pickleweed, gumplant and salt grass in tidal marshes.	Moderate
Long-billed curlew	<i>Numenius americanus</i>	FSC/–	Summers on grasslands, winters on mudflats and flooded fields. Nests in dry grassy meadows or prairies.	Moderate
Short-eared owl	<i>Asio flammeus</i>	–/CSC	Grasslands, meadows, emergent wetlands, and open areas. Nests require low concealing vegetation.	Moderate
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	FSC/CSC	Open arid and semi-arid habitats, including grasslands, deserts, agricultural fields, ruderal areas and open landscaped areas. May be nearly extirpated from Sonoma and Marin counties	Low
Allen's hummingbird (nesting)	<i>Selasphorus sasin</i>	FSC/–	Summer resident and migrant along most of the California coast. Breeds in coastal scrub, valley foothill hardwood and riparian habitats, but also found in pine-cypress, redwood forests and urban landscapes.	Moderate
Lewis' woodpecker (nesting)	<i>Melanerpes lewis</i>	FSC/–	Oak savannas and other open deciduous and coniferous woodlands. Often nests in a tree cavity, snag, or pole or at orchard edges.	Moderate

Common Name	Scientific Name	Status ^{1,2} (Fed./State)	Habitat	Potential to Occur
Loggerhead shrike	<i>Lanius ludovicianus</i>	FSC/CSC	Semi-open country with trees, scrub, brushy areas. Often nests in open fields with a few trees, or in open woodlands or scrub.	High
California horned lark	<i>Eremophila alpestris actia</i>	-/CSC	Grassland, open areas with low, sparse vegetative cover. Nests in a depression in ground lined with grasses.	Moderate
Yellow warbler	<i>Dendroica petechia brewsteri</i>	-/CSC	Nests in riparian woodlands (especially willows) and streamside thickets.	Moderate
Saltmarsh common yellowthroat	<i>Geothlypis trichas sinuosa</i>	FSC/CSC	Emergent wetlands; low, dense vegetation near water. Nests in shrubs 1-2 feet above ground.	High
San Pablo song sparrow	<i>Melospiza melodia samuelis</i>	FSC/CSC	Streamside thickets, brush, marshes. Nests on the ground or in a shrub or weeds 1-4 feet high. Occurs in the Petaluma River marsh and margins of San Pablo Bay.	Moderate
Oak titmouse	<i>Baeolophus inornatus</i>	SLC/-	Primarily associated with sparse oak woodlands. Roosts in the cavity of a tree or snag. Nests in natural cavities, abandoned woodpecker holes, and birdhouses.	Moderate
Tricolored blackbird (nesting colony)	<i>Agelaius tricolor</i>	FSC/CSC	Fresh emergent wetlands, grasslands, croplands. Nests in reeds above the surface or on ground. Breeding populations are very much localized and are not within the project area.	Low
Mammals				
Suisun ornate shrew	<i>Sorex ornatus sinuosus</i>	FSC/CSC	Tidal marshes on the north shores of San Pablo and Suisun bays and adjacent uplands. Uses stumps, logs and litter for cover and nests in wood, shrubs, and burrows.	Low
Pallid bat	<i>Antrozous pallidus</i>	-/CSC	Grasslands, shrublands, woodlands, open/ dry habitats, rocky outcrops, cliffs, crevices.	High
Townsend's western big-eared bat	<i>Corynorhinus townsendii townsendii</i>	FSC/CSC	Mesic habitats. Roosts in caves, tunnels, buildings and other human-made structures.	Moderate
Long-eared myotis bat	<i>Myotis evotis</i>	FSC/-	Variety of habitats from sage to high altitude forests; mostly found in forested regions. Sometimes roosts in buildings.	Low
Fringed myotis bat	<i>Myotis thysanodes</i>	FSC/-	Oaks, pinyon, and juniper forests. Roosts in caves, mines, buildings, and other protected locations.	Low
Long-legged myotis bat	<i>Myotis volans</i>	FSC/-	Mainly coniferous forests. In summer roosts in trees, crevices, or buildings.	Low

Common Name	Scientific Name	Status ^{1,2} (Fed./State)	Habitat	Potential to Occur
Yuma myotis bat	<i>Myotis yumanensis</i>	FSC/–	Open woodlands; typically forages over water. Roosts in buildings, mines, caves, crevices, swallow nests, and under bridges.	High
Salt-marsh harvest mouse	<i>Reithrodontomys raviventris</i>	FE/SE, CFP	Saline emergent wetlands and brackish marshes dominated by pickleweed.	Moderate

Note: ¹ Status Definitions:

Federal	State
ESU Evolutionarily Significant Unit	CFP California Fish and Game Code Fully Protected Species
FC Candidate for listing under the federal Endangered Species Act	CSC California Department of Fish and Game Species of Special Concern
FD Delisted under the federal Endangered Species Act	SE Listed as Endangered under the California Endangered Species Act
FE Listed as Endangered under the federal Endangered Species Act	ST Listed as Threatened under the California Endangered Species Act
FSC USFWS “species of concern”	
FT Listed as Threatened under the federal Endangered Species Act	
SLC USFWS Sacramento Fish & Wildlife Office “species of local concern”	

² Status designations based on: USFWS species list (updated March 1, 2004); CDFG *Special Animals* list (August 2004); CDFG *State and Federally Listed Endangered and Threatened Animals of California* (January 2005); NOAA Fisheries *Endangered Species Act Status of West Coast Salmon & Steelhead* (NOAA Fisheries website, updated May 2003).

³ Based on the species identified in the CNDDDB records, the range of habitats present, and the geographical range of these species, a determination was made as to which special-status species could occur in the project corridor.

Special Status Animals

Several special status animals included in Table 3.9-4 have moderate or high potential to occur within the project corridor. Many of these species are associated with aquatic and riparian habitats at stream crossings. The Russian River, Petaluma River, and several other perennial and intermittent streams crossed by or adjacent to the corridor support migratory runs of Central California Coast steelhead (*Oncorhynchus mykiss*) (Table 3.9-5). The Russian River also supports California Coastal chinook salmon (*Oncorhynchus tshawytscha*) and Central California Coast coho salmon (*Oncorhynchus kisutch*). Other special-status fish species that are likely to occur in streams within the corridor include Pacific lamprey (*Lampetra tridentata*), Russian River tule perch (*Hysterothorax traskii*), and Sacramento splittail (*Pogonichthys macrolepidotus*).

**TABLE 3.9-5
PRESENCE OF SALMONID FISHES IN STREAMS IN THE PROJECT STUDY AREA**

Watercourse Name	Milepost	Hydrology	Salmonid Fish ¹
Porterfield Creek	84.34	Seasonal	Steelhead
Icaria Creek	82.94	Perennial	Steelhead
Unnamed creek	79.29	Perennial	Steelhead
Peterson Creek	74.47	Seasonal	Steelhead
Foss Creek	68.65	Perennial	Steelhead
Russian River	67.62	Perennial	Coho salmon Chinook salmon Steelhead
Mark West Creek	59.50	Perennial	Coho salmon Steelhead
Santa Rosa Creek	53.57	Perennial	Coho salmon Steelhead
Copeland Creek	46.97	Perennial	Steelhead
Lichau Creek	44.37	Perennial	Steelhead
Willow Brook	42.42	Seasonal	Steelhead
Petaluma River	37.19, 39.74	Perennial / tidal	Chinook salmon Steelhead
Novato Creek	26.93	Perennial / tidal	Steelhead
Miller Creek	22.09	Perennial	Steelhead

Note: ¹ See the *Biological Technical Report for the SMART Passenger Rail Project* (Garcia and Associates, 2005) for sources and further explanation.

Special status amphibians and reptiles with moderate or high potential to occur within the corridor include the California tiger salamander (CTS) and northwestern pond turtle (*Emys [= Clemmys] marmorata marmorata*). Potential breeding habitat for CTS was mapped in several locations where seasonal ponds or ditches occur in non-urban segments of the corridor between Windsor and Penngrove. Northwestern pond turtles were observed in the proposed project corridor in 2003 in a culvert under the railroad tracks in Healdsburg (MP 69.6) and in 2004 in Miller Creek (MP 22.1). No California red-legged frogs were detected in protocol surveys conducted in consultation with the USFWS; therefore, this species is considered unlikely to occur within the proposed project corridor.

Special status animals that could occur in salt marsh and brackish marsh habitats between southern Petaluma and northern Novato include California clapper rail (*Rallus longirostris obsoletus*), California black rail (*Laterallus jamaicensis*), salt-marsh harvest mouse (*Reithrodontomys raviventris*), Suisun ornate shrew (*Sorex ornatus sinuosus*) and American bittern (*Botaurus lentiginosus*). Several other special-status bird species have potential to occur in riparian and oak woodland habitats within or adjacent to the project corridor (See Table 3.9-4). Three special status bat species, the pallid bat

(*Antrozous pallidus*), Townsend's western big-eared bat (*Corynorhinus townsendii townsendii*), and Yuma myotis bat (*Myotis yumanensis*) have moderate or high potential to occur within the project corridor.

Invasive Exotic Plant Species (Noxious Weeds)

The exotic invasive status of all plants observed in the project corridor during the botanical surveys was identified by consulting the CDFA (2000) List of California's Noxious Weeds and the California Exotic Pest Plant Council¹ (Cal-EPPC) (1999) list. A total of 27 exotic invasive plant species was identified. Sixteen of these species are concentrated in ruderal and non-native grassland communities within the project corridor. Four of the species occur exclusively in wetlands, and the remaining seven occur in a variety of plant communities.

Common ruderal invasive species found throughout the project corridor include wild oats (*Avena* spp.), bull thistle (*Cirsium vulgare*), fennel (*Foeniculum vulgare*), annual rye (*Lolium multiflorum*), Harding grass, and Italian thistle (*Carduus pycnocephalus*). Other invasive species occur in scattered patches, including French broom (*Genista monspessulan*), Scotch broom (*Cytisus scoparius*), poison hemlock (*Conium maculatum*), gorse (*Ulex europaeus*), woolly mullein (*Verbascum thapsus*), and pampas grass (*Cortaderia jubata*). These are all highly invasive plants that displace native species and degrade native plant communities. They are most prevalent on the railroad grade but are also interspersed with native species in natural wetland and upland plant communities within the right-of-way.

Two invasive exotics, perennial pepperweed (*Lepidium latifolium*) and salt-water cordgrass (*Spartina alterniflora*), occur in salt marshes within the project corridor. Perennial pepperweed is highly invasive in brackish and salt marshes, as well as in fields with slightly saline soils (Bossard et al., 2000). Salt-water cordgrass invades the intertidal area of salt marshes where it overtakes mudflats and hybridizes with the native California cordgrass (Bossard et al., 2000).

Freshwater marshes in the study area support two invasive plant species, giant reed grass (*Arundo donax*) and water hyacinth (*Eichornia crassipes*). Giant reed grass is a robust grass that displaces native vegetation in riparian areas and also can alter stream hydrology and morphology (Bossard et al., 2000). Water hyacinth is a floating aquatic plant that invades aquatic systems and rapidly covers the entire water surface. Annual rye and Harding grass are dominant invasive species in the seasonal wetlands adjacent to the railroad grade. Pennyroyal (*Mentha pulegium*) is another common invasive plant found in seasonal wetlands, including vernal pools, within the project corridor.

Along the project corridor, Himalayan blackberry dominates both a wetland plant community (blackberry wetland) and an upland scrub plant community (blackberry scrub). This exotic blackberry is a highly aggressive brambling shrub that generally crowds out all other species once established. It is considered one of the most invasive and widespread of California's wildland pest plants (Cal-EPPC, 1999).

3.9.4 Significance Criteria

Project-related effects on wetland, vegetation and wildlife resources were considered significant if they would result in one or more of the following conditions:

- A substantial adverse effect, either directly or through habitat modifications, on any wildlife species identified as endangered, threatened, candidate, sensitive or special-status by the USFWS, CDFG, CEQA, or CNPS or in local or regional plans, policies, or regulations;
- A substantial adverse effect on any riparian habitat or other sensitive natural community identified by the USFWS or CDFG or in local or regional plans, policies, regulations;

¹ The Cal-EPPC is now referred to as the California Invasive Plant Council (Cal-IPC).

- A substantial adverse effect on federally protected wetlands or other Waters of the U.S. as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources;
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan;
- Conflict with the following federal and state laws and regulations:
 - The Migratory Bird Treaty Act;
 - California Fish and Game Code Sections 3503 and 3503.5, which protect nesting birds and raptors;
 - California Fish and Game Code Section 1600 protections for fish and wildlife associated with streambed alteration activities; or
- Introduce or spread a noxious weed or substantially increase the dispersal and spread of existing populations of noxious weeds such that an existing plant community or wildlife habitat is substantially degraded.

3.9.5 Impact Assessment Methodology

In general, temporary and long-term impacts on biological resources would occur mostly within the existing, previously disturbed right-of-way and the station and maintenance facility sites. Permanent loss or alteration of sensitive plant communities and wildlife habitats would be limited to the proposed bicycle/pedestrian pathway side of the right-of-way, new siding track areas, and areas of stream banks and channels that would be modified with new crossing structures.

To quantify impact acreages for the various proposed project segments and components, this analysis assumes the extent of the impact footprint (area of potential disturbance) as follows:

- For segments of the corridor with the proposed bicycle/pedestrian pathway: the entire side of the corridor containing the bicycle/pedestrian pathway, from the centerline of the track to the outer edge of the right-of-way or outer edge of the bicycle/pedestrian pathway footprint, whichever is greater;
- For segments of the corridor without the proposed bicycle/pedestrian pathway: no change in existing condition except at stream crossings;
- For stream crossings: the entire right-of-way width for the length of the new crossing (structures suspended over water are considered as footprint by CDFG and ACOE);
- For siding track locations: the siding side of the right-of-way from the track centerline to the outer edge of the right-of-way;
- For proposed station sites: the footprint of new built structures including buildings, pavement, sidewalks and landscaping; and,
- For proposed maintenance yards and staging sites: the total areas of each site.

In all areas where long-term impacts are expected to occur (i.e. development of the bike path, stations, and maintenance facility), it was assumed that existing natural communities would be converted to developed land. The impact footprint is likely to be overestimated at stream crossings because most in-stream areas would be spanned by bridges and a substantial portion of watercourse area within the right-of-way would be unaffected once construction is complete. Proposed station locations indicated in

the description in Chapter 2 of this DEIR were used as the basis for quantifying the impact area associated with the new stations.

3.9.6 Impact Summary

Construction and operation of the proposed project is likely to adversely affect biological resources. Reconstruction of the rail line itself would result in minor impacts, but the addition of the proposed bicycle/pedestrian pathway would necessitate some widening of the corridor and fill of wetlands in areas that contain biological resources. Freshwater seasonal wetlands, largely functioning as drainage ditches, parallel much of the railroad grade. Because the railroad grade is raised, original construction produced a hydrologic barrier. Over time, and in combination with adjacent development, water has been concentrated to the right-of-way.

Of the approximately 360 acres that would be impacted by the proposed project, about 308 acres are non-sensitive upland communities (e.g. previously disturbed or developed lands) with minimal value for sensitive biological resources. Impacts in these communities (blackberry scrub, mixed scrub, non-native grassland, vineyard, ruderal, and developed/landscaped) would be less than significant. The remaining 52 acres that would be impacted include communities, such as wetlands and oak woodland, which do support sensitive biological resources.

Implementation of the proposed project would cause temporary impacts on biological resources associated with the construction of the proposed transportation facilities, permanent loss of resources associated with facility siting, and periodic disturbance of biological resources associated with maintenance and operation of the rail line. All of these impacts can be mitigated to a less-than-significant level through implementation of recommended mitigation measures to avoid, minimize and compensate for these impacts. In addition, environmental compliance measures that are part of the proposed project (see Section 2.9) and required consultation with the USFWS and CDFG would serve to reduce potential impacts.

3.9.7 Impacts and Mitigation Measures

Impacts resulting from the proposed project could include alteration of plant communities and wildlife habitats, loss of individual plants or wildlife, alteration or loss of wetlands and other waters, removal and trimming of native trees, alteration of stream banks, short-term increases in turbidity and sedimentation within creeks, and other types of disturbance to wildlife and plants.

Construction-Related Impacts

Construction-related impacts are predominantly short-term effects associated with project construction activities, including reparable ground disturbance in temporary work areas. However, adverse effects on special-status species are considered under long-term impacts, even if they occur in temporary work areas. Potential temporary, direct impacts on biological resources would include the following.

Impact BR-1: Project construction would cause damage to sensitive upland vegetation and wildlife habitat within temporary work areas. (*Significant mitigable*)

Operation of vehicles and equipment in temporary construction access and staging areas, parking of vehicles and placement of equipment and materials in temporary laydown and storage areas could remove or crush vegetation, damage tree roots, compact soil, or collapse animal burrows. Accidental spill or release of a hazardous material could potentially harm wildlife and impair the recruitment and establishment of onsite vegetation. Temporary work areas would be located mostly in ruderal and developed areas, but may overlap small portions of other upland plant communities including oak woodland, mixed scrub, and non-native grassland. Construction-related impacts on common upland plant communities would be less than significant. However, impacts on wildlife in work areas could be considered significant if they interfere substantially with wildlife movement, impede the use of breeding

sites, or conflict with local policies that protect wildlife species and habitats. Implementation of the following mitigation measures would reduce this impact to a less than significant level.

Mitigation Measure BR-1a: Construction access, staging, storage, and parking areas shall be located on ruderal or developed lands to the extent possible. Vehicle travel adjacent to wetlands and riparian areas shall be limited to existing roads and designated access paths. Sensitive natural communities (i.e., wetlands, waters, riparian zones and oak woodlands) shall be conspicuously marked in the field to minimize impacts on these communities, and work activities shall be limited to outside the marked areas.

Mitigation Measure BR-1b: Qualified biologists shall monitor construction activities that could potentially cause significant impacts on sensitive biological resources. A worker education program shall be developed and presented to all construction personnel before they start work on the proposed project. The program shall summarize relevant laws and regulations that protect biological resources, discuss sensitive habitats and special-status species with the potential to occur in the work zone, explain the role and authority of the biological monitors and review applicable avoidance and minimization measures to protect sensitive species and habitats.

Impact BR-2: There could be temporary disturbance of wetlands/Waters of the United States.
(Significant mitigable)

Construction activities could impact wetlands and other waters at temporary work sites, including temporarily-affected areas at stream crossings within and adjacent to the project corridor. Bridge and culvert construction, reconstruction, or rehabilitation would occur at 62 crossing sites along the proposed project corridor (see Impact BR-5 for long-term impact on these areas). Operation of vehicles and equipment in these areas could adversely affect wetland and stream habitat by disrupting soil and damaging or removing wetland and riparian vegetation. Ground disturbance and other activities within and adjacent to stream zones could result in increased erosion, water turbidity and sediment transport into waterways. Oil, gas and other pollutants could also be released into water bodies. While these temporary effects would not result in net loss of wetlands or other waters, they could adversely affect aquatic organisms in the vicinity of work areas. Suspended sediments can interfere with respiration, reduce visibility and affect feeding and other essential life cycle activities. Excess sediments can also bury eggs, fill pools and alter streambeds that provide important habitat. Construction in stream zones would require coordination with the RWQCB, CDFG, and possibly other agencies. (See Section 3.3, Water Resources for analysis of impacts on water quality).

Environmental compliance measures incorporated into the proposed project (see Section 2.9) include provisions for agency consultation, erosion control BMPs and fuel spill prevention measures. Mitigation measures WR-1a and 1b in Section 3.3.6 call for a Storm Water Pollution Prevention Plan (SWPPP) and Streambed Alteration Agreement to reduce potential water quality impacts. Most in-stream work areas would be temporarily dewatered which would prevent concrete and other debris from entering the water during bridge construction. A temporary dam structure would be installed upstream of, or surrounding, the work area, and water would be pumped or diverted away from the work area through a temporary culvert. These activities would displace fish and other aquatic animals from the dewatered areas and could disturb aquatic animals in areas adjacent to work areas. These effects would be temporary, generally lasting no more than one to two months, and would be confined to a relatively small area under and adjacent to crossing structures. Aquatic species are expected to return to these areas once the work is complete and flow is reestablished. Because of the limited extent and short-term nature of these effects, the impact on individual non-special-status species is less than significant. Potential impacts on special-status fish and aquatic species are described below under Impacts BR-12, 13 and 14.

In addition to environmental compliance provisions and mitigation measures identified in Section 3.3.6, implementation of Mitigation Measures BR-2a-c would reduce impacts on wetlands and U.S. Waters to a less than significant level.

Mitigation Measure BR-2a: Instream construction shall be confined to the dry or low-flow season. During in-stream construction, dewatered areas and temporary culverts shall be limited to the minimum area necessary. Pumps used for dewatering shall have agency-approved fish screens installed to minimize intake of fish into pumps. Diversion structures shall be left in place until all in-stream work is completed. Temporary culverts and all construction materials and debris shall be removed from the affected area prior to reestablishing flow and prior to the rainy season.

Mitigation Measure BR-2b: A qualified biological monitor shall be present during critical construction periods (e.g., grubbing and clearing, culvert installation, pouring concrete) in all streams and wetland areas. If a listed or protected species is encountered, work shall be stopped immediately at that location, the appropriate agency or agencies (USFWS, NOAA Fisheries and/or CDFG) shall be notified, and work shall not resume at that location prior to the agencies' approval, or as agreed to in prior consultation with the agencies.

Mitigation Measure BR-2c: Upon completion of the proposed project, all temporarily disturbed natural areas, including stream banks, shall be returned to original contours to the extent feasible. Affected wetlands, stream banks or stream channels shall be stabilized prior to the rainy season and/or prior to reestablishing flow. For wetland areas, the top six inches of native topsoil should be stockpiled and replaced following work. Wetland and riparian vegetation shall be reestablished as appropriate.

Impact BR-3: There could be disturbance of nesting birds due to construction activities.
(Significant mitigable)

Construction activities could affect raptors and other birds nesting in vegetation or on bridges or other built structures in or adjacent to work areas. Trimming or removal of vegetation could destroy or disturb active nests. Equipment noise, vibration, lighting and other human-related disturbance could disrupt nesting, feeding or other life cycle activities, and could cause nest abandonment or nesting failure. Structure-nesting species such as cliff swallows could also have their nests destroyed by demolition of existing bridges. Because active nests of most bird species are protected by the federal Migratory Bird Treaty Act and Section 3503 of the California Fish and Game Code, this impact is potentially significant. Additional protections would apply to federal- or state-listed bird species. Implementation of Mitigation Measures BR-3a and BR-3b would reduce this impact to a less than significant level.

Mitigation Measure BR 3a: To the extent feasible, trees and shrubs in the construction zones shall be trimmed or removed between September 1 and January 31 to reduce potential impacts on nesting birds. If vegetation must be removed during the period from February 1 to August 31, a qualified wildlife biologist shall conduct pre-construction surveys for nesting birds. If an active nest is found, the bird shall be identified to species and the approximate distance from the closest work site to the nest estimated. No additional measures need be implemented if active nests are more than the following distances from the nearest work site: (a) 300 feet for raptors; or (b) 75 feet for other non-special-status bird species (for California clapper rail and California black rail see Mitigation Measure BR-12). If active nests are closer than those distances to the nearest work site and there is the potential for destruction of a nest or substantial disturbance to nesting birds due to construction activities, a plan to monitor nesting birds during construction shall be prepared and submitted to the USFWS and CDFG for review and approval. Disturbance of active nests shall be avoided to the extent possible until it is determined that nesting is complete and the young have fledged.

Mitigation Measure BR-3b: If construction is likely to occur during the nesting season of cliff swallows (March 1 to July 31), bridges shall be periodically inspected for swallow nests by a qualified biologist prior to the onset of bridge demolition and/or new bridge construction. Nests shall be knocked down by a biologist prior to being one-third completed. Inspection of the bridges shall start in late February. Alternative methods to prevent cliff swallow nesting on the bridge may be used with prior approval by the CDFG.

Long-Term Impacts

Long-term impacts on biological resources include permanent conversion of natural habitats to developed land, other permanent alterations of natural biological communities and potential harm or mortality to individuals of special-status plant or animal species. Table 3.9-6 shows the estimated extent of long-term impacts on various plant communities within the study area under the proposed project.

**TABLE 3.9-6
EXTENT OF LONG-TERM IMPACTS ON PLANT COMMUNITIES IN
THE PROPOSED PROJECT AREA**

Plant Community	Affected Area, Cloverdale to Larkspur¹ (acres)
Coastal Salt Marsh	0.5
Coastal Brackish Marsh	1.3
Coastal Freshwater Marsh	2.0
Coastal Freshwater Seasonal Wetland	24.0
Vernal Pool	0.4
Blackberry Wetland	0.6
Total Wetlands	28.8
Perennial Watercourse	1.8
Seasonal Watercourse	1.0
Open Water	0.1
Total Waters	2.9
Riparian Scrub	3.5
Riparian Woodland	1.8
Total Riparian	5.3
Oak Woodland	15.0
Blackberry Scrub ²	3.8
Mixed Scrub ²	6.3
Non-native Grassland ³	14.6
Vineyard ²	1.0
Ruderal ²	229.0
Developed/Landscaped ²	53.8
Total Upland	323.5
Grand Total	360.5

Note: ¹ The impact footprint includes the bicycle/pedestrian path side of the railway corridor, new sidings and spurs, new stations, and the proposed Cloverdale maintenance facility site. See Table 3.9.-2 for a comparison of existing plant communities between the proposed Cloverdale and alternative Windsor maintenance facility sites. See Section 3.9.5 for further explanation of assumptions used to calculate the impact area.

² Non-sensitive plant community and not likely to support sensitive biological resources.

³ Non-sensitive plant community with potential to support sensitive biological resources.

Introduction of Noxious Weeds

Impact BR-4: The proposed project could result in the introduction or spread of noxious weeds in the project corridor. (Significant mitigable)

Project construction and maintenance activities could inadvertently spread existing populations of invasive weeds and/or introduce new species from contaminated sources. The entire project corridor has exotic invasive plants, some of which are already widespread and others that occur in isolated patches or specific habitat types. Invasive plants could be introduced or spread at any time of year by transfer of seeds or plant fragments on vehicles and heavy equipment; through erosion control practices such as placement of hay bales, seeding or mulching; and during planting of landscaping or reestablishment of natural vegetation within the right-of-way. Because this could conflict with policies to limit the spread of invasive weeds, this impact is potentially significant. Implementation of Mitigation Measure BR-4 would reduce this impact to a less than significant level.

Mitigation Measure BR-4: During construction activities, the following measures shall be implemented to the extent feasible to reduce the spread of exotic invasive plants in temporary work areas and throughout the project corridor:

- Minimize vehicle travel through weed-infested areas.
- Minimize soil disturbance and the removal of existing vegetation (exotic or native) to the extent feasible during construction activities.
- Use only certified weed-free straw and mulch or weed-free fiber roll barriers or sediment logs.
- Use only certified weed-free native seed mixes and native plants that are appropriate to the pre-existing or adjacent natural habitat for revegetation.
- Monitor all erosion-control and revegetation sites for weed infestations at least twice yearly during the growing season, for at least three years after construction.

Impacts on Sensitive Natural Communities

Impact BR-5: The proposed project would result in the loss or alteration of wetlands/Waters of the United States. (Significant mitigable)

Construction of the proposed project would result in the loss or permanent alteration of Waters of the U.S. and wetlands, including coastal salt marsh, coastal brackish marsh, coastal freshwater marsh, coastal freshwater seasonal marsh, and blackberry wetland. Approximately 28.8 acres of wetlands and 2.9 acres of jurisdictional waters would be permanently affected (Table 3.9-6) by filling and installation of new bridge structures. Placement of fill into wetlands and waters would occur at water crossings for the rail line as well as the proposed bicycle/pedestrian pathway. All 62 crossings along the existing line would require replacement or rehabilitation. Watercourses crossed by the rail line include those listed in Table 3.9-5 and numerous other creeks and drainage channels (see complete listing in Section 3.3, Water Resources). In most cases, existing timber trestles would be replaced with concrete spans supported on concrete pilings. Some smaller bridge crossings would be replaced with box or pipe culverts. Placement of the proposed bicycle/pedestrian pathway would remove narrow areas of wetland plant communities which occur throughout the project corridor along both sides of the rail line. The proposed bicycle/pedestrian pathway would avoid impacts on the majority of these wetlands and on the highest value wetlands (the pathway avoids salt marsh, which is considered the highest value wetlands). The construction activities described above would require coordination with, and authorization from, the ACOE and RWQCB (and possibly other agencies). Conformance with permit conditions and requirements specified by these agencies, and implementation of Mitigation Measures BR-2a-c and BR-5a and BR-5b, would reduce this impact to a less than significant level.

Mitigation Measure BR-5a: To replace impacted wetlands, a habitat restoration plan shall be developed and implemented to enhance wetland and riparian habitats in undeveloped portions of the right-of-way. Habitat should be restored or replaced at a minimum 1:1 ratio of acres of these habitats permanently impacted. Restoration efforts shall focus on areas where current conditions are degraded due to erosion, unstable slopes or abundance of invasive exotic plant species. Elements of the plan could include slope stabilization, control of invasive weeds, and reestablishment of appropriate native vegetation. Performance standards that are accepted by the resource agencies for site revegetation shall be specified in the plan. These standards could include a minimum 80 percent success rate of plants reestablished or acres restored. The restored areas shall be monitored for a minimum of three years and remedial measures taken, such as replanting vegetation or enhancing additional areas, if the performance standards are not met.

Mitigation Measure BR-5b: In the event that habitat restoration and enhancement within the right-of-way is insufficient to compensate for all wetland losses resulting from the proposed project, SMART shall provide additional, off-site compensation as needed to achieve a minimum 1:1 replacement ratio for affected wetland areas.

Impact BR-6: The proposed project would result in the loss or alteration of vernal pools.
(Significant mitigable)

Construction of the proposed bicycle/pedestrian pathway would remove approximately 0.4 acre of vernal pool habitat. Vernal pools occur within the project corridor between Windsor and Santa Rosa along both sides of the rail line, and additional potential habitat for vernal pool plant species was identified on railroad margins within the Santa Rosa Plain (MP 46.8-65.1). Vernal pools are locally unique biological communities that potentially support sensitive plants (addressed in Impact BR-10) and the federal animal Species of Concern, California linderiella (addressed under Impact BR-11). Implementation of a habitat restoration plan or off-site compensation for vernal pools, pursuant to the provisions of Mitigation Measure BR-5a and BR-5b would reduce this impact to a less than significant level.

Impact BR-7: The proposed project would result in the loss or alteration of riparian vegetation.
(Significant mitigable)

Installation of new crossing structures such as bridge platforms, pilings and abutments on stream banks would result in removal of approximately 5.3 acres of riparian woodland and riparian scrub vegetation. These vegetation types occur along numerous watercourses throughout the project corridor including, but not limited to, those listed in Table 3.9-5. Riparian woodland vegetation is best developed north of Santa Rosa along perennial streams such as Mark West Creek. Riparian habitats are considered sensitive by the resource agencies because of their high value to wildlife and because of the substantial loss and degradation of these habitats regionally. Removal of riparian vegetation could reduce potential nesting and cover sites for animals, reduce beneficial shading of watercourses and potentially affect bank stability. Therefore, this impact is potentially significant. Implementation of water resources Mitigation Measure WR-1b (see Section 3.3) and Measures BR-2c and BR-5a would reduce this impact to a less than significant level.

Impact BR-8: The proposed project would result in the loss of oak woodlands and removal of individual protected trees. (Significant mitigable)

Approximately 15.0 acres of oak woodland would be affected under the proposed project. Most of this impact would occur along the footprint of the proposed bicycle/pedestrian pathway north of Santa Rosa. Although large tracts of oak woodland habitat would not be removed, individual oak trees would be trimmed or removed and portions of the pathway could overlap the root zone of oaks. Oak woodlands are considered sensitive natural communities by the CDFG because of their high value to wildlife and their continuing decline regionally. Valley oak habitat areas and woodland habitats in general, are targeted for protection in the Sonoma County General Plan. In addition, project construction could result in removal of individual oak trees that are protected under Sonoma County, Marin County, or city tree

ordinances. Therefore, this impact is potentially significant. Implementation of Mitigation Measure BR-6 would reduce this impact to a less than significant level.

Mitigation Measure BR-6: A qualified arborist shall conduct a tree survey within the project corridor, prior to ground-disturbing activities, to identify trees that would be removed or potentially affected by the proposed project and trees that can be avoided. Where it is feasible to avoid protected trees, keep vehicles and mechanical equipment outside the dripline of these trees. In areas where oaks or other protected trees cannot be avoided, replace trees removed with the same native tree species at a minimum 3:1 ratio, or as required by applicable ordinance(s). SMART shall conduct monitoring for three years following planting to verify that trees have successfully reestablished.

Impact BR-9: The proposed project could result in the obstruction or alteration of wildlife corridors. (*Significant mitigable*)

Installation of the proposed bicycle/pedestrian pathway safety structure, retaining walls, new bridge structures, and operation of passenger trains could interfere with wildlife movement corridors in the study area. Portions of three major habitat linkages, the Russian River watershed, Bay Wetlands and the Sonoma Mountains - Burdell Mountain linkage, could be affected. Although the existing rail line crosses these movement corridors, it does not presently create a substantial barrier to wildlife movement because the railroad grade is mostly at ground level and does not have any barrier structure. All of the proposed safety structure designs could interfere with overland movements of wildlife to varying degrees, especially in non-urban areas of the project corridor. No substantial or long-term effect is anticipated in the stream zone of the Russian River, but wildlife movements through adjacent riparian and upland habitats, and other riparian corridors such as Mark West Creek, could be impeded. Wildlife movements and habitat connectivity could also be affected in the Sonoma Mountains - Burdell Mountain linkage area located between southern Petaluma and northern Novato. Effects in this area are expected to be relatively minor because the proposed bicycle/pedestrian pathway and associated safety structure would bypass the marshlands between Petaluma and Novato. Because the proposed project could interfere substantially with the movement of resident or migratory wildlife species in some locations, this impact is potentially significant. Implementation of Mitigation Measure BR-7 would reduce this impact to a less than significant level.

Mitigation Measure BR-7: In non-urban areas of the corridor that are not directly adjacent to Highway 101 and where a safety structure or wall is proposed to be installed between the proposed bicycle/pedestrian pathway and railway, intermittent gaps shall be placed along the barrier to allow passage of wildlife. These gaps shall be at least three feet wide, extend from ground level to the top of the structure, and be spaced no farther apart than every quarter-mile where feasible within existing or potential wildlife movement corridors along the right-of-way. Gaps shall be located in the following areas:

- Rural lands between Cloverdale and northern Santa Rosa where the right-of-way is at least 0.25 mile from Highway 101; and
- Between Main Gate Road (MP 23.6) and Smith Ranch Road (MP 21.0) in Marin County.

Gaps shall also be placed on both sides of bridge crossings of Mark West Creek and other major non-urban stream corridors to enable wildlife passage through these areas. Gaps shall not be located in or adjacent to urban or residential areas.

Impacts on Special-status Plants

Impact BR-10: The proposed project could result in the loss of individuals or habitat of special-status plant species. (*Significant mitigable*)

Construction of the proposed bicycle/pedestrian pathway, stream crossings, and other new facilities of the proposed project would potentially affect the following special-status plants associated with habitats

that may be disturbed. If any of these species are detected within the project corridor and individual plants or populations would be removed or disturbed, this impact would be potentially significant, but mitigable to a level that is not significant by implementation of Mitigation Measures 8a and 8b.

- **Sonoma sunshine, Burke's goldfields, Sebastopol meadowfoam, and many-flowered navarretia.** Vernal pools and other seasonal wetland habitats in the Santa Rosa Plain, located between MP 47.4 and MP 66.6, have suitable potential habitat for these plant species. All of these plants are federal endangered species, which are required to be surveyed in the Santa Rosa Plain under a two-year protocol established by the USFWS (1996). Because protocol surveys have not been completed, the presence and locations of these species within the proposed project corridor is not known. However, they are not expected to be abundant or widespread because of the predominantly disturbed conditions within the corridor.
- **Clara Hunt's milkvetch and/or Colusa layia.** The Clara Hunt's milkvetch and Colusa layia have the potential to occur in non-native grasslands or oak woodlands. Although surveys conducted in potential habitat for Clara Hunt's milkvetch and Colusa layia did not detect these species, protocol surveys have not been completed. Because the Clara Hunt's milkvetch is a federally endangered and state threatened species, this impact is potentially significant.
- **Pt. Reyes bird's beak and/or soft bird's beak.** The Pt. Reyes bird's beak and soft bird's beak have potential to occur in salt marsh habitats. Protocol surveys would be required to determine the presence and location of these species within the project corridor. Even if these species were to occur within the corridor, potential impacts on these species would be expected to be slight because construction within marsh areas would be confined mostly to the existing, disturbed railroad grade and the proposed bicycle/pedestrian pathway would bypass the extensive salt marsh area between Petaluma and Novato. Because the soft bird's beak is a federally endangered and state rare species and the Pt. Reyes bird's beak is a CNPS List 1B species, adverse effects on individuals or habitat of these species would be a potentially significant impact.

Mitigation Measure BR-8a: Within three years prior to project construction activities that could affect vernal pool habitats in the Santa Rosa Plain, conduct the botanical survey protocol for federally endangered plant species in the Santa Rosa Plain. The protocol would require two years of botanical surveys, three times over the impact area each year, to determine possible impacts on Sonoma sunshine, Burke's goldfields, Sebastopol meadowfoam and many-flowered navarretia. For other sensitive plant species, plant surveys shall be conducted pursuant to protocols established in consultation with appropriate agencies.

Mitigation Measure BR-8b: In the event that populations or individuals of sensitive plant species are found in the project corridor, the following measures shall be implemented:

- Sensitive plant species that are found within the right-of-way but not where construction would occur shall be protected by installing temporary plastic fencing outside the population perimeter with "Sensitive Habitat Area" signs posted on the outside of the fence. Monitoring shall occur during and following construction to insure compliance with plant protection.
- Where it is not feasible to avoid sensitive plant locations within the project corridor and the affected species is a non-listed annual that is sensitive pursuant to CEQA, seed collection and transplanting is proposed in suitable areas of the right-of-way outside of proposed construction.
- If an affected sensitive plant is a non-listed perennial, native plant nursery propagation is proposed as well as right-of-way planting outside of construction areas. All mitigation sites would be chosen for their suitability to each species.
- All sensitive plant restoration and planting areas shall be protected as described in (a) above and monitored for five years.
- Potential impacts on state- or federally listed species would necessitate consultation with the CDFG and/or USFWS and mitigation meeting the resource agency requirements. This could

include off-site mitigation and mitigation bank investments, similar to those that have been established in the Santa Rosa Plain.

Impacts on Special-status Wildlife – Direct Impacts

Impact BR-11: The proposed project could result in the loss of individuals or habitat of California linderella. *(Significant mitigable)*

Construction of the proposed bicycle/pedestrian pathway could remove vernal pools or other ephemeral ponded areas that may support this invertebrate. Mortality to individuals could result if the species is present and work activities occur in its habitat during the wet season. Dormant eggs could also be lost during ground-disturbing activities in the dry season. Because there is less than one acre of vernal pool habitat within the project corridor, there would be relatively little loss of high-quality habitat for this species. Removal of marginal seasonal wetlands within the right-of-way could potentially impact suitable habitat for this species. Implementation of Mitigation Measures BR-2c, and BR-5a would apply to this species and would reduce the impact to less than significant.

Impact BR-12: The proposed project could result in the loss or disturbance of individuals of Central California Coast coho salmon, California Coastal chinook salmon and Central California Coast steelhead. *(Significant mitigable)*

Construction of stream crossings could cause mortality, harm or disturbance to state- and federally listed coho salmon and federally listed chinook salmon and steelhead if they are present in or near work areas. During construction, migratory passageways for adults or juveniles could be temporarily blocked. While spawning by these species is not expected within the project corridor, juvenile fish could be present and could be displaced by work activities, injured by construction equipment and pile-driving or taken into pumps during dewatering of in-stream work areas. Construction-related increases in water turbidity or sedimentation could also adversely affect migrating or rearing fish. Among these species, steelhead have the greatest potential to be affected by the proposed project because they occur in several streams in the project corridor. California Coastal chinook salmon could be affected only in the Russian River, and coho salmon could be affected in the Russian River, Mark West Creek and possibly Santa Rosa Creek. Because runs of these fish are small in most streams in the project area, and work activities would be temporary and limited to existing crossing sites, relatively few individuals would potentially be affected. There would be no permanent adverse modification of these species' habitat because all streams that harbor salmonid fish would be spanned by bridges. Permanent in-stream structures associated with new bridges and bridge improvements would not substantially alter stream flow or hinder fish passage once construction is complete. Because there is the potential for adverse effects on individuals of species protected under the federal ESA and CESA, this impact is potentially significant. Implementation of Mitigation Measures WR-1a and b (see Section 3.3) and BR-2a-c to protect stream habitats, and Mitigation Measures BR-9a and BR-9b would reduce this impact to a less than significant level.

Mitigation Measure BR-9a: For work in stream zones (Table 3.9-5) that harbor federal- or state-listed salmonid fish, SMART shall consult with NOAA Fisheries and CDFG and implement protection measures specified in consultation with those agencies.

Mitigation Measure BR-9b: In streams that harbor state- or federally listed salmonid fish species, in-stream work shall not start before July 1 and shall be completed by October 15, unless otherwise approved by appropriate agencies.

Impact BR-13: The proposed project could result in the loss or disturbance of individuals of Pacific lamprey, Russian River tule perch, and Sacramento splittail. *(Significant mitigable)*

Bridge construction activities at the Russian River could harm or disturb individuals of Pacific lamprey and Russian River tule perch. Bridge construction activities at the Petaluma River, Novato Creek, Gallinas Creek, and other bayside watercourses could harm or disturb estuarine fishes including the

Sacramento splittail. These activities would be temporary and confined to a relatively small area, and would potentially affect only a small number of individuals of these species. There would be no permanent adverse modification of these species' habitat because new bridge structures and improvements to existing bridges would not substantially alter river flow or hinder fish passage once construction is complete. Because these are species of concern to the USFWS, this impact is potentially significant. Implementation of Mitigation Measures WR-1a and b (see Section 3.3) and BR-2a-c to protect stream habitats would reduce this impact to a less than significant level.

Impact BR-14: The proposed project could result in the loss or disturbance of individuals or habitat of the California tiger salamander. (Significant mitigable)

Construction activities within the range of the federally threatened California tiger salamander could result in harm, mortality or disturbance to individual salamanders if they are present within the work area. Breeding adults, larvae and juveniles could be directly affected in and around aquatic sites (seasonal pools, ponds or ditches) during and immediately following the rainy season (approximately mid-October through June). Adults could be impacted by construction vehicles or equipment during their fall and winter breeding migrations (approximately mid-October through March), and juveniles could be impacted during dispersal movements in the spring and early summer (approximately mid-April through July). Installation of the proposed bicycle/pedestrian pathway and new sidings tracks could permanently remove breeding pools and dispersal habitat of this species. Installation of the proposed bicycle/pedestrian pathway safety structure could also obstruct migration or dispersal movements of salamanders across the proposed project corridor. Because the CTS is a federally threatened species and a CDFG Species of Special Concern, this impact is potentially significant. Implementation of Mitigation Measures BR-10a and BR-10b would reduce this impact to a less than significant level.

Mitigation Measure BR-10a: For areas where construction would occur within the range of the California tiger salamander in Sonoma County (i.e., non-urban areas between Windsor and Penngrove), SMART shall consult with the USFWS and CDFG to obtain authorization for activities that could affect this species and implement all applicable protection measures specified through this consultation. Protection measures shall be focused on locations where California tiger salamander habitats have been identified within and adjacent to the right-of-way and where California tiger salamander could potentially be affected as determined in consultation with the USFWS. Protection measures could include, but would not be limited to, the following:

- Where impacts on potential CTS breeding habitats can be avoided, establish site-specific exclusion zones to protect these areas. Install temporary plastic fencing around the exclusion areas with "Sensitive Habitat Area" signs posted and clearly visible on the outside of the fence.
- Where it is not feasible to avoid work within or adjacent to potential CTS breeding sites, limit work in these areas to the period from June 1 to October 14 or when the ponds are dry.
- From October 15 to May 31 within potential CTS dispersal habitat, minimize operation of proposed project vehicles and equipment at night off pavement during rain events and within 24 hours following rain events, and check under vehicles parked overnight off pavement before moving them.

Mitigation Measure BR-10b: If permanent loss of occupied or potential CTS breeding habitat cannot be avoided, compensation shall be provided through protection and enhancement of CTS habitat within the right-of-way, purchase of off-site mitigation credits, and/or contribution to regional conservation and recovery efforts for the species as determined in consultation with the USFWS and CDFG.

Impact BR-15: The proposed project could result in the loss or disturbance of individuals or habitat of the northwestern pond turtle (NWPT). (Significant mitigable)

Construction activities along the project corridor could result in mortality, harm or disturbance to NWPT adults, juveniles or nests. Individual turtles could be crushed by construction vehicles and equipment, and their nests and eggs could be destroyed by ground disturbing activities. Movements of turtles could also be impeded during construction at stream crossings. Construction of the proposed bicycle/pedestrian pathway and other new facilities could permanently remove occupied or potential habitat of this species. The risk of these impacts would be greatest in and around permanent ponds, freshwater marshes, streams and drainage ditches in non-urban areas of the project corridor. Because this species has been documented both within and near the project corridor, and is a species of concern to the USFWS and CDFG, this impact is potentially significant. Implementation of Mitigation Measure BR-11 would reduce this impact to a less than significant level.

Mitigation Measure BR-11: A qualified biologist shall conduct a pre-construction survey for NWPT no more than 30 days prior to construction in suitable aquatic habitats within the project corridor, including stream crossings, drainage ditches, and culverts. A combination of visual and trapping surveys may be performed with authorization from the CDFG. If this species is found near any proposed construction areas, impacts on individuals and their habitat shall be avoided to the extent feasible. If occupied habitat can be avoided, an exclusion zone shall be established around the habitat and temporary plastic fencing shall be installed around the buffer area with "Sensitive Habitat Area" signs posted and clearly visible on the outside of the fence. If avoidance is not possible and the species is determined to be present in work areas, the biologist with approval from CDFG may capture turtles prior to construction activities and relocate them to nearby, suitable habitat out of harm's way (e.g., upstream or downstream from the work area). Exclusion fencing should then be installed if feasible to prevent turtles from re-entering the work area. For the duration of work in these areas the biologist should conduct monthly follow-up visits to monitor effectiveness.

Impact BR-16: The proposed project could result in the loss or disturbance of individuals or habitats of the salt-marsh harvest mouse (SMHM), California clapper rail and California black rail. (Significant mitigable)

Construction activities in salt marsh and brackish marsh areas could result in mortality, harm or disturbance to the state- and federally endangered SMHM and California clapper rail and the state-threatened California black rail, or permanently remove potential or occupied habitats of these species. The bicycle/pedestrian pathway would bypass the extensive salt marshes between Petaluma and northern Novato, so the risk of direct impacts on these species is low. Clapper rail and black rail are not likely to nest within the right-of-way because humans and feral animals currently use the existing railroad grade to move through the wetlands, but construction-related noise could temporarily disturb nesting birds in wetlands adjacent to the right-of-way. Similarly, SMHM is unlikely to be present within the right-of-way during construction, but could occur adjacent to the corridor and possibly be disturbed by work activities. Although the risk of direct harm to these species is very low, any project-related disturbance of these species would be prohibited without authorization from the USFWS and CDFG. Therefore, this impact is potentially significant. Implementation of Mitigation Measures BR-12 would reduce this impact to a less than significant level.

Mitigation Measure BR-12: For areas where the construction activities would occur within or adjacent to salt marsh or brackish marsh habitats, consult with the USFWS and CDFG to determine locations where salt-marsh harvest mouse, California clapper rail and California black rail could potentially be affected by the proposed project. All applicable protection measures specified through consultation with these agencies would be implemented during project construction. Protection measures could include, but would not be limited to, the following:

- A qualified biological monitor shall be present during all work activities in or adjacent to salt marsh and brackish marsh habitats between Petaluma and Novato.

- In areas where one or more of these species is determined to be potentially affected, work activities shall be confined to the existing railroad grade to the extent feasible. Staging, access and parking areas shall be located outside of salt marsh and brackish marsh habitats.
- Avoidance measures for SMHM could include installation of temporary exclusion barriers to prevent SMHM from entering work areas during construction. For California clapper rail and California black rail, protection measures could include avoiding work activities during the nesting season (March 1 to July 31) within 300 feet of areas identified as suitable nesting habitat for these species.
- If any of these species is detected during work activities, work shall be stopped immediately at that location and the USFWS and/or CDFG shall be contacted within two working days. Work shall not resume at that location until authorization is obtained from the USFWS and CDFG (for the SMHM and California clapper rail) or from the CDFG (for the California black rail), unless prior approval has been granted by these agencies.

Impact BR-17: The proposed project could result in disturbance or injury to special-status bats. *(Significant mitigable)*

Demolition of old buildings at station sites and bridge structures along the right-of-way could directly impact special-status bat species if they inhabit any of these structures. While most of the existing bridges and trestles do not provide sufficient thermal cover for bat roosting, abandoned buildings and hidden cavities in old structures could possibly be used as roosting or nursery sites. If bats are present, construction activities could cause mortality or harm to roosting bats or cause them to abandon these sites. If an active bat nursery is present, construction activities could disturb or harm breeding adults or offspring and adversely affect their reproductive success. Disturbance of an active bat nursery or harm to individuals of a special-status bat species would be a potentially significant impact. Implementation of Mitigation Measure BR-13 would reduce this impact to a less than significant level.

Mitigation Measure BR-13: A qualified biologist shall conduct a pre-construction survey for bats at bridges that have sufficient thermal cover for bat roosting, abandoned buildings and old structures prior to demolition or construction at these sites. Bats should be determined to be absent or flushed from roost locations prior to demolition of buildings. If flushing of bats from buildings is necessary, it shall be done by the biologist during the non-breeding season from October 1 to March 31. When flushing bats, structures shall be moved carefully to avoid harming individuals, and torpid bats given time to completely arouse and fly away. During the maternity season from April 1 to September 30, prior to building demolition or construction, a qualified biologist shall determine if a bat nursery is present at any sites identified as potentially housing bats. If an active nursery is present, disturbance of bats shall be avoided until the biologist determines that breeding is complete and young are reared.

Impacts on Special-status Wildlife – Indirect Impacts

Indirect impacts are those that would occur later in time after development of the proposed project, including long-term rail operation and maintenance activities. Potential indirect impacts on biological resources would include the following effects.

Impact BR-18: The proposed project could result in train collisions with wildlife. *(Significant mitigable)*

Operation of the trains would likely result in occasional collisions with wildlife that move through the corridor. Installation of the bicycle/pedestrian pathway safety structure could increase the frequency of collisions by obstructing escape routes for wildlife. However, the safety structure would also have the potential to prevent some collisions as it would obstruct access to the railway in some areas. Collisions would be expected to occur mostly with common wildlife species, but could also occasionally affect special-status mammals, birds, reptiles or amphibians. If large numbers of common native animals, or

individuals of any special-status species, are killed or injured by train collisions, this impact could be significant. Implementation of Mitigation Measures BR-7 and BR-14 would reduce this impact to a less than significant level.

Mitigation Measure BR-14: A qualified biologist shall conduct monitoring surveys to assess wildlife collision impacts along the entire corridor at least two times a year, once during spring and once during fall, for the first three years of train operation. The results shall be reported to the CDFG and, if federally listed or migratory bird species are affected, to the USFWS. If the CDFG or USFWS determines that collision impacts are excessive or adverse effects on federal- or state-protected species (including listed species, migratory birds and raptors) are occurring, remedial measures (e.g. redesign of structures and gaps) shall be developed and implemented in consultation with these agencies.

Impact BR-19: The proposed project could result in disturbance to stream zones, special-status species and nesting birds during railway maintenance activities. (Significant mitigable)

Routine and emergency maintenance activities at stream crossings (e.g. repair of flood-damaged crossing structures or slide-prone portions of the RR grade) could temporarily affect stream zones and associated fish and wildlife species in the vicinity of work areas. These activities could cause ground disturbance in stream channels and banks and could affect water quality by increasing turbidity, sedimentation or discharging oil, gas or other pollutants into watercourses. Use of herbicides for vegetation control, particularly near wetlands and watercourses, could have adverse effects on fish and wildlife species. Individual fish or wildlife, including special-status species, could be harmed or temporarily displaced by these activities. Maintenance vehicles and equipment and trimming of vegetation could disturb nesting birds and other animals that occur within, or move through, the corridor. Maintenance activities would be confined mostly to the existing railway, and vehicle access would occur mostly along the developed bicycle/pedestrian pathway, which would minimize potential impacts on wildlife. However, some maintenance activities could affect special-status species or their habitats in undeveloped portions of the project corridor. Nesting birds are protected by federal MBTA and the CFGC, and special-status species are of concern to the resource agencies; therefore this impact is potentially significant. Implementation of Mitigation Measures BR-15a and BR-15b would reduce this impact to a less than significant level.

Mitigation Measure BR-15a: SMART shall consult with the resource agencies (USFWS, NOAA Fisheries and CDFG) to develop habitat and species protection measures for scheduled and emergency maintenance activities to minimize impacts on wetlands, streams, riparian habitats, and special-status species.

Mitigation Measure BR-15b: For all herbicide applications during right-of-way maintenance, herbicides shall be used only according to label directions, applications shall be confined to within the right-of-way and appropriate BMPs shall be followed to prevent uncontrolled release of chemicals. Only aquatic-approved herbicides shall be used for vegetation control adjacent to open water and wetland habitats.

Cumulative Impacts

A review of past, present, and reasonably foreseeable projects has identified 29 residential and commercial developments in close proximity to the project corridor, including nine projects along and adjacent to the corridor and 17 projects within one mile of the corridor between Windsor and San Rafael. These projects are listed in Section 3.1.

As with construction of the proposed project, these projects could affect local plant communities, wetland resources and wildlife habitats by direct removal or temporary disturbance during construction. Approximately half of these sites can be characterized as urban infill, mostly or entirely surrounded by existing urban development. In general, projects on urban infill sites are not expected to result in

substantial losses of plant communities, wetland resources or wildlife habitats, or have substantial adverse effects on special-status plant or wildlife species.

The remaining developments considered in the analysis are located mostly along the margins of existing developed areas of Petaluma, Novato, and San Rafael. Development of these non-infill projects is expected to result in some cumulative losses of natural plant communities, predominantly non-native grassland, in the vicinity of the project corridor. Smaller patches of oak woodland habitats may also be removed or altered because of their proximity to these new developments. Removal of non-native grassland and other common upland communities are not expected to have a substantial cumulative impact because these habitats are common and widespread in the area. Within the project corridor, these habitats occur in discontinuous patches often adjacent to developed or cultivated lands, which reduce their value as natural plant communities and wildlife habitats. The removal of oak woodlands could contribute to a regional loss of these habitats that provide high value for wildlife; however, oak woodland habitat in the region is extensive and the proposed project's contribution to this impact is relatively minor. While there would likely be trimming and possibly removal of scattered, individual oak trees along the project corridor, the impact to the region would be negligible. Furthermore, replacement of trees is required through several city and county tree protection ordinances. Therefore, potential cumulative impacts of the proposed project on upland plant communities would be less than significant.

The removal and alteration of wetland resources within the project corridor could contribute to cumulative wetland impacts due to construction of the projects adjacent to the corridor. Following construction, local wetland resources could also be affected by altered hydrology, including increased storm runoff from impermeable surfaces. Furthermore, releases of irrigation water in summer (i.e., urban runoff) could alter the hydrologic regime. Wetland resources along the corridor could also be affected by altered water quality due to pollutants from urban and industrial sources and sedimentation from unstabilized soil. Implementation of Mitigation Measures BR-2a-f would protect stream zones and wetland habitats and Mitigation Measures BR-5a and BR-5b would ensure no net loss of wetland resources or corresponding wetland functions and values as a result of the project. Therefore, potential cumulative impacts of the proposed project on wetland resources would be less than significant.

Implementation of the proposed project in combination with other foreseeable projects in the vicinity of the project corridor could result in some cumulative losses of wildlife habitats in the region and increases in human-related disturbance, harm or mortality to wildlife. However, the cumulative impact of these projects on wildlife resources is expected to be less than significant because of the location of the project sites within or adjacent to developed urban areas and Highway 101. Mitigation Measures BR-7, BR-14 and Mitigation Measures for sensitive habitats (BR-5a, BR-5b and BR-6) would further reduce the proposed project's contribution to this less than significant cumulative impact.

The projects identified in this analysis are not expected to affect salt marsh habitats that could support special-status species such as the California clapper rail, California black rail and SMHM. Similarly, no known vernal pool habitats and associated species would be affected by these projects. Some special-status species could be affected by removal of non-native grassland at some of the project sites, but habitat suitability for these species is likely low to marginal because of the proximity of these sites to urban developed areas. The proposed project's contribution to any cumulative impact on special-status species would be reduced to a less than significant level with implementation of the species-specific Mitigation Measures (BR-6b, BR-10a, BR-10b, BR-11, and BR-12) previously described.