3.5 Biological Resources

This section of the Final Environmental Impact Statement/Report (referred to throughout as the Final EIS/R) characterizes the existing biological resources and natural environment in the Phase 2 project area and analyzes whether implementation of the project would cause a substantial adverse effect on biological resources. The information presented is based on review of existing conditions within the area and other pertinent federal, state and local regulations, which are presented in Section 3.5.2, Regulatory Setting. Using this information as context, an analysis of the biological environmental impacts of the project is presented for each alternative in Section 3.5.3, Environmental Impacts and Mitigation Measures. Program-level mitigation measures described in Chapter 2, Alternatives, would be implemented as part of the project. Therefore, this section only includes additional, project-level mitigation measures as needed.

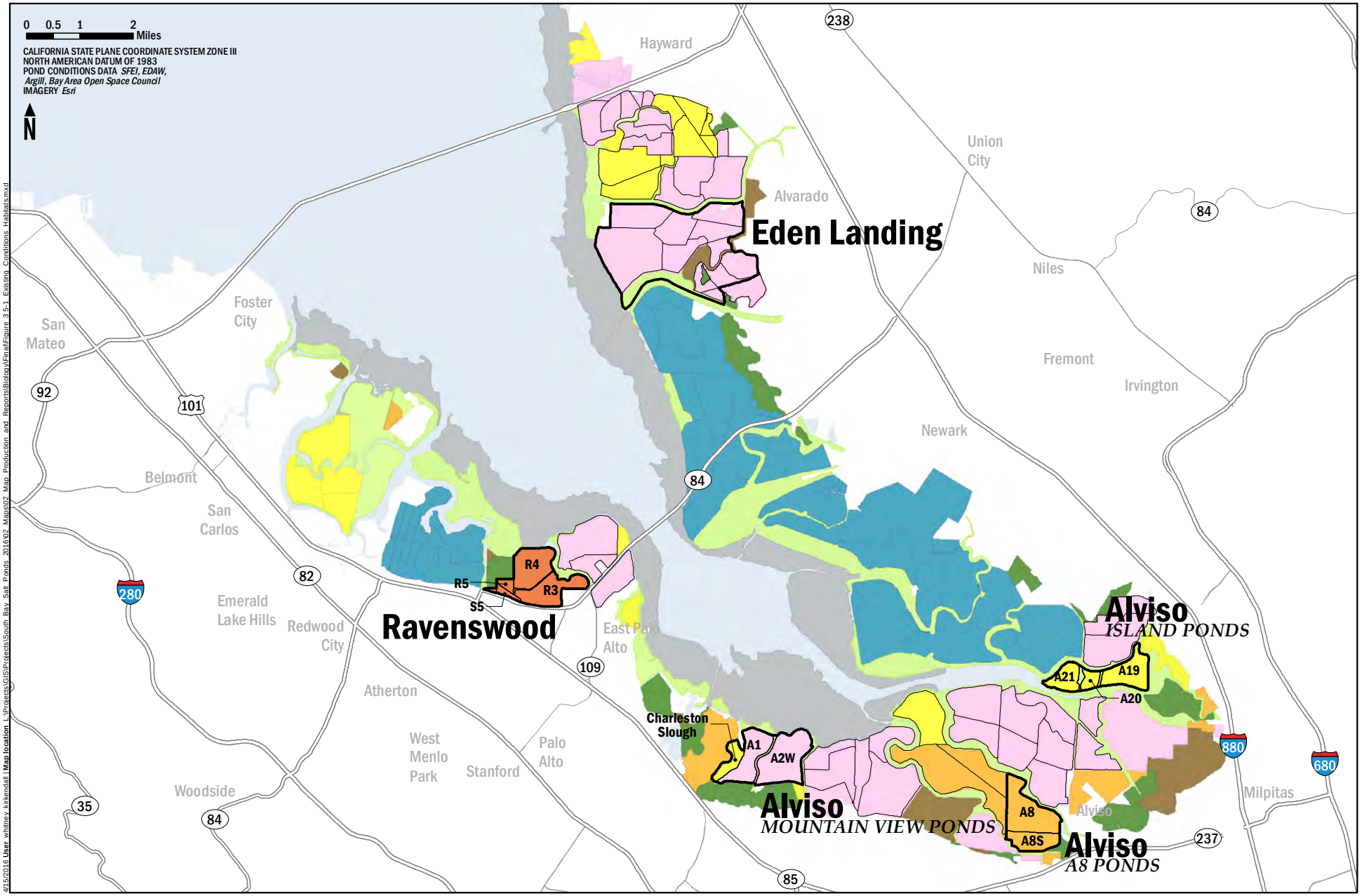
3.5.1 Physical Setting

Methodology

Following the methodology in the 2007 South Bay Salt Pond Restoration Project Programmatic EIS/R (2007 EIS/R), this section characterizes the existing biological conditions related to Phase 2 of the SBSP Restoration Project. The principal biological components of concern are the vegetation and habitats, the wildlife, and the area of habitat subject to United States Army Corps of Engineers (USACE) jurisdiction. Phase 2 of the SBSP Restoration Project focuses on four main areas (clusters): the Island Ponds (Ponds A19, A20, and A21); the Mountain View Ponds (Ponds A1 and A2W and the adjacent Charleston Slough); the A8 Ponds (Ponds A8 and A8S); and the Ravenswood Ponds (Ponds R3, R4, R5, and S5) (Figure 3.5-1). Existing conditions in the South Bay area are documented here to provide a regional context for the proposed project. Existing conditions within each of the four pond clusters is also provided. Much of the data on wildlife use of the South Bay has been collected by resource agencies such as the United States Fish and Wildlife Service (USFWS), the California Department of Fish and Wildlife (CDFW), and the United States Geological Survey (USGS); non-profit organizations and research groups such as Point Blue Conservation Science (Point Blue), formerly the Point Reyes Bird Observatory Conservation Science and the San Francisco Bay Bird Observatory (SFBBO); government entities such as the City of San Jose; consultants; researchers; and private individuals.

Regional Setting

As discussed in the 2007 EIS/R, the San Francisco Bay Estuary is the largest estuary on the west coast of North America and is an extremely productive and diverse ecosystem (Trulio et al. 2004). The South San Francisco Bay (South Bay) includes some of the most important habitat remaining in the Bay Area for a number of wildlife species (Goals Project 1999). The term “South Bay” refers to the portion of San Francisco Bay (Bay) south of Coyote Point on the western shore and San Leandro Marina on the eastern shore (Goals Project 1999). This region differs in several physical and ecological aspects from the other portions of San Francisco Bay Estuary. The habitats included in the South Bay are open waters and subtidal habitats to the upper reaches of tidal action, tidal and nontidal wetlands, and former salt evaporation ponds adjacent to the Bay, and the upland areas immediately adjacent to these features (see Figure 3.5-1).



LEGEND

Pond Boundaries
Phase 2 Project Area

Habitat Conditions

Mud Flat
Muted Tidal/Diked Marsh
Managed Pond
Seasonal Managed Pond
Ongoing Tidal Restoration
Salt Pond
Tidal Wetland
Upland
Water/Sewage Treatment

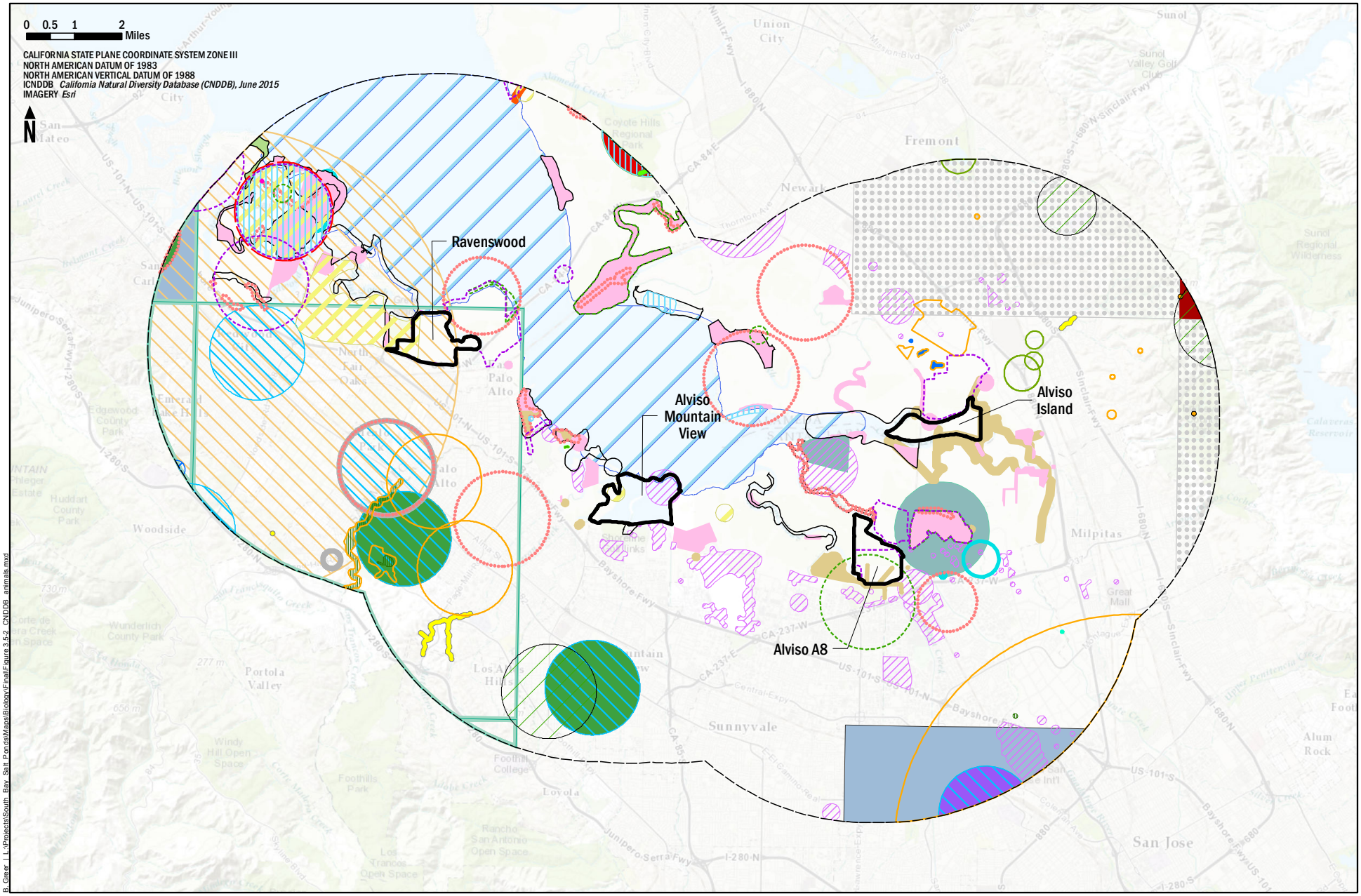
4/5/2016 User: whitney.kirkendall | Map location: L:\Projects\GIS\Projects\South Bay Salt Ponds 2016\02 Maps\02 Map Production and Reports\Biology\Final\Figure 3.5-1 Existing Conditions Habitats.mxd

AECOM
South Bay Salt Pond Restoration Project

Figure 3.5-1
Existing Condition Study Area Habitats

The diversity of habitat types, particularly within the South Bay, is largely responsible for the diversity of wildlife species that occur. Although the high productivity of these habitats allows those species that are not habitat-limited to achieve substantial numbers, the tidal salt marshes and open waters that sustain aquatic plants and phytoplankton and the ponds that sustain high biomass of invertebrates are the basis of the estuary's complex and productive food web. The San Francisco Estuary supports more than 250 species of birds, 120 species of fish, 81 species of mammals, 30 species of reptiles, and 14 species of amphibians (Siegel and Bachand 2002). Equally important, the San Francisco Estuary supports populations of species that are of regional, hemispheric, or even global importance. A number of special-status wildlife species—including endemic, endangered, threatened, and rare wildlife species or subspecies—reside in the San Francisco Bay Area. Figure 3.5-2 illustrates occurrences of these special-status species with data from the California Natural Diversity Database (CNDDB). These rare San Francisco Bay area endemics include the California Ridgway's rail (*Rallus obsoletus obsoletus*; formerly California clapper rail), salt marsh harvest mouse (*Reithrodontomys raviventris raviventris*) and salt marsh wandering shrew (*Sorex vagrans halicoetes*) in remnant tidal marsh habitat and other species such as California least tern (*Sterna antillarum browni*), western snowy plover (*Charadrius nivosus* ssp. *nivosus*), and steelhead (*Oncorhynchus mykiss*; Central California Coast Distinct Population Segment).

The southern San Francisco Bay Area, including the former salt-production ponds and managed ponds, provide habitat for more than one million waterbirds each year, including large percentages of the Pacific Flyway populations of some shorebird, duck, and tern species (Page et al. 1999; Stenzel and Page 1988; Takekawa et al. 2001; Trivedi and Gross 2005). With its extensive mudflats, remnant salt marshes, and ponds, the South Bay in particular supports very high diversity and abundance of waterbirds (Harvey et al. 1992; Takekawa et al. 2000; Warnock 2004). Some species, such as the Wilson's phalarope (*Phalaropus tricolor*), red-necked phalarope (*Phalaropus lobatus*), eared grebe (*Podiceps nigricollis*), and the federally threatened western snowy plover, forage in the South Bay most abundantly in shallow salt ponds and on exposed pond bottoms or edges; western snowy plover also nest in the dry salt pannes or salt flats in some former salt ponds. In contrast, a number of bird species use other habitats extensively as well, and most shorebirds occur in ponds primarily during high tide, when their preferred intertidal foraging habitats are inundated (Warnock 2004). Use of individual ponds by foraging birds is influenced primarily by water depth and salinity, which mediate food availability. Salinity affects the availability or abundance of prey in these ponds—fish for piscivorous species occur in low-salinity ponds, while species that forage on brine flies (especially *Ephydra millbrae* and *Lipochaeta slossonae*), reticulated water boatmen (*Trichocorixa reticulata*), and brine shrimp (*Artemia franciscana*) in the higher-salinity ponds can benefit from the considerable biomass of these invertebrates in areas where water depths are suitable for foraging. At any given time, only a relatively small portion of the pond complexes provide suitable conditions (e.g., moist soil or shallow water) for foraging by shorebirds. Numerous waterbirds use the ponds and their associated islands and levees primarily for roosting, either at night or during high tide, when their preferred foraging habitats are submerged. Large mixed species flocks of shorebirds, gulls, terns, cormorants, pelicans, herons, and other birds are often seen roosting or loafing on levees, in shallow water, or on exposed mud in the ponds, and several species are known to use isolated or undisturbed pieces of upland habitat for nesting, including levees and islands.



B_Greer I:\Projects\South_Bay_Salt_Ponds\Maps\Biology\Final\Figure 3.5-2_CNDDB_animals.mxd

URS

South Bay Salt Pond Restoration Project

Figure 3.5-2

CNDDB Special-Status Wildlife Species

There are two commercial airports in the South Bay (San Francisco International Airport and Norman Y. Mineta San Jose International Airport), smaller private airstrips in San Carlos and Hayward, and the Moffett Federal Airfield, which is also used by the California Air National Guard. These airfields do present some potential for bird strikes by planes flying into or out of them. Such bird strikes are rare enough as to present very little potential for affecting the various populations of special-status birds. The 2007 EIS/R did not include bird strikes as a potential impact on biological resources. In fact, the potential impact of concern is more about the possibility of reductions in aviation safety from aircraft hitting birds in the air. An analysis of these impacts was conducted for the Bair Island EIS/R (USFWS 2006), which identified the greatest risks to aviation safety from bird strikes as being from larger and higher-flying waterfowl that are attracted more to open-water ponds than they are to tidal marshes. Tidal marsh tends to attract smaller and lower-flying or ground-based birds. This point was mirrored in the Federal Aviation Administration's 2007 Circular on hazardous wildlife attractants on or near airports, which found that cormorants, cranes, pelicans, and ducks presented much greater hazards to aviation than do small shorebirds (FAA 2007).

With the exception of the Mountain View Ponds, the ponds included in the Phase 2 alternatives are all further away than the recommended 10,000-foot distance a project should be from an airport. The southeast corner of the Mountain View Ponds is approximately 2,500 feet from the end of the Moffett Federal Airfield runway. However, since, under Phase 2 actions, the Mountain View Ponds would be converted from open water ponds to tidal marshes, the Phase 2 actions are not expected to increase the risk or hazard associated with bird strikes. For this reason, bird strikes are not exhaustively assessed in this Final EIS/R.

The details of the habitats in and adjacent to the former salt ponds proposed for restoration under Phase 2 and the species that utilize these habitats are discussed in greater detail in the following section.

SBSP Phase 2 Project Setting

The Phase 2 activities assessed in this document are in the Alviso and Ravenswood pond complexes. The following subsections present a summary of the major habitat categories that were mapped in 2004 in the immediate vicinity of each of the three SBSP Restoration Project pond complexes. In addition, a wetland delineation (URS 2014) of the Phase 2 pond clusters was conducted in 2013; this delineation identified tidal salt marsh, freshwater marsh, upland/levees, mudflats, water-filled former salt ponds, and unvegetated non-mudflats (seasonally wet salt pannes) as the primary habitat types of the Alviso and Ravenswood pond complexes. The preliminary wetland delineation report prepared for submission to the USACE is included as Appendix E; map figures of these delineation results are included therein.

The following discussion first generally describes the habitat types within the Alviso and Ravenswood and Phase 2 pond complexes. The subsequent section then describes more specifically which of these habitats occur within each pond cluster.

Habitats Identified within the Alviso and Ravenswood Pond Complexes

Tidal Salt Marsh

Tidal salt marsh vegetation consists of halophytic (salt-tolerant) species adapted to occasional to regular (tidal) saltwater inundation. Tidal salt marsh occurs on the outboard (San Francisco Bay) portions of salt pond levees; these are often referred to as fringing marshes.

In tidal salt marsh, cordgrass (*Spartina* sp. – OBL[1]) dominates low marsh areas. Pacific cordgrass (*Spartina foliosa*) has hybridized extensively with smooth cordgrass (*Spartina alterniflora*), a non-native species from the east and gulf coasts of North America. One or both of these species and/or their hybrids may be present at any one location.

The pickleweed and cordgrass salt marsh habitats are generally separated by elevation; cordgrass typically occurs below the Mean High Water (MHW) mark and pickleweed occurs above this mark and often extends into higher elevations. However, the hybridized cordgrass can extend into the pickleweed elevation in some marshes. Pickleweed (*Sarcocornia depressa* and *S. pacifica* – OBL) dominates middle marsh areas, and high marsh areas feature a mixture of pickleweed and other moderately halophytic species, including alkali heath (*Frankenia salina* – FACW), saltgrass (*Distichlis spicata* – FAC), saltmarsh dodder (*Cuscuta salina* – NL), small flowered iceplant (*Mesembryanthemum nodiflorum* – FAC), fleshy jaumea (*Jaumea carnosa* – OBL), spearscale (*Atriplex prostrate* – FACW), perennial pepperweed (*Lepidium latifolium* – FAC), New Zealand spinach (*Tetragonia tetragonioides* – NL), and marsh gumplant (*Grindelia stricta* var. *angustifolia* – NL). High marsh species frequently occur above the high tide line, which is indicated by wrack material (water-transported organic and synthetic detritus). The outboard areas from pond levees and lower reaches of sloughs surrounding Ponds A1, A2W, and R4 typify tidal salt marsh in the project area.

In addition to the endangered salt marsh harvest mouse and the California Ridgway's rail, the Alameda song sparrow (*Melospiza melodia pusillula*), endemic to the Central and South San Francisco Bay, nests in dense herbaceous vegetation in salt and brackish marshes. The savannah sparrow (*Passerculus sandwichensis*) nests in pickleweed and peripheral halophytes in the upper marsh and upland transitional zones. The saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*) nests in tidal and nontidal brackish and freshwater marshes and possibly also in low densities in salt marsh habitat (Shuford and Gardali 2008) in the South Bay. A wide variety of birds nest in the tidal marshes of the South Bay, including several species of ducks, Virginia rails (*Rallus limicola*), soras (*Porzana carolina*), black-necked stilts (*Himantopus mexicanus*), northern harriers (*Circus cyaneus*), and in a few locations herons and egrets (Gill 1977). Also, California black rails (*Laterallus jamaicensis coturniculus*) breed in small numbers in these marshes (Liu et al. 2005). In addition, non-breeding birds, including larger shorebirds, swallows, blackbirds, and other species, roost, occasionally in large numbers, in the tidal marsh. Tidal marshes (and mudflats) in several South Bay locations are also used as haul-out and pupping sites by harbor seals (*Phoca vitulina*).

[1] Plant indicator status categories include (Environmental Laboratory 1987):
- OBL - Plants that almost always occur in wetlands under natural conditions (estimated probability >99%), but which rarely occur in non-wetlands
- FACW - Plants that occur usually (estimated probability >67% to 99%) in wetlands, but also occur in non-wetlands
- FAC - Plants with a similar likelihood (estimated probability 33% to 67%) of occurring in both wetlands and non-wetlands
- FACU - Plants that occur sometimes (estimated probability 1% to <33%) in wetlands, but occur more often in non-wetlands
- UPL - Plants that occur rarely (estimated probability <1%) in wetlands, but occur almost always in non-wetlands
- NL – Not listed or evaluated for this region

Brackish Marsh

Brackish marsh occurs along the intertidal reaches of the creeks and sloughs that drain to the Bay, where salinities are lower due to freshwater input. Brackish marsh is found where intermediate interstitial soil salinities occur along creeks and sloughs; where freshwater channels experience periodic tidal inundation, and where groundwater emerges into tidal marshlands. Vegetative diversity and richness increase with greater freshwater influence. Where sediment deposits form terraced floodplains along low-flow channels, short bulrushes such as seacoast bulrush (*Bolboschoenus robustus* – OBL) and saltmarsh bulrush (*Bolboschoenus maritimus* ssp. *paludosus* – OBL) dominate the brackish habitat. These terraced areas may also support dense populations of the invasive perennial pepperweed, which can quickly develop into monotypic stands with increasing levels of disturbance. Other moderately halophytic plants such as brass buttons (*Cotula coronopifolia* – OBL) and taller bulrushes, including California bulrush (*Schoenoplectus californicus* – OBL) and hard stemmed tule (*Schoenoplectus acutus* var. *occidentalis* – OBL), occur in areas of lower soil salinity (e.g., toward the upland edges of brackish marsh). Tidal salt marsh species, including pickleweed, alkali heath, saltgrass, and spearscale, may also colonize brackish habitat. The periphery of Pond A19 and the adjacent Mud Slough are exemplary of brackish marsh in the project area.

Brackish marshes support many of the wildlife species that use salt marsh and freshwater marsh habitats. Species composition and the relative abundance of different species may vary spatially within brackish marshes depending on water salinity, vegetation type, and habitat structure. Variability in salinity within brackish marshes is likely most important for aquatic species, which are directly subject to variation in salinity. Brackish marshes are particularly important for anadromous fish (migrating from saline to fresh water to spawn), catadromous fish (migrating from fresh to saline water to spawn), and invertebrates such as shrimp, which use brackish marshes while physiologically acclimating to changing salinity on their migrations between saline and freshwater habitats.

The often taller and more dense vegetation in brackish marshes supports large densities of breeding song sparrows, saltmarsh common yellowthroats, and marsh wrens (*Cistothorus palustris*) and large numbers of Virginia rails and soras during migration and winter.

Freshwater Marsh

Freshwater marsh vegetation in and around the project area exists along the upper reaches of sloughs and creeks and primarily consists of emergent vegetation adapted to freshwater wetland conditions. Though some freshwater marshes may experience tidal influence and periodic saltwater inundation, soil salinity remains relatively low due to freshwater flowing through these areas on a regular basis. The upper reach of Ravenswood Slough (along the eastern edge of Pond R3) demonstrates the vegetation transition that occurs as freshwater influence increases. Dense stands of California bulrush and hard-stemmed tule interspersed with perennial pepperweed (*Lepidium latifolium*) or curly dock (*Rumex crispus* – FAC) compose the majority of emergent vegetation in freshwater marsh habitat. Areas less frequently exposed to freshwater flow but still exposed to occasional saltwater inundation may also host halophytic species such as marsh gumplant and pickleweed. The Guadalupe River side of Pond A8 is a location where freshwater species colonize the entire floodplain terrace.

Relatively limited areas of freshwater marsh occur in the South Bay, and the wildlife communities of these marshes (versus those of brackish and salt marshes) in the South Bay have been little studied. Where freshwater occurs along the inland margins of the project area, the Pacific treefrog (*Pseudacris*

regilla), bullfrog (*Rana catesbeiana*), and western toad (*Bufo boreas*) are present. California tiger salamanders (*Ambystoma californiense*) (a species listed as Threatened under the Federal and California Endangered Species Acts) occur in vernal pool habitats in the Warm Springs Unit area, primarily on lands of the Don Edwards San Francisco Bay National Wildlife Refuge (Refuge), adjacent to the SBSP Restoration Project area and the Newark salt ponds managed by Cargill Inc. (Cargill).

Most wetland-associated birds respond more to food availability and habitat structure than to salinity and therefore may occur in abundance in freshwater, brackish, or salt marsh habitats with suitable habitat structure. Some birds that are typically associated with fresh (versus more saline) marshes during the breeding season, such as bitterns, Virginia rails, and soras, breed sparingly in the South Bay, likely due to the limited extent of freshwater marshes. In contrast, red-winged blackbirds (*Agelaius phoeniceus*), American coots (*Fulica americana*), common moorhens (*Gallinula chloropus*), pied-billed grebes (*Podilymbus podiceps*), song sparrows, saltmarsh common yellowthroats, and marsh wrens breed commonly in freshwater marsh habitats in the South Bay. A variety of mammals occur in these freshwater habitats as well, although with the exception of the muskrat (*Ondatra zibethica*), none are associated primarily with this habitat type. Rather, mammals associated more with adjacent upland habitats use freshwater marsh for cover or foraging habitat.

Upland/Levees

The primary upland habitat existing in the Alviso-Island, Alviso-Mountain View, Alviso-A8, and Ravenswood pond clusters exists along the tops of levees and along the landward sides of the project area. Levees were constructed from native tidal salt marsh soils (silty clay) in the immediate vicinity and may occasionally be reinforced with concrete debris. Due to the high salinity of these soils and their inherent disturbed nature, many levees feature areas of bare soil or are otherwise populated by non-native halophytic species, including small flowered iceplant, New Zealand spinach, sea fig (*Carpobrotus chilensis* – FACU), Russian thistle (*Salsola soda* – FACW), and Australian saltbush (*Atriplex semibaccata* – FAC).

On levees and portions of levees where freshwater (groundwater or rain) has reduced soil salinity over time, other common ruderal species (non-native species that thrive in areas of disturbance) of forbs and grasses dominate; including black mustard (*Brassica nigra* – NL), Italian thistle (*Carduus pycnocephalus* – NL), yellow star thistle (*Centaurea solstitialis* – NL), sweet fennel (*Foeniculum vulgare* – NL), perennial pepperweed, common mallow (*Malva neglecta* – NL), bird's foot trefoil (*Lotus corniculatus* – FAC), wild oats (*Avena fatua* – NL), ripgut brome (*Bromus diandrus* – NL), crabgrass (*Digitaria sanguinalis* – FACU), Italian rye grass (*Lolium multiflorum* – NL), tall wheat grass (*Elymus ponticus* – NL), and Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum* – FAC). Native shrubs may colonize more substantial levees (for instance, the coyote bush [*Baccharis pilularis* – NL] found on the Pond A19 levees).

Due to the intense disturbance of much of uplands areas adjacent to the ponds, with most areas lacking an obvious transitional zone between the aquatic bayland habitats and adjacent habitats, most of the wildlife species found in these peripheral areas are common species adapted to urban or ruderal habitats. Reptiles such as the western fence lizard (*Sceloporus occidentalis*), gopher snake (*Pituophis melanoleucus*), and southern alligator lizard (*Elgaria multicaranata*) and mammals such as the house mouse (*Mus musculus*), California vole (*Microtus californicus*), western harvest mouse (*Reithrodontomys megalotis*), California ground squirrel (*Spermophilus beecheyi*), black-tailed jack rabbit (*Lepus californicus*), cottontail

(*Sylvilagus audubonii*), brush rabbit *(S. bachmani*), valley pocket gopher (*Thomomys bottae*), and striped skunk (*Mephitis mephitis*) all occur in the upland transitional areas along the edge of the Bay.

In most areas, the bird species that occur in the peripheral upland habitats are also common, widespread species. These include permanent residents such as the Anna's hummingbird (*Calypte anna*), mourning dove (*Zenaida macroura*), black phoebe (*Sayornis nigricans*), northern mockingbird (*Mimus polyglottos*), bushtit (*Psaltriparus minimus*), California towhee (*Pipilo crissalis*), red-winged blackbird (*Agelaius phoeniceus*), Brewer's blackbird (*Euphagus cyanocephalus*), house finch (*Carpodacus mexicanus*), lesser goldfinch (*Carduelis psaltria*); summer residents such as the barn swallow (*Hirundo rustica*) and cliff swallow (*Petrochelidon pyrrhonota*); transients (some of which breed at higher elevations in the Bay Area), including the Swainson's thrush (*Catharus ustulatus*); and winter residents such as the hermit thrush (*Catharus guttatus*), white-crowned sparrow (*Zonotrichia leucophrys*), golden-crowned sparrow (*Zonotrichia atricapilla*), yellow-rumped warbler (*Dendroica coronata*), and American pipit (*Anthus rubescens*).

In remote areas (e.g., levees between salt ponds far from the upland edge), South Bay levees are heavily used for nesting by birds such as double-crested cormorants (*Phalacrocorax auritus*), California gulls (*Larus californicus*), black-necked stilts, and American avocets (*Recurvirostra Americana*). Western snowy plovers have been identified nesting in relatively large numbers on some South Bay levees relatively recently, in the years since their construction. Before the development of the levees, western snowy plover primarily nested in natural dunes, many of which have been lost to development. Large numbers of shorebirds use salt pond levees for roosting, particularly when intertidal foraging habitats are inundated during high tide (Warnock 2004). Some species, including western snowy plovers, black-necked stilts, and least sandpipers (*Calidris minutilla*), also forage frequently along the margins of levees. Gulls, Forster's terns (*Sterna forsteri*), Caspian terns (*Hydroprogne caspia*), cormorants, pelicans, and other waterbirds also frequently roost on levees. The California least tern uses levees in the South Bay as post-breeding roosting sites. After breeding (primarily at Central Bay sites), adult California least terns bring their juvenile offspring to the South Bay to forage before migration. Mammals use levees for dispersal and to obtain access to foraging areas. Red foxes (*Vulpes vulpes*) and California ground squirrels often excavate dens within levees (usually near the upland edge). Levees with riprap or concrete debris provide some cover for other small mammals, including predators or nuisance species such as the Norway rat (*Rattus norvegicus*), roof rat (*Rattus rattus*), and feral cat (*Felis catus*), and peripheral halophytes along the lower edges of the levee provide high-tide refugia for species such as the salt marsh harvest mouse, California Ridgway's rail, and California black rail. These high-tide refugia may be quite important to the survival of individual rails and mice during extreme high-tide events. However, levees also provide corridors for mammalian predators to access marsh areas, which can lead to high levels of predation on marsh wildlife.

Mudflats

Naturally occurring mudflats on the outboard sides of many South Bay salt ponds begin at low tidal salt marsh areas and extend into the Bay. They form the overwhelming majority of intertidal habitat in the South Bay, with exceptions being only a narrow and deep channel near the center of the Bay and the fringing marshes and former salt ponds around the edges. Covered by shallow water during high tide, these mudflats are exposed during low tide. These intertidal habitats are inhospitable to most vascular emergent vegetation; typically supporting 0 to 10 percent cover of cordgrass or pickleweed. Narrow stretches of mudflat occur within slough and creek channels and at the mouths of major sloughs. Mudflats also exist in the basins of former salt ponds, such as Charleston Slough (adjacent to the Mountain View

Ponds), and in portions of the Alviso-Island pond cluster (Ponds A19, A20, and A21) where the levees have been breached and the pond re-exposed to Bay waters and tides. Eventually, as sediment accretes, tidal marsh habitat is expected to replace mudflat habitat within the former salt ponds.

These mudflats are a key reason for the importance of the San Francisco Bay Area to west coast shorebird populations, with an average of 67 percent of all the shorebirds on the west coast of the United States using San Francisco Bay wetlands (Page et al. 1999). Gulls and some dabbling ducks forage on the exposed mudflats as well. Because benthic invertebrates often recede deeper into the mud as the tidal elevation drops, especially large concentrations of foraging birds usually occur along the edge of the receding or rising tideline. Although the largest numbers of shorebirds forage on the broad flats along the edge of the Bay at low tide, some shorebirds, gulls, and large waders (e.g., herons and egrets) feed on the exposed flats along sloughs and channels, and the smaller channels in the brackish and salt marshes are the favored foraging areas for the state and federally endangered California Ridgway's rail.

Shorebirds, gulls, terns, American white pelicans (*Pelecanus erythrorynchos*), and ducks often use exposed mudflats as roosting or loafing areas when available, as do Pacific harbor seals (*Phoca vitulina richardsi*). When the tides rise, most of these birds return to roosting areas in salt ponds or other alternate habitats, and the seals move to open waters.

Former Salt Production Ponds

Salt ponds were previously managed for the purpose of commercial salt production. A total of 3,027.1 acres of potentially jurisdictional wetlands and other waters of the U.S. and waters of the State were identified within the footprint of the Phase 2 project alternatives. Of the features identified in the wetland delineation, 388.1 acres are freshwater marsh, tidal marsh, and seasonal wetland, and 2,639.1 acres are other waters. A total of 477.0 acres of historic water features (as defined by Section 10 of the Rivers and Harbors Act) were identified within the area surveyed for the jurisdictional wetland delineation, and 1,345.2 acres of current Section 10 waters are present within the Study Area boundaries. The margins and basins of some former salt ponds that are seasonally ponded but dry much of the year (e.g., Ponds R3 and R4 at the Ravenswood pond cluster) consist of bare ground and salt flat or salt panne (non-mudflat soils) areas. Historically, these basins were subject to regular tidal inundation, but following installation of levees and their use as salt ponds, the salinity has increased beyond the tolerance of most halophytic vegetation. Few vascular plant species surviving in this environment, such as are pickleweed, alkali heath, and the non-native small flowered iceplant (*Carpobrotus* spp.), which occur sparsely along the margins of the basins and on top of the soil terrace of the salt flats. Due to the paucity of vegetation, these ponds provide little to no cover for small mammals or reptiles and provide nesting habitat only for species that ground-nest on the levees and the occasional islands that have been created (by deposition of material dredged) within the ponds.

Many of the remaining ponds provide valuable roosting and foraging habitat for shorebirds and waterfowl. Higher-salinity ponds support high densities of brine shrimp and brine flies (especially *Ephydra millbrae*), which in turn serve as prey for eared grebes and other high-salinity specialists.

The ponds within the project area are, collectively, highly productive systems supporting large quantities of vertebrate and invertebrate biomass. However, much of the biomass produced by these ponds is unavailable to birds or fish due to water depths (for shorebirds) and salinities (for fish) that preclude these vertebrates' use of much of the invertebrates as food in the deeper, higher-salinity ponds.

Open Water and Subtidal Habitats

The open water category includes a variety of habitat types, including subtidal Bay waters, tidal sloughs and channels, and areas of standing or flowing waters within the salt ponds and tidal marshes. Deep water does not support emergent vegetation. Deep bays and channels are important for aquatic invertebrates, fishes, waterbirds, and harbor seals. The open waters of South San Francisco Bay support a high diversity of benthic and pelagic macroinvertebrates. Though most of the dominant invertebrates are non-native species, they nonetheless support native oyster populations, large fish populations representing several different trophic levels, including Pacific herring (*Clupea pallasi*), northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax caeruleus*), staghorn sculpin (*Leptocottus armatus*), several species of perch (Embiotocidae family), English sole (*Parophrys vetulus*), and California halibut (*Paralichthys californicus*). Many of these fish species in turn support harbor seals and piscivorous (fish-eating) birds such as the Forster's tern, California least tern, American white pelican, brown pelican (*Pelecanus occidentalis*), and double-crested cormorant. Waterfowl such as greater scaup (*Aythya marila*), lesser scaup (*Aythya affinis*), canvasbacks (*Aythya valisineria*), and surf scoters (*Melanitta perspicillata*) dive for bivalves, crustaceans, and other invertebrates in shallower subtidal areas. Bird diversity in the open Bay waters is fairly low, as the species of birds that can exploit the subtidal areas are limited to those that can forage from the air (e.g., terns) or under water (e.g., scoters) and those that can swim. However, large densities of diving ducks (e.g., bufflehead [*Bucephala albeola*], greater scaup) occur in some areas where appropriate depths and concentrations of benthic invertebrates, particularly bivalves, provide a rich food source. Some species, such as gulls, also roost on the open waters of the Bay, especially at night.

The tidal sloughs and channels that circulate water around and in between salt ponds and marsh remnants and through the marshes provide important habitat for large numbers of benthic and pelagic invertebrates and fish. These detritus-rich channels serve as important nurseries and feeding areas for estuarine fish, including leopard sharks (*Triakis semisasciata*). California bay shrimp (*Crangon franciscorum*) spawn in the open ocean but spend much of their lives feeding in the brackish waters of South Bay sloughs (Baxter et al. 1999). Diving ducks generally avoid the smaller tidal channels but can be found in abundance, particularly during their nonbreeding season, near the mouths of the larger tidal sloughs, in open waters, and in deeper ponds. Thousands of diving ducks also roost and forage in the artificial lagoons in Foster City and Redwood Shores, north of the Ravenswood pond cluster, and in the Sunnyvale water treatment plant, southeast of the Alviso-Mountain View pond cluster, in winter. Dabbling ducks such as the gadwall (*Anas strepera*), green winged teal (*Anas crecca*), northern shoveler (*Anas clypeata*), and mallard (*Anas platyrhynchos*) reach high densities in the shallower ponds and in smaller and shallower channels, where they feed on aquatic plants (including algae, submerged aquatic vegetation, and plankton) and invertebrates. Terns often forage in the larger and mid-sized channels and ponds, and several species of herons and egrets forage in the shallows for fish. Many shorebirds feed along the exposed flats along tidal channels at low tide, as do rails and other tidal marsh birds.

SBSP Phase 2 Restoration Project Ponds

Two pond complexes, Alviso and Ravenswood, are being considered for Phase 2 restoration under this Final EIS/R.

Alviso Pond Complex

Large areas of mudflats and open water Bay habitats are found adjacent to the Alviso pond complex. Open water exists along Mountain View Slough, Stevens Creek, Alviso Slough, Artesian Slough,

Guadalupe Slough, and in Coyote Creek. Large expanses of newly formed mudflat and cordgrass habitats exist downstream of the Island Ponds (Ponds A19, A20, and A21) (Callaway et al. 2009). Mudflats occur at the mouth of Guadalupe Slough and along Charleston Slough. Advancing mudflat occurs adjacent to Calaveras Point and also at the mouths of Mountain View Slough and Stevens Creek adjacent to Ponds A1 and A2W. Additional small areas of mudflats are surrounded by freshwater marsh at the upper end of the reach to the south of the Island Ponds.

Vegetation. Marsh habitat adjacent to the Alviso pond complex includes salt marsh, brackish marsh, and freshwater marsh. Salt marsh habitat occurs on the outboard levees along the extent of the Alviso pond complex. Salt marsh dominated by cordgrass is found at lower elevations bordering the mudflats and along the fringing lower elevations of Coyote Creek. Cordgrass also borders Mountain View Slough, the mouth of Stevens Creek, Guadalupe Slough and Alviso Slough, and the mouth of Mud Slough. Pickleweed-dominated salt marsh is found at higher elevations just above cordgrass-dominated marsh and extends upstream into Mountain View Slough, Stevens Creek, Coyote Creek, Guadalupe Slough, Mud Slough, and Alviso Slough. Brackish marsh covers the marsh plain in the transition from salt to brackish marsh along Coyote Creek and also dominates the outboard levees near the junction of Mud Slough and Coyote Creek. Brackish marsh replaces salt marsh moving upstream along Guadalupe Slough, Alviso Slough, Mountain View Slough, and Stevens Creek. Levees separate many of the individual ponds in the Alviso pond complex. Upland vegetation borders sections of the freshwater and brackish marshes. Unvegetated islands exist within several of the ponds.

***Wildlife*.** Characteristics of ponds such as salinity, and depth may change rapidly, influencing wildlife use. In particular, changes in salinity and depth that may occur seasonally or between years may affect the abundance and species composition of invertebrates, fish, and feeding and roosting assemblages of birds in ponds. Bird surveys at ponds managed for salt production by Cargill suggest the response to physical characteristics varies between guilds. For example, small and medium shorebirds, gulls, and eared grebes showed an increase in abundance with increases in salinity while piscivorous birds, egrets and herons, and diving ducks showed marked decreases in abundance in areas of higher salinity. These different responses are likely related to the interactions between water depth, salinity, and dissolved oxygen. Some guilds, including dabbling ducks and terns showed little change in abundance with changes in salinity, potentially indicating more flexibility with regard to water quality parameters. These differences support the assumption that a range of ponds with differing physical characteristics is necessary to support a diverse and robust avian community (Scullen et al. 2015).

Monitoring conducted by USGS; SFBBO; University of California, Davis; and others indicated that the most prominent wildlife resources and patterns of wildlife distribution in the Refuge's ponds and vicinity in recent years are as follows:

- Increased use of the Island Ponds by almost all guilds of birds (dabbling ducks, diving ducks, piscivores, gulls, herons, medium shorebirds, phalaropes, and small shorebirds), with the exception of eared grebes, since the breaching of the ponds in March 2006 (SCVWD and USFWS 2010).
- California Ridgeway's rail (at least one breeding pair) were observed in Pond A21 in summer of 2014 (Jen McBroom, pers. comm., 2014).
- Fish representing 34 families have been found in the salt pond complexes. Fish abundance has also increased in the Island Ponds since the breaching in March 2006. Overall fish abundance was

consistently at least an order of magnitude higher than adjacent sites along Coyote Creek. Three-spined stickleback (*Gasterosteus aculeatus*) was the most common fish captured, with most being observed in the Alviso/Coyote Marsh complex. They are most abundant within the Island Ponds and Upper Coyote Creek Slough. Their population is consistent with a resident, annual population. Other abundant species in the Island Ponds include Pacific staghorn sculpin (*Leptocottus armatus*) and yellowfin goby (*Acanthogobius flavimanus*). Pacific herring and northern anchovy were the next-most-abundant species and were relatively common at all sites. High fish abundance at the Island Ponds is attributed to better foraging habitat in shallower water and edge habitats, a high concentration of mysid shrimp, and the refuge from predation that these former ponds now offer (Hobbs and Moyle 2009). At the Alviso/Coyote Marsh complex, Pacific staghorn sculpin, Pacific herring, and northern anchovy were the most common in 2012 (Hobbs 2012). Longfin smelt (*Spirinchus thaleichthys*) have been caught in Coyote Creek and Alviso Slough and could possibly be present in Pond A8 but have not yet been detected there. The longfin smelt a state-listed threatened species that is also a candidate for listing under the federal Endangered Species Act. It is present in the South Bay year-round. An individual chinook salmon (*Oncorhynchus tshawytscha*) smolt was found on May 18, 2012, in Coyote Creek adjacent to Pond A19 (Hobbs 2012).

- Over 365,000 individual waterbird sightings of were recorded at the Alviso pond complex in 2014. These sightings were comprised of 69 species, the highest species richness and abundance of all complexes surveyed by the SFBBO between September 2013 and August 2014 (Washburn, et al. 2015). SFBBO staff and volunteer monitors of waterbird nests have observed a wide variety of nesting birds in the project area, including double-crested cormorants, black-necked stilts, American avocets, terns, and gulls. Nests were observed on multiple substrates, including power transmission towers, in Ponds A2E, A2W, and A18; on the levees between ponds; and within the ponds themselves (Donehower et al. 2013).
    - Black skimmers (*Rynchops niger*) have been identified breeding at Ponds A1, A2W, and A8 (Ackerman and Herzog 2012; Bluso-Demers et al. 2008; Demers et al. 2010).
    - Black-necked stilts have nested at Pond A2W (Ackerman and Herzog 2012; Donehower and Tokatlian 2012).
    - Western snowy plover were most abundant at the Eden Landing and Ravenswood pond complexes, with the largest number of nests at Eden Landing in Ponds E14, E8, and E6B (Tokatlian et al. 2014, 2015; Donehower et al. 2013); in the Alviso pond complex, they have nested in ponds (when dry) A12, A13, A16, A9, and in New Chicago Marsh.
    - American avocet nests were found in Ponds A5/7, A8, A12, A2W, and R1. Forster's tern nests were found at Ponds A1, AB2, A7, A8, A16, and A2W (Donehower and Tokatlian 2012).
    - Large numbers of shorebirds forage on the intertidal mudflats ringing the South Bay south of the Dumbarton Bridge during low tide.
    - Large numbers of shorebirds roost and forage to varying degrees within the Alviso Ponds.
    - Diving ducks are found in large numbers in Ponds A2W, A5, and A1 totaling over 36,000 individuals at those ponds.

- A number of California gull colonies are present in the Alviso pond complex; in or near the Phase 2 project area, California gull nests were found at Pond A1 and at the adjacent Palo Alto Flood Basin (Ackerman et al. 2013a). Over 13,000 California gulls and over 6,600 nests were observed by the SFBBO during walkthrough surveys of the breeding colony located in Alviso Ponds A9, A10, A11, and A14 (2015). Much of this activity was concentrated on the levees and islands in these ponds.
- Red-tailed hawks (*Buteo jamaicensis*), northern harriers, peregrine falcons (*Falco peregrinus*), common ravens (*Corvus corax*), and double-crested cormorants nest and roost on transmission towers in several ponds and over tidal marshes, including the Alviso pond complex as well as other groups of ponds not included in Phase 2 (Ackerman et al. 2013a), and in 2006 (as well as other more recent years) a pair of peregrine falcons nested on a tower in the Alviso pond complex (Robinson et al. 2007; C. Strong, pers. comm., 2014). Red-tailed hawks and peregrine falcons were observed on the Pacific Gas and Electric Company (PG&E) towers in Pond SF2 and the Ravenswood pond complex (Robinson-Nilsen et al. 2011).

- California Ridgway's rails occur in a number of locations, although high-quality habitat is limited. The highest numbers are likely to occur within the more extensive tidal salt marshes along Coyote Creek and Mowry Slough, although this species is also present in brackish marshes in the Warm Springs area, along Guadalupe Slough and Alviso Slough, and in smaller marsh remnants along sloughs and the Bay edge.
- Mercury levels increased in both three-spined stickleback and Mississippi silverside (*Menidia beryllina*) between 2010 and 2011 in Alviso Slough (near the Alviso-A8 pond cluster). The peaks were relatively short lived, between July and August, and mercury levels returned to average by October (Ackerman et al 2013b). Mercury levels in terns and avocets saw increases between 2010 and 2011, with notably higher increases in areas of initial wetland restoration followed by subsequent decreases (Ibid).
- Steelhead occur in Stevens Creek, the Guadalupe River, and Coyote Creek, all of which are designated critical habitat for the Central California Coast Distinct Population Segment for this species.
- Chinook salmon occur in the Guadalupe River and Coyote Creek.
- Green sturgeon (*Acipenser medirostris*), listed as threatened under the federal Endangered Species Act [FESA]), is known to occupy South San Francisco Bay during every month of the year, though it does not typically enter breached ponds or adjacent sloughs or waterways.
- Salt marsh harvest mouse habitat in the Alviso pond complex is generally limited, but occurs in tidal salt marshes that fringe the existing ponds and in the diked salt marsh habitat at New Chicago Marsh. Most of the Alviso marshes are brackish marshes, areas in which salt marsh harvest mice have been recently discovered. Although their use of these brackish habitats in the South Bay is not well understood, early indications are that populations in the brackish marshes are not as dense as those in mature salt marsh dominated by pickleweed. The salt marsh that does exist typically has little to no high marsh or escape cover except along levee edges.

Phase 2 Action Areas. The characteristics of the individual ponds that were chosen for Phase 2 of the SBSP Restoration Project are discussed below.

Ponds A19, A20, and A21. Ponds A19 (265 acres), A20 (65 acres), and A21 (150 acres) are called the Island Ponds. They are bordered on the north and west by Mud Slough and on the south by Coyote Creek. As part of the Initial Stewardship Plan (ISP), the Island Ponds were breached to Coyote Creek and tidal action in March 2006. Once breached, these ponds provided intertidal foraging habitat for shorebirds and other waterbirds at low tide and tidal foraging habitat for waterfowl at high tide. As sediment has accumulated (and the gypsum layer is buried and/or deteriorates), tidal marsh vegetation is becoming established, providing breeding and foraging habitat for the California Ridgway's rail (recently noted in Pond A21) and other marsh species. Though ruderal in their vegetation species composition, upland portions of the levees may provide suitable habitat for a range of species that need high-tide refugia. The outboard margins of the pond levees (on Mud Slough and Coyote Creek) are characterized by seasonally brackish marsh.

Ponds A1 and A2W and Charleston Slough. Pond A1 (275 acres) and Pond A2W (435 acres) are bordered on the north by the Bay and on the south by Mountain View Shoreline Park. Pond A1 is bordered on the west by Charleston Slough, which has muted tidal action. Pond A2W is bordered on the east by Stevens Creek; although hydraulically connected by a siphon, the ponds are separated by Mountain View Slough. The outboard areas of the pond levees and the lower reaches of the surrounding sloughs are characterized by tidal salt marsh and the interior of these ponds are primarily open water or mudflat with little to no visible vegetation. Suitable nesting bird habitat (for California gulls, Forster's terns, American avocets, black-necked stilts, and the occasional black skimmer) exists on a few small, isolated islands found within the interior waters of Ponds A1 and A2W.

Charleston Slough itself is a 115-acre muted tidal mudflat that is separated from the Bay's full tidal flows by a levee and a large tide gate structure owned and operated by the City of Mountain View. The water intake for the city's Shoreline Park sailing lake (at the foot of the southern end of the slough) takes in 8 to 10 million gallons of water per day, which maintains a channel deeper than the rest of the slough's tidal mudflats that runs the length of the slough from the tide gate to the intake. The intertidal mudflats around the channel draw large numbers of foraging shorebirds, ducks, and other species, particularly at low tide. The southern and western levees around Charleston Slough support popular public access/recreation trails and ruderal and other vegetation.

Ponds A8 and A8S. Pond A8 (410 acres) is bordered on the west by Ponds A5 and A7, on the north and east by Alviso Slough, and on the south by Pond A8S. Pond A8S (160 acres) is bordered on the south and west by the freshwater marsh of Guadalupe Slough and industrial development to the east and is now effectively part of Pond A8. Ponds A5, A7, A8, and A8S were all linked as part of Phase 1 actions that took out portions of the interior levees that had separated them. These ponds provide forage habitat for terns, waterfowl, and shorebirds and the levees provide nesting habitat. Sediment has been accreting in these ponds since they were opened to muted tidal flows through culverts and a variable-size, reversible armored notch in 2011. The ponds provide habitat for fish and benthic invertebrates that provide food for a variety of species.

Ravenswood Pond Complex

Tidal marsh, mudflat, and open water bay habitats are found around the former salt-production ponds of the Ravenswood pond complex. Narrow tidal marsh habitat exists along the outboard edges of many ponds and more extensively in Ravenswood Slough. A large tidal marsh, Greco Island, lies north and west of the pond complex. Open water habitat exists throughout the pond complex in the historic slough channels and in seasonally flooded ponds. Mudflat habitat has formed at the mouth of Ravenswood Slough. The pond complex includes salt marsh and peripheral halophyte marsh habitats adjacent to the ponds. A large expanse of mudflat lies to the north and east of the pond complex.

Vegetation. The Ravenswood pond complex is surrounded by salt marsh that consists of cordgrass marsh along the lower elevation fringes of the marsh and pickleweed marsh in the higher elevation marsh plain. Some patches of salt marsh are dominated by other species, particularly along the southern edge of the pond complex. Peripheral halophyte vegetation borders the salt marsh in much of the transitional zone to upland areas. Upland vegetation is also found at higher elevations around the salt marsh boundary, often bordering the levees. There is one small area of freshwater marsh along the southern boundary of the Ravenswood pond complex.

Wildlife. Characteristics of ponds such as salinity and depth may change rapidly, influencing wildlife use. In particular, changes in salinity and depth that may occur seasonally or from year to year may affect the abundance and species composition of invertebrates and fish and the feeding and roosting assemblages of birds in ponds. However, based on recent monitoring conducted by USGS, SFBBO, and others, the most prominent wildlife resources and patterns of wildlife distribution in the Ravenswood pond complex and vicinity in recent years are as follows:

- Moderate numbers of western snowy plovers breed and winter in ponds throughout the Ravenswood pond complex as a whole (R1, R2, R3, R4, R5, SF2, and S5) (Donehower et al. 2013). During the 2012 surveys, the most plover nests were found in Pond R1 (Donehower et al. 2013). Phase 1 restoration actions modified Pond SF2 to provide habitat islands and improved forage for plovers, which have intermittently nested there in recent years. Of the Phase 2 Ravenswood Ponds (R3, R4, R5, and S5), plover tend to use Ponds R4 and R3 most often. In 2015, Pond S5 had four active nests; no nests had been found in that pond since 2012.

- Large numbers of shorebirds forage on mudflats north and east of the Ravenswood pond complex at low tide.

- Large numbers of waterfowl and shorebirds roost and forage to varying degrees in Ponds R1, R2, and SF2.

- Medium shorebird observations at Pond SF2 were the second highest of all ponds monitored by SFBBO in 2014/2015 with over 9,500 individuals. Over half of the medium shorebirds were observed on islands (2015).

- Over 42,000 individual waterbird sightings comprised of 50 species were recorded between September 2013 and August 2014 by the SFBBO (2015).

- California Ridgway's rails occur along Ravenswood Slough and along the northwest edge of Pond R4 immediately adjacent to Greco Island. The vegetation along the levee edges provides high-tide refugia for cover from predators during extreme high tides, but otherwise California

Ridgway's rail habitat along the edges of other ponds in the complex is very limited. Much more extensive habitat exists near large Ridgeway's rail populations on Greco Island, to the northwest, and in East Palo Alto and Palo Alto marshes, to the south.

- Salt marsh harvest mouse habitat is very limited in extent and quality (i.e., the tidal marshes are very narrow and have little to no escape cover). With the exception of limited areas on Greco Island, the extent of high marsh habitat and transition zones to higher areas (for refugia during the highest spring tides) is limited enough to constrain habitat quality for the salt marsh harvest mouse. As noted previously, these high-tide refugia are important to this species.

Phase 2 Action Areas. The characteristics of the individual ponds that were chosen for Phase 2 of the SBSP Restoration Project are discussed below.

Ponds R3 and R4. Pond R3 (270 acres) is bordered on the north and west by Pond R4, by the Ravenswood Slough on the north and east, and by State Route (SR) 84 and industrial areas on the south. Pond R4 (295 acres) is bordered on the north by the Bay, on the northwest by Greco Island (~700 acres), on the west by Bayfront Park and Pond R5, on the east by Ravenswood Slough and on the south by Pond R3. The levees of these ponds are unbreached. These ponds are seasonally wet ponds that collect rainwater during winter but dry out to become salt pannes in summer. The upland and remnant slough channels and borrow ditches within the ponds have extremely high salinity, which inhibits most plant life but the salt flats do provide nesting habitat for special-status species including the threatened western snowy plover. Vegetation growing on the pond bottom is limited to extremely salt-tolerant vegetation, notably small flowered iceplant, which is an invasive species requiring active and regular control efforts.

Ponds R5 and S5. Ponds R5 and S5 (30 acres each) are separated by a levee that runs diagonally northwest to southeast. These ponds are bordered on the north and west by Bedwell Bayfront Park, on the east by Ponds R4 and R5 and on the south by a channel separating the ponds from SR 84. These ponds are seasonally wet ponds that collect rainwater during winter but dry out to become salt pannes in summer. They contain little to no vegetation. A drainage outlet for stormwater runoff from the Bayfront Canal and Atherton Channel in portions of Redwood City, Atherton, and Menlo Park carries water into Flood Slough next to the southern exterior of Pond S5, creating freshwater to brackish marsh habitat on the water's way to the Bay.

Other Notable South Bay Wildlife Resources Outside the Project Area

The most prominent wildlife resources and patterns of wildlife distribution within the general South Bay area are as follows:

- Steelhead use estuarine habitats as rearing habitat for juveniles and move through the project area on their migrations to and from upstream spawning areas in the designated critical habitat in Stevens Creek, Coyote Creek, and Guadalupe River.

- Green sturgeon have been found throughout San Francisco Bay (the designated critical habitat for this species), though its population and its freshwater spawning tend to be concentrated in the northern portions of the Bay and the Sacramento-San Joaquin River Delta.

- Large numbers of shorebirds forage on the intertidal mudflats ringing the South Bay during low tide and roost (and, variably, forage) in ponds and other alternate habitats at high tide.

- Large numbers of waterfowl forage and roost on open bay and pond waters and other available habitats.
- The largest harbor seal haul-out site in the South Bay occurs along lower Mowry Slough. Other areas frequently used as haul-out sites are near Calaveras Point, at Dumbarton Point, on Greco and Bair Islands, and along Corkscrew Slough.
- California Ridgway's rail and salt marsh harvest mouse habitat in many areas is somewhat limited in extent and connectivity. For example, many of the tidal marshes are very narrow and have little to no escape cover or transitional habitat. Relatively large marshes occur on Dumbarton Point, between Newark and Mowry Sloughs, Faber-Laumeister Marshes along the peninsula, at the Palo Alto Baylands Park and Nature Preserve, and on Greco and Bair Islands. The highest population densities for rails continue to be in South San Francisco Bay. The largest populations occur in Arrowhead Marsh, Dumbarton Point, Mowry Slough, the Faber/Laumeister Marshes, Bair Island, and Greco Island (USFWS 2013).

Special-Status Plant Species

The special-status plant species that occur in the South Bay in the vicinity of the SBSP Restoration Project are discussed in this section. The most current and historic pertinent information was reviewed to compile a list of species considered for occurrence within the Phase 2 project area. The CNDDB was queried to determine the potential for occurrence in the area based on known populations and habitat requirements. This database represents the most current data available regarding special-status plant distribution within California. A map of the results is presented as Figure 3.5-3.

The SBSP Restoration Project pond complexes themselves are not expected to support many special-status plants: vascular plants are entirely absent from artificial, hypersaline ponds, and levees and remnant marshes provide peripheral halophytic habitat bearing little resemblance to the broad, relatively heterogeneous habitat of an intact upper marsh. However, special-status plants may once have occurred in the natural salt pannes, sandy deposits, and slough channels of the former marsh, and habitat still exists in the general area of the SBSP Restoration Project and its surroundings. The legal status and likelihood of occurrence of these species are listed in Table 3.5-1.

No Endangered Species Act-listed or -proposed plants have been documented within the boundaries of the Alviso or Ravenswood pond complexes (CNDDB 2013). However, there are a number of historical or extirpated records from nearby (Figure 3.5-3). Several records of Point Reyes bird's beak (*Chloropyron maritimum* ssp. *palustre*), alkali milk vetch (*Astragalus tener* var. *tener*), and Hoover's button celery (*Eryngium aristulatum* var. *hooveri*) were collected nearby in the early 1900s, but are mostly believed to be extirpated (CNDDB 2013). Numerous occurrences of five species—Congdon's tarplant (*Centromadiaa parry*i ssp. *congdonii*), prostrate navarretia (*Navarretia prostrata*), alkali milk vetch (*Astragalus tener* var. *tener*), Contra Costa goldfields (*Lasthenia conjugens*), and San Joaquin spearscale (*Atriplex joaquiniana*)—have been documented in the vicinity of the Alviso pond complex. However, these occurrences are exclusively within the Pacific Commons Preserve (which is now part of the Warm Springs Unit of the Refuge), just north of Pond A22, except for Congdon's tarplant, which was recorded adjacent to Stevens Creek in 2002 (H.T. Harvey and Associates et al. 2005) and at Sunnyvale Baylands Park south of Pond A8 (CNDDB 2013).

A California Rare Plant Rank (CRPR) 4.3 species, small spikerush, *Eleocharis parvula*, has been identified at the Island Ponds. CRPR 4.3 species are non-threatened watch list species, which are

uncommon enough that their status is monitored regularly. CRPR lists are maintained by the California Native Plant Society (CNPS), CDFW, and other organizations; the CRPR was called the CNPS list until recently. The small population of small spikerush is in three separate patches on exposed mud flat at the edge of the northwest corner of Pond A19.

The goals of the SBSP restoration Project are aligned with the goals set in the USFWS Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California (2013). The ultimate goal of this Recovery Plan is to recover all listed species and remove them from listing under the Endangered Species Act. The interim goal is to recover all endangered species to the point that they can be downlisted from endangered to threatened status. The goal for *Chloropyron maritimum* ssp. *maritimum* (salt marsh bird's-beak) is to support recovery strategies detailed in the Salt Marsh Bird's-beak Recovery Plan (U.S. Fish and Wildlife Service 1985a). For species covered by that plan that are not federally listed as threatened or endangered, the goal is to conserve them so as to avoid the need for protection provided by listing. To achieve these goals, the following objectives were developed: (1) secure self-sustaining wild populations of each covered species throughout their full ecological, geographical, and genetic range; (2) ameliorate or eliminate, to the extent possible, the threats that caused the species to be listed or of concern and any future threats; and (3) restore and conserve a healthy ecosystem function supportive of tidal marsh species. The goals and objectives of Phase 2 are in line with these goals.

Special-Status Wildlife Species

Special-status animal species that occur in or near the Phase 2 project areas are shown on Figure 3.5-2. The legal status and likelihood of occurrence of these species are listed in Table 3.5-2. There are three threatened or endangered species that are a focus of particular management efforts by the Refuge: salt marsh harvest mouse, California Ridgway's rail, and western snowy plover. A number of special-status species occur in the Phase 2 project area as visitors, migrants, or foragers but are not known or expected to breed in the immediate project area. Animals that occasionally occur within the project area and breed in upland habitats in the greater South Bay area, but occur only in the Phase 2 project area as uncommon to rare foragers, include the bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), Vaux's swift (*Chaetura vauxi*), California yellow warbler (*Dendroica petechia brewsteri*), bank swallow (*Riparia riparia*), and pallid bat (*Antrozous pallidus*). Species that occur in the project area regularly as foragers but have "special status" only at nesting sites elsewhere in California include the common loon (*Gavia immer*), American white pelican, Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), osprey (*Pandion haliaetus*), Barrow's goldeneye (*Bucephala islandica*), long-billed curlew (*Numenius americanus*), and elegant tern (*Sterna elegans*).

Table 3.5-1 Special-Status Plant Species Known to Occur within a 5-Mile Radius of and with Potential to Occur in the Phase 2 Ponds

NAME	STATUS*	HABITAT/DESCRIPTION	POTENTIAL TO OCCUR
Threatened or Endangered Species			
San Mateo thorn-mint (*Acanthomintha duttonii*)	FE, SE, CRPR 1B	Chaparral, valley and foothill grassland, coastal scrub in relatively open areas. Only known to occur on very uncommon serpentinite vertisol clays. Elev. 50–200 meters(m).	**No potential to occur.** Only CNDDB occurrence within 5 miles is presumed extirpated. No appropriate habitat or suitable serpentinite substrate is present in the Phase 2 project area.
Robust spineflower (*Chorizanthe robusta* var. *robusta*)	FE, CRPR 1B	Cismontane woodland, coastal dunes, coastal scrub, growing on sandy terraces and bluffs or in loose sand. Elev. 3–120 m.	**No potential to occur.** Only CNDDB occurrence within 5 miles is a historical record from 1882. The Phase 2 project area does not include appropriate coastal habitat with sandy substrate.
Fountain thistle (*Cirsium fontinale* var. *fontinale*)	FE, SE, CRPR 1B	Valley and foothill grassland, chaparral, growing in serpentine seeps and grassland. Elev. 90–180 m.	**No potential to occur.** No serpentine seeps are present in the Phase 2 project area.
Marin western flax (*Hesperolinon congestum*)	FT, ST, CRPR 1B	Chaparral, valley and foothill grassland, growing in serpentine barrens and in serpentine grassland and chaparral. Elev. 30–365 m.	**No potential to occur.** No serpentine habitats are present in the Phase 2 project area.
Contra Costa goldfields (*Lasthenia conjugens)*	FE, CRPR 1B	Saline/alkaline vernal pools, mesic areas within grassland. Known from Alameda, Solano, Monterey, Contra Costa, and Napa Counties. Annual; blooms March through June. Elev. 4 – 180 m,	**No potential to occur.** Historically known from edges of salt ponds at the Bay shore near Mt. Eden and Newark. Occurs on the Warm Springs vernal pool unit of the Refuge (Fremont). No suitable habitat is present in the Phase 2 project area. Otherwise occurs in disjunct populations in Monterey and North Bay areas.
California seablite (*Suaeda californica*)	FE, CRPR 1B	Sandy, high-energy shorelines within salt marsh. Relictual populations in South Bay considered extirpated; known from the San Francisco Bay and Morro Bay, San Luis Obispo county. Elev. 0 – 160 m.	**Low potential to occur.** Suitable habitat occurs within Eden Landing and Ravenswood pond complexes and the species has been documented in salt marsh habitat at multiple locations in central San Francisco Bay.
Species of Concern and CRPR Species			
Franciscan onion (*Allium peninsulare* var. *franciscanum*)	CRPR 1B	Cismontane woodland, valley and foothill grassland, growing on clay soils or serpentine on dry hillsides. Elev. 100–300 m.	**No potential to occur.** No suitable habitat present in Phase 2 project area.
Kings Mountain manzanita (*Arctostaphylos regismontana*)	CRPR 1B	Broadleaved upland forest, chaparral, north coast coniferous forest, growing on granitic or sandstone outcrops. Elev. 305–730 m.	**No potential to** occur**.** No suitable habitat present in Phase 2 project area.
Alkali milk-vetch (*Astragalus tener* var. *tener*)	CRPR 1B	Alkaline soils in playas, vernal pools, and adobe clay areas within grassland. Alameda, Merced, Solano, and Yolo Counties. Annual; blooms March to June. Elev. 0 – 130 m.	**Low potential to occur.** A recently rediscovered population in seasonal wetlands at Warm Springs in Fremont. Considered extirpated from Santa Clara County. Currently no high-quality habitat in Phase 2 project area.

Table 3.5-1 Special-Status Plant Species Known to Occur within a 5-Mile Radius of and with Potential to Occur in the Phase 2 Ponds

NAME	STATUS*	HABITAT/DESCRIPTION	POTENTIAL TO OCCUR
Brittlescale (*Atriplex depressa*)	CRPR 1B	Chenopod scrub, meadows, playas, valley and foothill grassland, vernal pools. Usually occurs in alkali scalds or clay in meadows or annual grassland. Elev. 1–320 m.	**No potential to occur.** No suitable habitat present in Phase 2 project area.
San Joaquin saltbush (*Atriplex joaquiniana*)	CRPR 1B	Alkaline soils within chenopod scrub, meadows, playas, and grasslands in 14 Central California counties. Annual; blooms April through October. Elev. 0 – 750 m.	**No potential to occur.** Potentially occurs in seasonal wetlands in Warm Springs vicinity and known at Warm Springs. Currently, no suitable habitat present in Phase 2 project area.
Lesser saltscale (*Atriplex minuscula*)	CRPR 1B	Chenopod scrub, playas, valley and foothill grassland, in alkali sink and grassland in sandy, alkaline soils. Elev. 20–100 m.	**No potential to occur.** No suitable habitat present in Phase 2 project area.
Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*)	CRPR 1B	Moist, alkaline soils within grassland. Tolerates disturbance. Annual; blooms June through November. Known from Alameda, Monterey, San Luis Obispo, and Santa Clara Counties. Elev. 0 – 260 m.	**Potential to occur.** Known from several locations in Newark, Fremont, Alviso, and Sunnyvale. Slight potential for occurrence in peripheral halophyte or disturbed upland zones in Phase 2 project area, but not currently associated with salt marsh.
Point Reyes bird's-beak (*Chloropyron maritimum* ssp. *palustre*)	CRPR 1B	Coastal salt marsh habitats, growing with pickleweed and saltgrass, etc. Elev. 0–15 m.	**Low potential to occur.** Found in LaRiviere Marsh, Don Edward's Refuge, Fremont in 2010 and 2015 (R. Tertes, pers comm). Appropriate habitat is present in the fully tidal marshes of the Island Ponds and outside of other Phase 2 project areas.
Lost thistle (*Cirsium praeteriens*)	CRPR 1A	Little information is available about the habitat preferences of the species. Bloom period is June through July. Elev. 0 – 100 m.	**No potential to occur.** The species is known from only two collections made near Palo Alto (last in 1901) and is presumed extirpated in California.
San Francisco collinsia (*Collinsia multicolor*)	CRPR 1B	Closed-cone coniferous forest and coastal scrub, growing on decomposed shale (mudstone) mixed with humus. Elev. 30–250 m.	**No potential to occur.** No suitable forest or scrub habitats present in Phase 2 project area.
Western leatherwood (*Dirca occidentalis*)	CRPR 1B	Broad-leafed upland and riparian forest and woodlands, and chaparral, growing on brushy slopes, in mesic areas; mostly in mixed evergreen & foothill woodland communities. Elev. 30–550 m.	**No potential to occur.** No suitable habitat present in Phase 2 project area.
Small spikerush (dwarf spikerush) (*Eleocharis parvula*)	CRPR 4.3	Coastal and riparian marshes, swamps, and wetlands; blooms July and August. Elev. 1–3,000 m.	**Known to occur.** A population of small spikerush has been documented on the levee shoreline of Pond A19, occurring on exposed mud flat in three separate patches (Santa Clara Valley Water District 2014).

Table 3.5-1 Special-Status Plant Species Known to Occur within a 5-Mile Radius of and with Potential to Occur in the Phase 2 Ponds

NAME	STATUS*	HABITAT/DESCRIPTION	POTENTIAL TO OCCUR
Hoover's button-celery (*Eryngium aristulatum* var. *hooveri*)	CRPR 1B	Vernal pools, alkaline depressions, roadside ditches, and other wet places near the coast. Elev. 5–45 m.	**Low potential to occur.** Suitable habitat may be present in Phase 2 project area.
Fragrant fritillary (*Fritillaria liliacea*)	CRPR 1B	Coastal scrub, valley and foothill grassland, coastal prairie. Often on serpentine; various soils reported, though usually clay, in grassland. Elev. 3–410 m.	**No potential to occur.** No suitable habitat present in Phase 2 project area.
Arcuate bush-mallow (*Malacothamnus arcuatus*)	CRPR 1B	Chaparral on gravelly alluvium substrates. Elev. 80–355 m.	**No potential to occur.** No suitable habitat present in Phase 2 project area.
Davidson's bush-mallow (*Malacothamnus davidsonii*)	CRPR 1B	Coastal scrub, riparian woodland, chaparral, cismontane woodland, in sandy washes. Elev. 185–855 m.	**No potential to occur.** No suitable habitat present in Phase 2 project area.
Hall's bush-mallow (*Malacothamnus hallii*)	CRPR 1B	Chaparral. Populations may occur on serpentine. Elev. 10–550 m.	**No potential to occur.** No suitable habitat present in Phase 2 project area.
Prostrate navarretia (*Navarretia prostrata*)	CRPR 1B	Seasonal wetlands and vernal pools within grassland and coastal scrub. Ranges from Monterey County south to San Diego. Annual; blooms April through July. Elev. 3 – 1210 m.	**No potential to occur.** In South Bay area, known only from Warm Springs in Fremont. Currently, no suitable habitat present in Phase 2 project area.
Hairless popcorn-flower (*Plagiobothrys glaber*)	CRPR 1A	Formerly known from alkali meadows and coastal salt marshes and swamps. Extirpated throughout its range; last documented occurrence in 1954, though possibly relocated near Antioch. Elev. 15 – 180 m.	**No potential to occur.** Presumed extinct.
Chaparral ragwort (*Senecio aphanactis*)	CRPR 2B	Chaparral, cismontane woodland, coastal scrub. drying alkaline flats. Elev. 15–800 m.	**No potential to occur.** No suitable habitat present in Phase 2 project area.
Most beautiful jewel-flower (*Streptanthus albidus* ssp. *peramoenus*)	CRPR 1B	Chaparral, valley and foothill grassland, cismontane woodland, growing on serpentine outcrops, on ridges and slopes. Elev. 120–730 m.	**No potential to occur.** No suitable habitat present in Phase 2 project area. Serpentine substrates are absent.

Table 3.5-1 Special-Status Plant Species Known to Occur within a 5-Mile Radius of and with Potential to Occur in the Phase 2 Ponds

NAME	STATUS*	HABITAT/DESCRIPTION	POTENTIAL TO OCCUR
Slender-leaved pondweed (*Stuckenia filiformis* ssp. *alpina*)	CRPR 2B	Marshes and swamps (assorted shallow freshwater habitats). Elev. 300 – 2150 m.	**Low potential to occur.** Suitable habitat may be present in Phase 2 project area.
Saline clover (*Trifolium hydrophilum*)	CRPR 1B	Edges of salt marshes, alkali meadows, and vernal pools along the coast from Sonoma County south to San Luis Obispo as well as in the inland counties of Solano and Colusa. Annual; blooms April through June. Elev. 0 – 300 m.	**Low potential to occur.** Historic collection (type locality) from Belmont and documented in Fremont salt flats in 2004. Currently, no high-quality habitat present in the immediate Phase 2 project area.
Dwarf spikerush (*Eleocharis parvula*)	CRPR 4.3	Coastal and riparian marshes, swamps, and wetlands; blooms July and August. Elev. 1–3,000 m.	**Known to occur.** Individuals of this species have been found on a levee around Pond A19.

* Definitions:

FE – Federally Endangered

FT – Federally Threatened

SE – State Endangered (California)

ST – State Threatened (California)

CRPR – California Rare Plant Rank CRPR 1A – Plants considered extinct.

CRPR 1B – Plants rare, threatened, or endangered in California and elsewhere.

CRPR 2B – Plants rare, threatened, or endangered in California, but more common elsewhere.

CRPR 4 – Plants of limited distribution – watch list.

Sources:

CNDDB 2013.

Nomenclature from Baldwin et al. 2012.

Table 3.5-2 Special-Status Animal Species Known to Occur within a 5-Mile Radius of and Potential to Occur in the Phase 2 Ponds

NAME	STATUS	HABITAT/DESCRIPTION	POTENTIAL TO OCCUR
Threatened or Endangered Species			
Green sturgeon, Southern Distinct Population Segment (DPS) (*Acipenser medirostris*)	FT	Spends majority of life in near-shore oceanic waters, bays, and estuaries; spawns in freshwater rivers.	**Known to occur.** Spawns in Sacramento River, but not known to spawn in South Bay. Present in the South Bay; unlikely to be inside ponds.
Steelhead – California Central Coast DPS (*Oncorhynchus mykiss irideus*)	FT	Cool streams with suitable spawning habitat and conditions allowing migration and marine habitats.	**Known to occur.** Known to be present in several South Bay creeks (including Coyote, Stevens, San Francisquito, and Alameda Creeks and the Guadalupe River) and associated slough channels within the project area. Suitable spawning habitat is not present in the project area, but this species moves through the area to spawn upstream.
Longfin smelt (*Spirinchus thaleichthys)*	FC, ST	Spends the majority of life in San Francisco Bay, moving upstream to spawn in low-salinity waters in winter/spring.	**Known to occur**. Occurs year-round in San Francisco Bay and known to occur in the South Bay.
California tiger salamander (*Ambystoma californiense*)	FT, ST, CSSC	Vernal or temporary pools in annual grasslands, or open stages of woodlands.	**Low potential to occur.** A population is present on Refuge lands in the Fremont/Warm Springs area, though not in the immediate SBSP pond complexes.
Bald eagle (*Haliaeetus leucocephalus*)	SFP, BCC	Occurs mainly along seacoasts, rivers, and lakes; nests in tall trees or in cliffs. Feeds mostly on fish.	**Low potential to occur.** Rare visitor, primarily during winter, to the project area. May occasionally forage, but does not nest, in the project area.
American peregrine falcon (*Falco peregrinus anatum*)	SFP, BCC	Forages in many habitats; nests on cliffs and similar human-made structures.	**Known to occur.** Regular forager (on other birds) in the project area, primarily during migration and winter. In the Alviso pond complex, individuals have nested on electrical towers regularly since at least 2006, and two pairs nested on towers in 2007.
California Ridgway's rail (*Rallus obsoletus obsoletus*)	FE, SE, SFP	Salt and brackish marsh habitat usually dominated by pickleweed and cordgrass.	**Known to occur.** Resident in many tidal marshes and sloughs in the project area. Large numbers are known to occur in Greco Island, immediately adjacent to the Ravenswood pond complex.
California least tern (*Sterna antillarum browni*)	FE, SE, SFP	Nests along the coast on bare or sparsely vegetated flat substrates.	**Known to occur.** The South Bay is an important post-breeding staging area for California least terns. Current Bay Area nesting sites include Alameda Point and Hayward Regional Shoreline. Has attempted to nest in small numbers at Eden Landing Pond E8A, but not in recent years. Forages and roosts in a number of South Bay ponds, especially Ponds A1 and A2W.

Table 3.5-2 Special-Status Animal Species Known to Occur within a 5-Mile Radius of and Potential to Occur in the Phase 2 Ponds

NAME	STATUS	HABITAT/DESCRIPTION	POTENTIAL TO OCCUR
California brown pelican (*Pelecanus occidentalis californicus*)	SFP	Occurs in near-shore marine habitats and coastal bays. Nests on islands in Mexico and Southern California.	**Known to occur.** Regular in project area during nonbreeding season (summer and fall). Roosts on levees in the interiors of pond complexes; forages in ponds and Bay.
Salt marsh harvest mouse (*Reithrodontomys r. raviventris*)	FE, SE, SFP	Salt marsh habitat dominated by pickleweed.	**Known to occur.** Resident in pickleweed marshes within the project area.
California black rail (*Laterallus jamaicensis coturniculus*)	ST, SFP	Breeds in fresh, brackish, and tidal salt marsh.	**Potential to occur.** Non-breeding individuals winter in small numbers in tidal marsh within the project area. Have been observed in small numbers during breeding seasons around the Island Ponds and potentially breeding in small numbers.
Western snowy plover (*Charadrius alexandrinus nivosus*)	FT, CSSC, BCC	Nests on sandy beaches and salt panne habitats, including dry ponds.	**Known to occur.** Resident in the project area. Greatest numbers at Eden Landing and Ravenswood pond complexes. Additional birds occur in the project area during winter.
Bank swallow (*Riparia riparia*)	ST	Colonial nester on vertical banks or cliffs with fine-textured soils near water.	**Potential to occur.** Observed in the project area as rare transient. No suitable breeding habitat in the project area.
State Species of Concern and Fully Protected Species			
Fall-run chinook salmon Central Valley Evolutionarily Significant Unit (ESU) (*Oncorhynchus tshawytscha*)	CSSC	Cool rivers and large streams that reach the ocean and that have shallow, partly shaded pools, riffles, and runs.	**Known to occur.** Known to be present in several South Bay creeks (including Coyote Creek, Alameda Creek, and the Guadalupe River) and associated slough channels within the project area. Suitable spawning habitat is not present in the project area, but this species moves through the area to spawn upstream along some of these creeks.
Western pond turtle (*Actinemys marmorata*)	CSSC	Permanent or nearly permanent fresh or brackish water in a variety of habitats.	**Potential to occur.** Uncommon along the inshore side of Pond A3W but not within the pond itself. Occasionally found in freshwater and brackish creeks and sloughs elsewhere in the project area.
Common loon (*Gavia immer*)	CSSC (nesting)	Nests in freshwater marshes; winters in coastal marine habitats.	**Potential to occur.** Occasional winter visitor; does not breed in the project area.
American white pelican (*Pelecanus erythrorhnchos*)	CSSC (nesting)	Forages in freshwater lakes and rivers; nests on islands in lakes.	**Potential to occur.** Common non-breeder, foraging primarily on ponds in the project area. Regular visitor from late summer to spring. Not known to breed on-site.

Table 3.5-2 Special-Status Animal Species Known to Occur within a 5-Mile Radius of and Potential to Occur in the Phase 2 Ponds

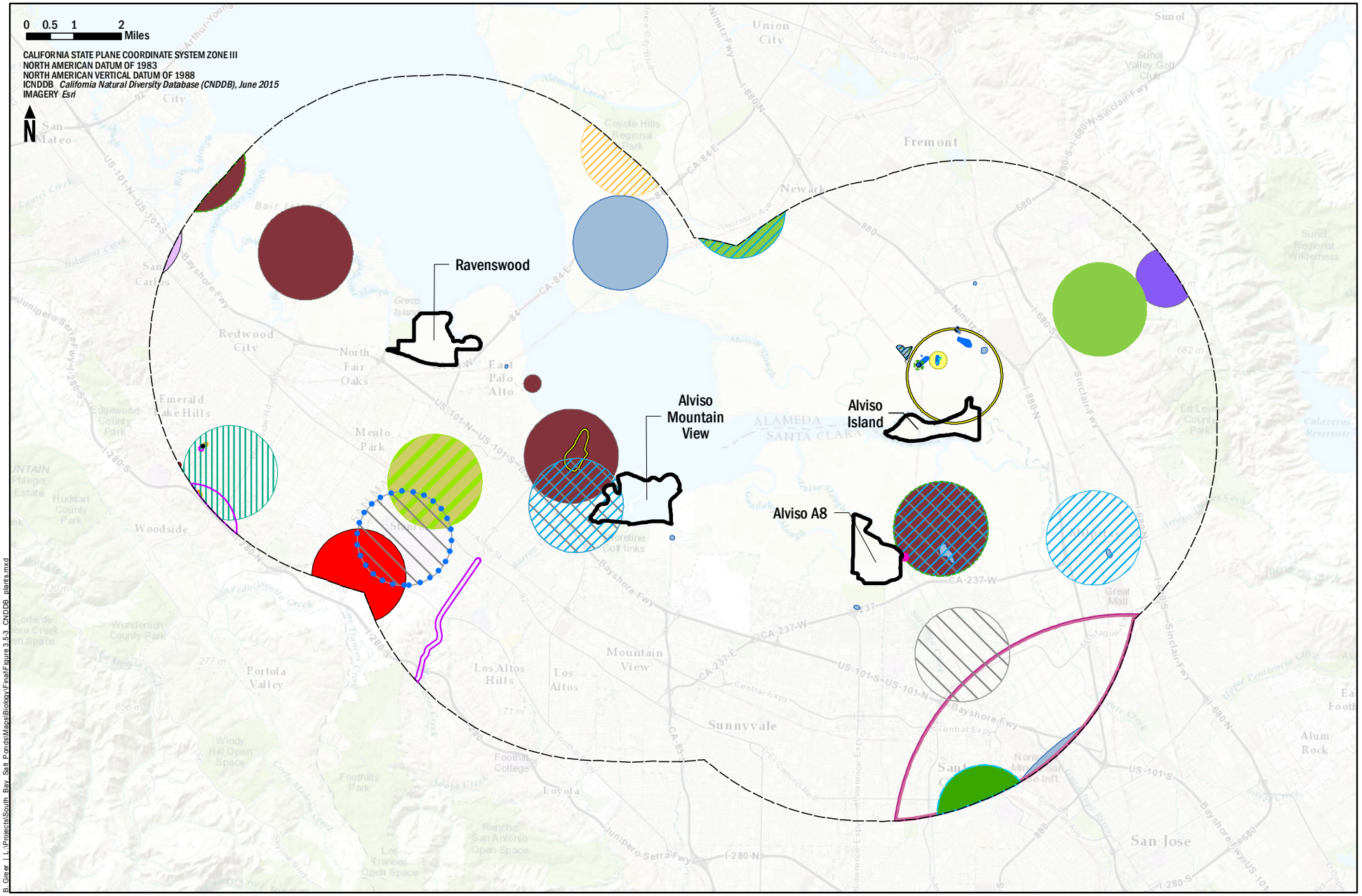
NAME	STATUS	HABITAT/DESCRIPTION	POTENTIAL TO OCCUR
Double-crested cormorant (*Phalacrocorax auritus*)	WL (nesting)	Colonial nester on coastal cliffs, offshore islands, electrical transmission towers, and along interior lake margins. Feeds on fish.	**Known to occur.** Breeds on electrical transmission towers and on levees within the project area and forages in ponds and other open water habitats in the project area.
White-faced ibis (*Plegadis chihi*)	WL (nesting)	Forages in freshwater marshes and, to a lesser extent, brackish areas.	**Potential to occur.** Occasional visitor in fall and winter. Has bred in heron rookery on Mallard Slough, but no current nesting known.
Barrow's goldeneye (*Bucephala islandica*)	CSSC (nesting)	Nests in freshwater marshes; winters in coastal marine habitats.	**Low potential to occur.** Uncommon winter visitor; does not breed in the project area.
Northern harrier (*Circus cyaneus*)	CSSC (nesting)	Nests and forages in marshes, grasslands, and ruderal habitats.	**Potential to occur.** Common year-round in the vicinity of the ponds. Breeds in small numbers in marsh in the project area; forages in a variety of habitats.
Sharp-shinned hawk (*Accipiter striatus*)	WL (nesting)	Nests in woodlands; forages in many habitats in winter and migration.	**Potential to occur.** Observed on-site as a migrant and winter resident. No breeding habitat in project area.
Cooper's hawk (*Accipiter cooperii*)	WL (nesting)	Nests in woodlands; forages in many habitats in winter and migration.	**Potential to occur.** Observed on-site as a migrant and winter resident. Breeds in limited numbers in upland habitats adjacent to the project area in the South Bay, but not within the immediate Phase 2 project area.
Osprey (*Pandion haliaetus*)	WL (nesting)	Nests in tall trees or cliffs on freshwater lakes and rivers and along seacoast; feeds on fish.	**Potential to occur.** Occasional forager, primarily during the nonbreeding season. Has nested in towers in the Fremont area, adjacent to the project area.
Golden eagle (*Aquila chrysaetos*)	SFP, WL, BCC	Breeds on cliffs or in large trees or electrical towers; forages in open areas.	**Potential to occur.** Occasional forager, primarily during the nonbreeding season. Known to nest in the Fremont/Milpitas area. No nesting records within the project area.
Merlin (*Falco columbarius*)	WL	Uses many habitats in winter and migration.	**Potential to occur.** Regular in low numbers during migration and winter. Does not nest in California.
Long-billed curlew (*Numenius americanus*)	WL, BCC (nesting)	Nests on prairies and short-grass fields; forages on mudflats, marshes, pastures, and agricultural fields.	**Potential to occur.** Forages on mudflats and marshes and roosts on levees, diked marshes, and ponds in the project area as a migrant and winter resident. Does not nest in the project area.
Black skimmer (*Rynchops niger*)	CSSC, BCC (nesting)	Nests on abandoned levees and islands in salt ponds and marshes.	**Known to occur.** A few pairs breed and forage in the project area on islands in ponds.
Short-eared owl (*Asio flammeus*)	CSSC (nesting)	Nests on ground in tall emergent vegetation or grasses; forages over a variety of open habitats.	**Potential to occur.** Uncommon in tidal marsh habitat in the area. Has bred in small numbers within the project area, although current breeding status unknown. Most numerous in project area in migration and winter.

Table 3.5-2 Special-Status Animal Species Known to Occur within a 5-Mile Radius of and Potential to Occur in the Phase 2 Ponds

NAME	STATUS	HABITAT/DESCRIPTION	POTENTIAL TO OCCUR
Western burrowing owl (*Athene cunicularia hypogea*)	CSSC, BCC	Flat grasslands and ruderal habitats.	**Known to occur.** Nests at several upland sites immediately adjacent to the Phase 2 project area pond complexes (notably in the closed landfills that now form City of Mountain View's Shoreline Park [Alviso-Mountain View pond cluster]) and potentially at City of Menlo Park's Bedwell Bayfront Park [Ravenswood pond cluster], as well as the Warm Spring vernal pools north of project area; may forage within marshes and ponds to some extent. Uncommon along pond levees in winter.
Vaux's swift (*Chaetura vauxi*)	CSSC (nesting)	Nests in snags in coastal coniferous forests or, occasionally, in chimneys; forages aerially.	**Potential to occur.** Forages over project area during spring. No nesting habitat within area.
Loggerhead shrike (*Lanius ludovicianus*)	CSSC (nesting)	Nests in dense shrubs and trees; forages in grasslands, marshes, and ruderal habitats.	**Potential to occur.** Resident in low numbers within the project area.
California horned lark (*Eremophila alpestris actia*)	WL	Short-grass prairie, annual grasslands, coastal plains, and open fields.	**Potential to occur.** Common in the project area during nonbreeding season. May nest in small numbers on salt pond levees, salt flats, and ruderal habitats within project area.
California yellow warbler (*Dendroica petechia brewsteri*)	CSSC, BCC (nesting)	Breeds in riparian woodlands, particularly those dominated by willows and cottonwoods.	**Potential to occur.** Observed on-site as a migrant. No nesting habitat within the immediate SBSP pond complexes, but nests in riparian habitat upstream from the Bay, including areas within the South Bay.
Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)	CSSC, BCC	Breeds primarily in fresh and brackish marshes in tall grass, tules, willows; low-density resident in salt marshes, which are used more in winter.	**Potential to occur.** Common resident, breeding in freshwater and brackish marshes and, to a lesser extent, in salt marshes; forages in all three marsh types during the nonbreeding season.
Alameda song sparrow (*Melospiza melodia pusillula*)	CSSC, BCC	Breeds in salt marsh, primarily in marsh gumplant and cordgrass along channels.	**Potential to occur.** Common resident, breeding and foraging in tidal salt marsh.
Tricolored blackbird (*Agelaius tricolor*)	Provisional Listing, CDFW (nesting)	Breeds near freshwater in dense emergent vegetation.	**Potential to occur.** May breed in extensive freshwater marshes around the periphery of the project area, such as at Coyote Hills. Occurs elsewhere in the project area as a nonbreeding forager.
Salt marsh wandering shrew (*Sorex vagrans halicoetes*)	CSSC	Occurs in middle and high marsh zones with abundant driftwood and pickleweed.	**Potential to occur.** May occur in salt marshes throughout the project area, though numbers have declined and current status is unknown.

Table 3.5-2 Special-Status Animal Species Known to Occur within a 5-Mile Radius of and Potential to Occur in the Phase 2 Ponds

NAME	STATUS	HABITAT/DESCRIPTION	POTENTIAL TO OCCUR
White-tailed kite (*Elanus caeruleus*)	SFP (nesting)	Nests in tall shrubs and trees; forages in grasslands, marshes, and ruderal habitats.	**Potential to occur.** Common resident; breeds at inland margins of the study site, where suitable nesting habitat occurs.
Definitions: FE – Federally Endangered FT – Federally Threatened FC – Candidate for Federal Listing BCC – USFWS Bird of Conservation Concern SE – State Endangered		ST – State Threatened SFP – Fully Protected (California) CSSC – California Species of Special Concern WL – CDFW Watch List Source: CNDDB 2014.	



LEGEND

- Phase 2 Project Boundaries
- 5-mile buffer around Phase 2 Project Boundaries

CNDDB Sensitive Species Plants

- Alkali milk-vetch
- Arcuate bush-mallow
- Brittlescale
- California seablite
- Chaparral ragwort
- Congdon's tarplant
- Contra Costa goldfields
- Crystal Springs fountain thistle
- Davidson's bush-mallow
- Fragrant fritillary
- Franciscan onion
- Hairless popcornflower
- Hall's bush-mallow
- Hoover's button-celery
- Lesser saltscale
- Lost thistle
- Marin western flax
- Most beautiful jewelflower
- Point Reyes salty bird's-beak
- Prostrate vernal pool navarretia
- Robust spineflower
- Saline clover
- San Francisco collinsia
- San Joaquin spearscale
- San Mateo thorn-mint
- Slender-leaved pondweed
- Western leatherwood

URS

South Bay Salt Pond Restoration Project

Figure 3.5-3

CNDDB Special-Status Plant Species

3.5.2 Regulatory Setting

This section discusses the regulations that are relevant to the biological resources of the Phase 2 project area.

Federal Regulations

Waters of the United States Regulations Overview

Areas meeting the regulatory definition of "Waters of the U.S." (jurisdictional waters) are subject to the jurisdiction of the USACE under provisions of Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. These waters may include all waters used, or potentially used, for interstate commerce, including all waters subject to the ebb and flow of the tide, all interstate waters, all other waters (intrastate lakes, rivers, streams, mudflats, sandflats, playa lakes, natural ponds, etc.), all impoundments of waters otherwise defined as Waters of the U.S., tributaries of waters otherwise defined as Waters of the U.S., the territorial seas, and wetlands (termed Special Aquatic Sites) adjacent to Waters of the U.S. (33 Code of Federal Regulations [CFR] Section 328.3[2]). Wetlands on non-agricultural lands are identified using the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987).

Federal Endangered Species Act

FESA protects listed fish and wildlife species from harm or "take," which is broadly defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Take can also include habitat modification or degradation that directly results in death or injury to a listed wildlife species. An activity can be defined as take even if it is unintentional or accidental. Listed plant species are provided less protection than listed wildlife species. Listed plant species are legally protected from take under FESA if they occur on federal lands or if the project requires a federal action, such as a Section 404 fill permit.

USFWS has jurisdiction over federally listed threatened and endangered wildlife species under the FESA, and the National Marine Fisheries Service (NOAA Fisheries) has jurisdiction over federally listed, threatened, and endangered marine and anadromous fish. These agencies also maintain lists of species proposed for listing. Species on these lists are not legally protected under the FESA, but may become listed in the near future, and these agencies often include them in their review of a project.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) governs all fishery management activities that occur in federal waters within the U.S. 200-nautical-mile limit. The act establishes eight Regional Fishery Management Councils responsible for the preparation of fishery management plans to achieve the optimum yield from U.S. fisheries in their regions. These councils, with assistance from NOAA Fisheries, establish Essential Fish Habitat (EFH) in fishery management plans for all managed species. Federal agencies that fund, permit, or implement activities that may adversely affect

[2] 33 CFR 328.3, "Definition of Waters of the United States." 51 Federal Register 41250 (13 November 1986), as amended at 58 Federal Register 45036 (25 August 1993).

EFH are required to consult with NOAA Fisheries regarding potential adverse effects of their actions on EFH, and respond in writing to the recommendations of the NOAA Fisheries.

Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (16 United States Code [U.S.C.] § 703) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

Marine Mammal Protection Act

The 1972 Marine Mammal Protection Act (16 U.S.C. §§ 1361–1407) was enacted to conserve marine mammals, including cetaceans, pinnipeds, and other marine mammal species. With certain exceptions, the act prohibits the taking and importation of marine mammals and products taken from them. Relevant to the Phase 2 project, this act prohibits harassment of marine mammals, including the harbor seal.

Coastal Zone Management Act

The 1972 Coastal Zone Management Act (16 U.S.C. §§ 1451–1464, Chapter 33) was passed to encourage coastal states to develop and implement coastal zone management plans. This act was established as a United States national policy to preserve, protect, develop, and where possible, restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations. See “San Francisco Bay Conservation and Development Commission” below for a discussion of how the act is implemented within San Francisco Bay.

State Regulations/Agencies

California Department of Fish and Wildlife Jurisdiction

Habitats potentially under the regulatory jurisdiction of CDFW are described under Division 2, Chapter 6, Sections 1600–1616 of the Fish and Game Code of California. Under Sections 1600–1607 of the Fish and Game Code of California, CDFW does not claim jurisdiction over saltwater habitats, including diked, muted, and tidal salt marsh similar to that found within the Phase 2 project area (CDFG 1994). Other sections of the Fish and Game Code of California protect various groups of wildlife species, including fish, crustaceans, mollusks, birds, mammals, reptiles, and amphibians.

California Endangered Species Act and Other Special-Status Species

The California Endangered Species Act (CESA) prohibits the take of any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with the CESA, CDFW has jurisdiction over state-listed species (California Fish and Game Code § 2070). CDFW also maintains lists of “species of special concern” that are defined as species that appear to be vulnerable to extinction because of declining populations, limited ranges, and/or continuing threats. CDFW also regulates “Fully Protected Animals”, a classification which was the State's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Most (but not all) Fully Protected Animals have also been listed as threatened or endangered species under the more recent state and federal endangered species laws and regulations.

San Francisco Bay Conservation and Development Commission

The San Francisco Bay Conservation and Development Commission (BCDC) is a California state agency. BCDC jurisdiction in the project area extends over the Bay, up to mean high tide and to 5 feet above mean sea level in marshes, and over a 100-foot shoreline band inland from the line of mean high tide or the line 5 feet above mean sea level adjacent to marshes. BCDC also has certain waterway jurisdiction in the project area, along Coyote Creek (and branches) in Alameda and Santa Clara Counties to the easternmost point of Newby Island. BCDC does not have 100-foot shoreline band jurisdiction adjacent to its certain waterway jurisdiction. BCDC also has salt pond jurisdiction, consisting of all areas that have been diked off from the Bay and have been used during the 3 years from August 1966 to August 1969 for the solar evaporation of Bay water in the course of salt production. The SBSP Restoration Project would require a BCDC permit or consistency determination for dredging and filling, shoreline improvements, or substantial changes in use. BCDC is responsible for enforcing the McAteer-Petris Act, which requires that "maximum feasible public access, consistent with a project be included as part of each project to be approved by the BCDC." BCDC is also responsible for determining consistency with the federal Coastal Zone Management Act.

The federal Coastal Zone Management Act and the California Coastal Act require the BCDC to review federal projects, projects that require federal approval or projects that are supported by federal funds. The BCDC Bay Plan (Bay Plan) promotes Bay conservation along with shoreline development and public access. BCDC has adopted policies that specifically address public access and wildlife compatibility, where in some "cases public access would be clearly inconsistent with the project because of public safety considerations or significant use conflicts, including unavoidable, significant adverse effects on Bay natural resources."

BCDC jurisdiction in the project area extends over the Bay, to 5 feet above mean sea level in marshes and over a 100-foot shoreline band inland from the line of mean high tide. The SBSP Restoration Project would require a BCDC permit for dredging and filling and shoreline improvements.

San Francisco Bay Regional Water Quality Control Board

The San Francisco Bay Regional Water Quality Control Board (RWQCB) has primary authority for implementing provisions of the federal Clean Water Act and California's Porter-Cologne Water Quality Control Act. These statutes establish the process for developing and implementing planning, permitting, and enforcement authority for waste discharges to land and water. The *San Francisco Bay Basin (Region 2), Water Quality Control Plan (Basin Plan)* establishes beneficial uses for surface and groundwater resources and sets regulatory water quality objectives that are designed to protect those beneficial uses (RWQCB 2011). Under the current Basin Plan, designated beneficial uses of the San Francisco Bay Area's surface waters include municipal and domestic supply; agricultural supply; industrial service supply; groundwater recharge; contact and noncontact recreation; warm freshwater fish habitat; cold freshwater fish habitat; wildlife habitat; preservation of rare and endangered species; migration of aquatic organisms; and spawning, reproduction, and/or early development of fish.

The Basin Plan provides a program of actions designed to preserve and enhance water quality and to protect beneficial uses. It meets the requirements of the United States Environmental Protection Agency (USEPA) and establishes conditions related to discharges that must be met at all times.

The implementation portion of the Basin Plan includes descriptions of specific actions to be taken by local public entities and industries to comply with the Basin Plan's policies and objectives. These actions include measures for urban runoff management and wetland protection.

The SBSP Restoration Project would be designed to comply with RWQCB permitting requirements. USFWS and CDFW would prepare and conform to a Storm Water Pollution Prevention Plan (SWPPP), as required under the State Water Resources Control Board–implemented National Pollutant Discharge Elimination System (NPDES) permit program for construction activities and conform to an SWPPP, as required by the State Water Resources Control Board. The SWPPP would identify specific measures for reducing construction impacts such as erosion and sediment control measures.

The SBSP Restoration Project would involve construction activities that could adversely affect water quality, and therefore the Action Alternatives for each pond cluster would require acquisition of a Clean Water Act Section 401 water quality certification from the RWQCB.

The San Francisco Bay RWQCB also has established sediment screening criteria and testing requirements for the beneficial reuse of dredged material (e.g., wetlands creation, upland disposal). All sediment used for creation of upland habitat would be screened to meet wetland cover standards set by the RWQCB.

California Native Plant Society / California Rare Plant Rank

CNPS, a statewide, non-governmental conservation organization, working with CDFW and other organizations, has developed a ranking of plant species of concern in California. Vascular plants included on the California Rare Plant Rank (CRPR) are defined as follows:

CRPR 1A: Plants considered extinct.

CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere.

CRPR 2: Plants rare, threatened, or endangered in California but more common elsewhere.

CRPR 3: Plants about which more information is needed; these are on the CNPS "review list."

CRPR 4: Plants of limited distribution; these are on the CNPS "watch list."

Although the CNPS is not a regulatory agency, and plants on the ranking have no regulatory protection under the federal or state Endangered Species Acts, plants appearing as CRPR 1B or CRPR 2 are, in general, considered to meet the California Environmental Quality Act (CEQA) Section 15380 criteria and adverse effects to these species are considered significant.

Regional/Local Regulations and Related Programs

San Francisco Estuary Invasive Spartina Project

The Invasive Spartina Project is in the process of implementing a coordinated, region-wide eradication program, comprising a number of on-the-ground treatment techniques to stave off a San Francisco Bay invasion of non-native cordgrass (*Spartina alterniflora* and its hybrids as well as *S. densiflora, S. patens*, and *S. anglica*) (CSCC and USFWS 2003). The Invasive Spartina Project is focused on the nearly 40,000 acres of tidal marsh and 29,000 acres of tidal flats that constitute the shoreline areas of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma, and Sacramento Counties. The purpose of the Invasive Spartina Project is to arrest and reverse the spread of invasive non-

native cordgrass species in the estuary to preserve and restore the ecological integrity of the estuary's intertidal habitats and estuarine ecosystem.

Association of Bay Area Governments San Francisco Bay Trail Plan

The plan for the Bay Trail proposes development of a regional hiking and bicycling trail around the perimeter of San Francisco and San Pablo Bays. The Bay Trail Plan was prepared by the Association of Bay Area Governments (ABAG) pursuant to Senate Bill 100 (1989), which mandated that the Bay Trail provide connections to existing park and recreation facilities; create links to existing and proposed transportation facilities; and be planned in such a way as to avoid adverse effects on environmentally sensitive areas. The Bay Trail Plan proposes an alignment for what is planned to become a 500-mile recreational "ring around the Bay."

Santa Clara Valley Water District

The Santa Clara Valley Water District (SCVWD) manages drinking water and flood protection for Santa Clara County. To help protect the valley's creeks and rivers, SCVWD recently adopted a new ordinance (replacing Ordinance 82-3) that requires a project review and permitting process to minimize impacts to watercourses resulting from development or community activities. Anyone who plans a project within 50 feet of a creek or waterway or within 50 feet of SCVWD property or easement must first obtain a permit from SCVWD's Community Projects Review Unit. To protect groundwater resources, SCVWD Ordinance 90-1 requires permitting for any person digging, boring, drilling, deepening, refurbishing, or destroying a water well, cathodic protection well, observation well, monitoring well, exploratory boring (45 feet or deeper), or other deep excavation that intersects the groundwater aquifers of Santa Clara County.

Alameda County Flood Control and Water Conservation District

The Alameda County Public Works Agency is responsible for maintaining the infrastructure of Alameda County—from its roads and bridges to flood channels and natural creeks. Within the Public Works Agency, the Alameda County Flood Control and Water Conservation District (ACFCWCD) works specifically to protect county citizens from flooding while preserving the natural environment. The Grading and Permits Division enforces a number of ordinances that may require a permit, such as the Watercourse Protection and Flood Plain Management ordinances. The SBSP Restoration Project would be designed to comply with local ordinances, and the project is working collaboratively with Alameda County and the ACFCWCD to determine if any permits will be required.

Permits Required

The following permits/approvals may be required from the agencies indicated:

- Section 404 Permit (USACE);
- Section 401 Water Quality Certification (RWQCB);
- BCDC Permit (BCDC);
- Biological Opinion (BO) (USFWS);
- BO, Essential Fish Habitat consultation and Marine Mammal Act Permit (NOAA Fisheries);

- Incidental Take Permit or Consistency Determination (CDFW); and
- Access and construction easements and/or permits from SCVWD, City of Menlo Park, City of Redwood City, City of Mountain View, and City of Palo Alto.

3.5.3 Environmental Impacts and Mitigation Measures

Overview

This section includes an analysis of potential short-term (construction) and long-term (operation) impacts of the SBSP Restoration Project, Phase 2. Impact evaluations for the Action Alternatives are assessed based on the existing conditions described in Section 3.5.2, not the conditions that would occur under the No Action Alternative.[3] This approach follows the requirements of the National Environmental Policy Act (NEPA), CEQA, and what was done for the 2007 EIS/R. In this case, the No Action Alternative represents no change from current management direction or level of management intensity provided in the Adaptive Management Plan (AMP) or in more general Refuge management plans such as the Comprehensive Conservation Plan (CCP). Mitigation measures are recommended, as necessary, to reduce significant impacts.

Significance Criteria

For the purposes of this Final EIS/R, a significant biological impact would occur if the project would result in any of the following:

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

[3] "No Action Alternative" is the NEPA term. It corresponds to the CEQA term "No Project Alternative." This Final EIS/R generally uses No Action throughout.

These bullet points are general descriptors of what types of changes would constitute a significant impact. Below, the first four points in this general list are developed into specific impacts to particular habitats, taxa, guilds, or species that were identified and chosen for individual analysis as part of the 2007 EIS/R.

The last two points are not directly considered as itemized impacts. However, this Final EIS/R considers those criteria implicitly as part of the overall impact assessment. Specifically, with regard to conflicting with local policies or ordinances, the SBSP Restoration Project has committed to comply with applicable local policies and regulations. Phase 2 project areas subject to those include, for example, Charleston Slough (City of Mountain View), levees surrounding ponds that could be altered (in the cities of Palo Alto and Mountain View and in the Santa Clara Valley Water District), and the portions of city parks that would be used for staging or material delivery (Bedwell Bayfront Park in Menlo Park and Shoreline Park in Mountain View). In these areas, the relevant jurisdictional agencies are project partners that have made their policies known and with whose input and participation the alternatives have been developed. These local agencies will also have permitting authority over those aspects of the project that would ensure that their policies and ordinances would be followed. There is no need for a numbered impact specifically assessing these regulations. Further, the Phase 2 project alternatives do not conflict with provisions of an adopted HCP; NCCP; or other relevant local, regional, or state regulations. The Santa Clara Valley Habitat Plan (a combined HCP and NCCP), for example, does not extend to the salt ponds or the streams adjacent to them.

The CEQA Guidelines indicate that an action would be significant if it had a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in a local or regional plan, policy, or regulation or by the USFWS or CDFW (AEP 2014). For species that use a single habitat type (e.g., only deep salt-pond habitat or cordgrass-dominated tidal salt marsh), determining whether Phase 2 would result in a substantial reduction in habitat is fairly straightforward. However, many species use a variety of habitats, including salt ponds, bay waters, intertidal areas, water treatment plants, and other habitats. Also, Phase 2 activities would not just result in a loss or gain of general habitat types such as “former salt pond,” but also a change in the conditions of those habitat types through species-targeted management (in the case of managed ponds) or carefully planned breaches and other measures to restore more extensive and more complex tidal marsh than currently exists in the South Bay. Although the extent of what is currently managed pond habitat would be reduced as a result of conversion to tidal habitats, the remaining managed ponds would be enhanced as part of various project phases and then actively managed for wildlife. As a result, making significance determinations simply on the basis of acreages of habitat loss or gain is not generally straightforward. Instead, in addition to assessing potential effects on individuals, this analysis considers habitat type, loss, or conversion in combination with species life histories, habitat needs, and overall population size and abundance in the South Bay to determine significance of impacts.

The 2007 EIS/R modeled habitat evolution in the South Bay under the three programmatic alternatives, and Point Reyes Bird Observatory (now called Point Blue) (Stralberg et al. 2006) performed modeling to predict bird population responses to changing habitat conditions under the three programmatic alternatives. The 2007 EIS/R predicted the acreage of various habitats important to wildlife species in the South Bay, including shallow and deep subtidal, intertidal, and low and high tidal marsh as well as the extent and size of tidal channels and marsh pannes within restored tidal marshes. The extent of these habitats was predicted at Year 0 (2008) and Year 50 (2058) for each of the alternatives. Using data gathered for the 2007 EIS/R tidal habitat predictions, predictions of the conditions within managed ponds provided by H.T. Harvey & Associates, and bird-habitat relationship data from 6 years (1999–2004) of

Point Blue's avian surveys in tidal marsh and salt pond habitats, Stralberg et al. (2006) developed models to predict numbers of key bird species in the SBSP Restoration Project area, and in the South Bay as a whole at Year 50 under each of the three alternatives.

The baseline for determining the significance of potential impacts under NEPA and CEQA for the purposes of this Final EIS/R is the existing condition of the project area. However, South Bay populations of many plants and animals may vary considerably from one year to the next, and thus a longer-term average (e.g., in numbers of individuals of a particular species) is used where appropriate to establish baseline conditions and determine whether deviations from that condition would result in a significant impact. Triggers for action that are addressed in the AMP are designed to ensure, to the greatest extent possible, that the project not have significant adverse impacts and will be effective in achieving the project objectives. The discussion of impacts herein focuses on whether impacts would reach a level of significance under NEPA and CEQA.

Establishing thresholds of significance, determining the significance of impacts, and establishing adaptive management triggers for biological resources for the SBSP Restoration Project are complicated by several factors, as described in the 2007 EIR/S. These factors are summarized below.

- The lack of a clear, quantifiable baseline (i.e., status/abundance originally in 2006 or during preparation of this document between 2013 and 2015) for many potential species impacts makes it difficult to identify a quantitative threshold of significance. For example, interannual variability in shorebird numbers requires many years of bird surveys to establish a baseline quantitatively, yet the available data on South Bay birds may not accurately describe existing conditions for NEPA/CEQA baseline purposes.

- The most intensive, standardized surveys were conducted either before ISP implementation (Point Blue) or while conditions in the ponds were changing due to Cargill's preparation for the sale of the ponds and due to ISP implementation (USGS).

- Most such surveys covered the ponds and did not include the associated bay habitats such as mudflats and subtidal areas, which may be affected by the project.

- The inherent variability in South Bay plant and wildlife communities makes it difficult to determine whether a quantitative threshold of significance has been exceeded. For example, if the threshold of significance for project impacts to small migratory shorebirds was set at 20 percent below baseline conditions, the interannual variability in shorebird numbers in the South Bay would result in numbers that, in some years, would drop below the threshold, even if the project was not involved.

- A number of factors external to the SBSP Restoration Project will affect the biological resources using the South Bay. For example, global climate change and sea-level rise may have much greater effects on numbers of migratory shorebirds present in the South Bay than would changes resulting directly from the project. As restoration proceeds and key biological parameters (e.g., shorebird numbers) are monitored, it will be challenging to distinguish trends (e.g., declines in abundance of small migratory shorebirds) that actually result from project activities from trends resulting from external factors, yet such a distinction will be important to avoid significant project impacts.

- Some biological resources are expected to decline even in the absence of the project, which may exaggerate impacts actually attributable to the SBSP Restoration Project. For example, the loss of outboard mudflats due to existing processes of sediment dynamics in the Bay and sea-level rise is expected to occur regardless of the alternative selected; this loss would cause a number of species to be affected (negatively and positively) even under the No Action Alternative. Separating the changes that are not related to the SBSP Restoration Project from those changes caused by the various alternatives is a considerable challenge.

- The SBSP Restoration Project sets forth restoration targets and thresholds of significance that in some instances are related to each other but are not identical. For example, the restoration target for small migratory shorebirds is "Maintain small shorebird numbers at pre-ISP levels," yet these population levels differ from the NEPA/CEQA baseline used in the 2007 EIS/R (which is a percentage change in the small shorebird population relative to fall 2006 numbers). These similar but not identical targets lead to a complication wherein maintaining populations at 90 percent of pre-ISP levels could occur, which would be a failure to achieve a restoration target but not severe enough to trigger a significance determination. Although these differences do not necessarily affect the determination of the NEPA/CEQA threshold of significance for small migratory shorebirds, they complicate the link between the adaptive management triggers and the threshold of significance in the monitoring and adaptive management process that would be used to avoid significant impacts.

In the summaries of thresholds of significance for specific biological resources impacts discussed below, the term "substantial" is frequently used to indicate the level of impact (e.g., a decline in numbers of a particular species or group) that would be considered significant under NEPA and CEQA. Neither NEPA nor CEQA guidelines provide a clear definition of the term "substantial" as it applies to the magnitude of an impact (e.g., to a species' populations, habitat, or range) that would be considered significant. Therefore, in determining the threshold of significance for a particular species or group of species for the SBSP Restoration Project, both the magnitude of impacts to South Bay populations and the contribution of South Bay populations to larger-scale (i.e., regional, flyway-level, continental, and range-wide) populations were considered. As a result, thresholds of significance may vary among different taxa (e.g., percent declines in numbers that would be considered significant may vary among some impacts discussed below). Except where a specific percent decline is noted in a particular significance threshold, a decline of 10 to 20 percent in South Bay numbers or 5 to 10 percent in flyway-level numbers (for birds) would generally be considered "substantial."

Thresholds of significance for potential project impacts to specific biological resources are discussed below. If at any point during the 50-year SBSP Restoration Project, a numerical threshold is exceeded or a qualitative threshold is reached for a given impact and that change has resulted from the SBSP Restoration Project, a significant impact would have occurred. However, monitoring and Adaptive Management are integral components of the SBSP Restoration Project and would be critical in preventing adverse effects from reaching a level of significance. The Adaptive Management triggers would be set to warn of potential impacts and allow Adaptive Management to be undertaken to reverse or forestall such impacts before such a point will have been reached. The rationale for each impact includes a description of how the threshold of significance was selected, indicates how the threshold of significance is related to the restoration target and the triggers, and illustrates how monitoring and Adaptive Management would be used to avoid a significant impact.

Although both the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA and the CEQA Guidelines were considered during the impact analysis, impacts identified in this Final EIS/R are characterized using CEQA terminology. Please refer to Section 3.1.1, Chapter Organization, for a description of the terminology used to explain the severity of the impacts.

In Table 3.5-3, the threshold of significance is briefly described for each potential biological resources impact. Except where otherwise noted, the impacts and the thresholds of significance are the same as those presented in the 2007 EIS/R. Next, potential impacts and related adaptive management information are discussed, first in a summary form for the Programmatic SBSP Restoration Project ("Program-Level Evaluation") and then for the Phase 2 projects ("Project-Level Evaluation").

Program-Level Evaluation Summary

In the 2007 EIS/R, the analysis determined that Programmatic Alternative C was beneficial or would have less-than-significant impacts to almost all species and habitats when evaluated at the full program scale. The only potentially significant adverse biological impacts identified for Programmatic Alternative C was to ruddy ducks (*Oxyura jamaicensis*). Construction-related impacts (that would generally be temporary and localized) would also occur under Programmatic Alternatives B and C; no construction-related impacts would occur under Programmatic Alternative A.

Programmatic Alternative C was chosen, and implementation of Phase 1 actions began. The actions proposed under completed Phase 1 actions in combination with Phase 2 actions will continue to move the overall mix of habitats toward 50 percent restored tidal marsh, after which future phases can continue progressing toward the mix of habitats described for Programmatic Alternative C.

Project-Level Evaluation

Project-level evaluation is described below for each of the 25 identified potential biological resource impacts. Of these 25 impacts, 23 are the same ones used in the 2007 EIS/R. However, two new impacts were added for consideration here. Impact 3.5-24 covers the potential impacts to jurisdictional wetlands or waters. This impact was added to more specifically call out and assess the changes to jurisdictional wetlands that would occur as part of connecting former salt ponds with tidal flows. Many of the ponds are surrounded by fringing marsh that would necessarily have channels excavated through them, and the Project Management Team (PMT) wanted to explicitly account for and analyze those channels. Impact 3.5-25 covers potential construction-related loss of, or disturbance to, nesting raptors (including burrowing owls). This impact was added at the request of project partners that own and manage public lands or infrastructure adjacent to the SBSP Restoration Project that are known to be raptor habitat. It was appropriate to make an explicit assessment of the construction-related impacts to those birds.

Phase 2 Impact 3.5-1: Potential reduction in numbers of small shorebirds using San Francisco Bay, resulting in substantial declines in flyway-level populations.

Several species of small shorebirds (examples of common species include semipalmated plover, western sandpiper, least sandpiper, dunlin, short-billed dowitcher, and long-billed dowitcher) occur in the San Francisco Bay Area, primarily during migration and in winter (roughly July through April). San Francisco Bay is one of the most important stopover and wintering areas on the west coast for these species. Within San Francisco Bay, the majority of these birds are typically found in the South Bay.

Table 3.5-3 Biological Impact Significance Thresholds

IMPACT	THRESHOLD OF SIGNIFICANCE
3.5-1: Potential reduction in numbers of small shorebirds using San Francisco Bay, resulting in substantial declines in flyway-level populations.	The SBSP Restoration Project would have a significant impact on small shorebirds if it resulted in a substantial reduction in numbers (i.e., a decline of 20 percent below baseline levels as a result of the SBSP Restoration Project) of the most abundant species (i.e., semipalmated plover (*Charadrius semipalmatus*), western sandpiper (*Calidris mauri*), least sandpiper, dunlin (*Calidris alpina*), short-billed dowitcher [*Limnodromus griseus*], and long-billed dowitcher [*Limnodromus scolopaceus*]) in the South Bay, resulting in a substantial decline in flyway-level populations.
3.5-2: Loss of intertidal mudflats and reduction of habitat for mudflat-associated wildlife species.	The threshold of significance for this impact is defined as measurable, long-term loss of intertidal mudflat area not compensated for by equivalent increases in productivity as a result of SBSP Restoration Project activities.
3.5-3: Potential habitat conversion impacts to western snowy plovers.	The SBSP Restoration Project would have a significant impact on western snowy plovers if it resulted in a decline in the adult breeding-season population within San Francisco Bay (relative to the NEPA/CEQA baseline).
3.5-4: Potential reduction in the population size of breeding, pond-associated waterbirds (avocets, stilts, and terns) using the South Bay due to reduction in habitat, concentration effects, displacement by nesting California gulls, and other project-related effects.	The SBSP Restoration Project would have a significant impact if it resulted in a decline of 10 percent or greater (relative to the NEPA/CEQA baseline) in the number of breeding black-necked stilts, American avocets, Caspian terns, or Forster's terns breeding in the San Francisco Bay Area.
3.5-5: Potential reduction in the population size of non-breeding, salt-pond-associated birds (e.g., phalaropes, eared grebes, and Bonaparte's gulls as a result of habitat loss.	The SBSP Restoration Project would have a significant impact on salt-pond-specialist waterbirds (i.e., eared grebes, Bonaparte's gulls [*Chroicocephalus philadelphia*]), Wilson's phalaropes, and red-necked phalaropes) if it resulted in the loss of a substantial number of individuals (i.e., a decline of 50 percent below baseline levels as a result of the SBSP Restoration Project) of these species from the South Bay, resulting in a substantial decline in flyway-level populations, due to a reduction in the extent of higher-salinity ponds and the conversion of managed ponds to tidal habitats.
3.5-6: Potential reduction in foraging habitat for diving ducks, resulting in a substantial decline in flyway-level populations.	The SBSP Restoration Project would have a significant impact on diving ducks foraging in the South Bay if it resulted in a substantial reduction in numbers (i.e., a decline of 20 percent below baseline levels as a result of the SBSP Restoration Project) of diving ducks using the South Bay, resulting in a substantial decline in flyway-level populations, due to the conversion of managed ponds to tidal habitats.
3.5-7: Potential reduction in foraging habitat for ruddy ducks, resulting in a substantial decline in flyway-level populations.	The SBSP Restoration Project would have a significant impact on ruddy ducks foraging in the South Bay if it resulted in a substantial reduction in numbers of individuals (i.e., a real decline of 15 percent below baseline levels as a result of the SBSP Restoration Project) using the South Bay, resulting in a substantial decline in flyway-level populations, due to the conversion of managed ponds to tidal habitats.
3.5-8: Potential habitat conversion impacts on California least terns.	The SBSP Restoration Project would have a significant impact on California least terns if it resulted in a decrease in foraging habitat or prey availability for post-breeding dispersants in the South Bay, leading to a decline in the Bay Area breeding population relative to baseline levels.

Table 3.5-3 Biological Impact Significance Thresholds

IMPACT	THRESHOLD OF SIGNIFICANCE
3.5-9: Potential loss of pickleweed-dominated tidal salt marsh habitat for the salt marsh harvest mouse and salt marsh wandering shrew and further isolation of these species' populations due to breaching activities and scour.	The threshold of significance for this impact is defined as measurable, sustained loss of pickleweed-dominated tidal salt marsh resulting in substantial isolation of salt marsh harvest mouse and salt marsh wandering shrew populations due to the SBSP Restoration Project, without development of a commensurate amount of new contiguous marsh once the appropriate elevations are achieved within the restored ponds.
3.5-10: Potential construction-related loss of or disturbance to special-status, marsh-associated wildlife.	The SBSP Restoration Project would have a significant impact on marsh-associated species if it resulted in the mortality of, or the loss of active nests of, substantial numbers of state- or federally listed marsh-associated species or abandonment of a primary harbor seal haul-out or pupping area as a result of the SBSP Restoration Project.
3.5-11: Potential construction-related loss of or disturbance to nesting pond-associated birds.	Loss of any individuals or nests of the federally listed western snowy plover would be significant given the low west coast populations of this species. The loss of a substantial number of active nests and/or chicks of other pond-associated species, such as Forster's and Caspian terns, American avocets, and black-necked stilts, due to breaching of ponds and other construction-related activities during the nesting season would also be a significant impact.
3.5-12: Potential disturbance to or loss of sensitive wildlife species due to ongoing monitoring, maintenance, and management activities.	The SBSP Restoration Project would have a significant impact on biological resources as a result of ongoing monitoring, management, and maintenance activities if these activities resulted, directly or indirectly (e.g., by facilitating predation), in: ▪ The mortality of, or loss of active nests of, any western snowy plovers or California least terns; ▪ The mortality of, or the loss of active nests of, substantial numbers of state- or federally listed, marsh-associated species; ▪ Abandonment of a primary harbor seal haul-out or pupping area; ▪ The loss of substantial numbers of nests of non-listed pond-associated birds such as terns, avocets, and stilts; or ▪ Disturbance or harm to plant species of concern.
3.5-13: Potential effects of habitat conversion and pond management on steelhead.	The SBSP Restoration Project would have a significant impact on steelhead if it resulted in a decline in steelhead populations associated with South Bay spawning streams.
3.5-14: Potential impacts to estuarine fish.	The SBSP Restoration Project would result in a significant impact to estuarine fish if it resulted in a substantial decline in South Bay populations of estuarine fish.
3.5-15: Potential impacts to piscivorous birds.	The SBSP Restoration Project would result in a significant impact to piscivorous birds if it resulted in a substantial decline (relative to baseline levels) in South Bay populations of mergansers, pelicans, fish-eating grebes, herons, and egrets, resulting in a substantial decline in Pacific Flyway populations.
3.5-16: Potential impacts to dabbling ducks.	The SBSP Restoration Project would have a significant impact to dabbling ducks if it resulted in a substantial decline (relative to baseline levels) in South Bay populations of dabbling ducks, resulting in a substantial decline in Pacific Flyway populations.
3.5-17: Potential impacts to harbor seals.	The SBSP Restoration Project would result in a significant impact to harbor seals if it resulted in a substantial decline (relative to baseline levels) in South Bay populations.

Table 3.5-3 Biological Impact Significance Thresholds

IMPACT	THRESHOLD OF SIGNIFICANCE
3.5-18: Potential recreation-oriented impacts to sensitive species and their habitats.	Recreation associated with the SBSP Restoration Project would have a significant impact if it resulted, directly or indirectly (e.g., by facilitating predation), in: ▪ The abandonment of a primary harbor seal haul-out or pupping area; ▪ The mortality of, or loss of active nests of, western snowy plovers or California least terns; ▪ A reduction in California Ridgway's rail populations; ▪ The loss of substantial numbers of nests of non-listed pond-associated birds (specifically, terns, avocets, and stilts); ▪ Substantial, long-term declines in numbers of waterbirds in the South Bay due to recreational disturbance; or ▪ Losses of California Ridgway's rail or salt marsh harvest mouse individuals by impeding the use of high-tide refugia under or near public access features.
3.5-19: Potential impacts to special-status plants.	The threshold of significance for this impact is defined as the loss of individuals of a state- or federally listed plant species, or loss of a substantial portion of the population of other special-status plants (e.g., species considered rare under the CRPR), as a result of SBSP Restoration Project activities without commensurate increases in numbers as a result of restoration of tidal and transitional habitats.
3.5-20: Colonization of mudflats and marsh plain by non-native *Spartina* and its hybrids.	The threshold of significance is defined as colonization of restored tidal habitats by non-native *Spartina* at a level (measured by percentage of the vegetated marsh dominated by non-native *Spartina*) that exceeds recently colonized marshes elsewhere in the South Bay.
3.5-21: Colonization by non-native *Lepidium.*	The threshold of significance is defined as colonization of restored brackish marsh habitats by *Lepidium latifolium* at a level (measured by percentage of the vegetated marsh dominated by *Lepidium latifolium*) that exceeds recently colonized reference brackish marshes elsewhere in the South Bay.
3.5-22: Increase in exposure of wildlife to avian botulism and other diseases.	The threshold of significance is defined as a substantial increase in the incidence of avian botulism or other wildlife diseases in the South Bay, or an increase in the number of individuals exposed to such diseases, relative to baseline conditions as a result of the SBSP Restoration Project.
3.5-23: Potential impacts to bay shrimp populations.	The threshold of significance is defined as a substantial decrease in numbers of California bay shrimp within the South Bay as a result of the SBSP Restoration Project.
3.5-24: Potential impacts to jurisdictional wetlands or waters.	The threshold of significance for this impact is defined as measurable, long-term loss of jurisdictional wetlands or waters not compensated for by equivalent increases in jurisdictional wetlands or waters as a result of SBSP Restoration Project activities.
3.5-25: Potential construction-related loss of, or disturbance to, nesting raptors (including burrowing owls [*Athene cunicularia*]).	The SBSP Restoration Project would have a significant impact on raptors if it resulted in the mortality of, or the loss of active nests of, raptors (including burrowing owls), as a result of the SBSP Restoration Project.

In the South Bay, these small shorebirds forage primarily on intertidal mudflats at low tide and to a lesser extent along the margins of ponds or in shallow ponds. These birds roost and nest on sandy or gravel islands, salt flats, and levees.

Restoration of former salt ponds to tidal habitats is expected to increase the availability of intertidal mudflat foraging area at low tide in the short term, as some of the breached ponds would provide intertidal mudflat habitat for some time before accreting enough sediment to become vegetated. However, in the long term, sedimentation patterns of the South Bay are expected to result in a loss of intertidal mudflat, both due to conversion to emerging fringe marsh and conversion to subtidal habitat due to scour as a result of increased tidal flux and eventually because of sea-level rise. This mudflat loss is predicted to occur even in the absence of the SBSP Restoration Project, but mudflat loss is expected to be greater if ponds are breached and tidal habitats restored (2007 EIS/R). However, intertidal mudflats are the dominant habitat of the South Bay, and only a small percentage of the total area of mudflats is within the Phase 2 area and would be affected by Phase 2 actions.

In addition to causing changes in the extent of mudflats, tidal restoration of what are currently managed ponds would reduce the availability of high-tide roosting habitat for small shorebirds. The extent of shallow-water habitat that may be used by foraging small shorebirds (estimated as the extent of managed ponds containing water less than 6 inches deep) would vary considerably among the alternatives. High-tide roosting habitat is unlikely to limit populations, as pond levees, islands, and other alternative habitats can support high densities of roosting birds. However, conversion of managed ponds to tidal habitats would reduce the numbers of sites where shorebirds can congregate at high tide, potentially resulting in increased predation, possibly increased susceptibility to disease, and increased disturbance (and associated increases in energy expenditure) by predators and humans.

Pond-cluster-specific discussion of this impact follows.

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. The USFWS would continue to operate and maintain the ponds in accordance with ongoing management practices that have been in place since the implementation of ISP actions. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh. Because these ponds currently function as tidal marsh habitat, low-tide mudflats would continue to be available for foraging shorebirds in the short term. In the long-term, most of the mudflats would become vegetated and thus unavailable to small shorebirds, although narrow intertidal mudflats along marsh channels and sloughs would remain as foraging habitat for small shorebirds at low tides.

Minor degradation to levees may occur over time, but generally, the existing levees would continue to serve as potential roosting locations and would not be significantly affected. The reductions to small shorebird habitat are not expected to produce substantial declines in flyway-level populations or reduce the populations 20 percent below baseline levels. Therefore, impacts under Alternative Island A would be less than significant.

Alternative Island A Level of Significance: Less than Significant

Alternative Island B. Under Alternative Island B, sediment accretion would continue but in a more spatially diverse way because of the additional breach locations and other levee and pond modifications.

Further, all breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. This action would continue to create mudflat habitat for small shorebirds in the short term. In the long-term, most of the mudflats would become vegetated and thus unavailable to small shorebirds, although narrow intertidal mudflats along marsh channels and sloughs would remain as foraging habitat for small shorebirds. Although the Island Ponds are already breached and on their way toward becoming vegetated tidal marshes, the changes proposed under Alternative Island B would improve habitat connectivity and complexity for tidal marsh habitat.

The minimal levee alterations would have a minor effect on roosting habitat. The reductions to small shorebird habitat are not expected to produce substantial declines in flyway-level populations or reduce the populations 20 percent below baseline levels. Therefore, impacts would be less than significant.

Alternative Island B Level of Significance: Less than Significant

Alternative Island C. Under Alternative Island C, all the components of Alternative Island B are included with the addition of more levee breaches at Ponds A20 and A21, levee lowering along Pond A20, and breach expansion and pilot channels cut into Pond A19. The purpose is to further add habitat connectivity and complexity and improve the spatial distribution of sediment accretion as the ponds transition to tidal marsh. Impacts for Alternative C are similar to the impacts for Alternative B but with additional points of tidal flow entry into ponds and increased lengths of altered levees.

The levee alterations would be a minor effect on roosting habitat. The reductions to small shorebird habitat are not expected to produce substantial declines in flyway-level populations or reduce the populations 20 percent below baseline levels. Therefore, impacts under Alternative Island C are considered less than significant.

Alternative Island C Level of Significance: Less than Significant

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. The USFWS would continue to operate and maintain the ponds in accordance with ongoing management practices that have been in place. Ponds A1 and A2W would remain as limited managed ponds. Charleston Slough would remain a muted tidal mudflat. Levees would be maintained, and the ponds would continue to provide the same habitat functions as they do now. Existing trails would continue to be maintained and used for recreational access. Currently the ponds and levees provide minimal habitat for small shorebirds; Charleston Slough provides extensive foraging habitat for them at low tide.

Because the habitat would not change relative to baseline and the ponds and surrounding levees and mudflats currently provide habitat, Alternative Mountain View A would have no impact on shorebirds.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Under Alternative Mountain View B, levees would be breached to restore tidal flows to Ponds A1 and A2W. The large extent of tidal marsh that would be restored in Ponds A1 and A2W would be an improvement in shorebird habitat over the deep-water conditions that currently exist. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's outboard (bayside) levee, raise and improve the existing boardwalk within Pond A2W, and add more concrete to expand the footings around the bases of transmission towers. In the short term, the

ponds would remain filled with water, but due to levee breaches would become tidal. With time, sedimentation would raise the pond bottom, providing mudflat habitat for foraging at low tide. Once sediment accretion has reached a level that supports tidal marsh vegetation, small shorebird foraging habitat would be locally reduced; however, due to the abundance of mudflat habitat in the South Bay, this change would not be significant. Narrow intertidal mudflats along marsh channels and sloughs would continue to provide small amounts of foraging habitat for small shorebirds.

The boardwalk to be added north of Pond A1's bayside levee would have a very small impact on existing mudflat habitat that could be used for foraging shorebirds. The Pond A2W eastern levee is already used for access, so access improvements here are not expected to have long-term effects on roosting habitat, though there could be short-term construction-related impacts. Roosting habitat for shorebirds would be created through the construction of several islands in Ponds A1 and A2W. Islands would also provide high-tide refuge for small shorebirds and better protection from predators compared to the levees. Habitat transition zones would be constructed to increase habitat complexity. A habitat transition zone would provide a gradual slope that would increase the intertidal area over time. This area would provide some foraging habitat for small shorebirds. As the habitat transition zones vegetate, their value for foraging for small shorebirds would decrease.

Alternative Mountain View B would have a net increase in foraging and roosting habitat for shorebirds in the short term. The effects of the levee breaching and PG&E infrastructure improvements on roosting habitat would be minimal. The reductions to small shorebird habitat are not expected to produce substantial declines in flyway-level populations or reduce the populations 20 percent below baseline levels. Therefore, the impacts of Alternative Mountain View B are considered less than significant under CEQA and beneficial under NEPA.

Alternative Mountain View B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Mountain View C. Under Alternative Mountain View C, additional breaches in Pond A1 would be added to enhance habitat connectivity and add more points of tidal exchange. The same PG&E infrastructure improvements noted for Alternative Mountain View B would also be made in Alternative C. In addition, Charleston Slough would be breached and connected to Pond A1, facilitating the transition of the slough's mudflats to tidal marsh. The south and west levees of Charleston Slough would be raised and improved to meet City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance. As Charleston Slough evolves into tidal marsh, much of the current intertidal mudflat and the associated foraging habitat for shorebirds in the slough would be lost. The conversion of 53 acres of Charleston Slough to tidal marsh is a requirement of a BCDC permit obtained by the City of Mountain View when it took ownership of Charleston Slough from Cargill/Leslie Salt, the previous owner. This transition is supposed to be occurring already, but Mountain View has not been successful in previous efforts to begin establishing tidal marsh in the slough. Under Alternative C, this transition would be facilitated and expected to take place.

On a local scale, Charleston Slough is an important resource and foraging area for small shorebirds. Thus, the conversion of the slough to tidal marsh would locally decrease tidal mudflats and a portion of the forage habitat they provide. This loss is not expected to be relevant on a flyway-population scale, however, and due to the presence of large amounts of mudflat habitat throughout the South Bay this

decrease in foraging habitat is not expected to be limiting for small shorebird populations. Therefore, this transition to tidal marsh is a not significant impact on foraging habitat for small shorebirds.

Under Alternative Mountain View C, trail improvements and additions are proposed for the western levee along Charleston Slough. Because a popular trail currently exists on the western Charleston Slough levee, an improved trail in the same location is not expected to significantly increase long-term disturbance to roosting shorebirds, though there would be short-term construction impacts. On the other side of the pond cluster, a new trail is proposed along the eastern border of Pond A2W. These levees currently provide limited potential roosting habitat for small shorebirds. The new trail proposed along the eastern border of Pond A2W would be located on a levee that is already used for PG&E and Refuge access, but it is expected that the recreational access would be more disturbing to roosting due to the increased use of the levee by bicyclists and people on foot. The PG&E infrastructure impacts would be similar to those described for Alternative Mountain View B. The relocation of the intake structure would result in temporary construction impacts, but would not have long-term impacts on shorebirds. The construction of nesting islands, which would be located away from levees to minimize disturbance from recreation, would provide roosting habitat and would mitigate for the roosting habitat lost where the new trail/infrastructure would be located. Habitat transition zones would also be constructed along the southern border of Ponds A1 and A2W, potentially providing foraging habitat for shorebirds in the short and medium term. As the habitat transition zones vegetate, their value for foraging for small shorebirds would decrease.

The large extent of tidal marsh that would be restored in Ponds A1 and A2W would be an improvement in shorebird habitat over the deep-water conditions in those ponds now. Also, the temporary intertidal mudflat and upland areas on levees, islands, and habitat transition zones would provide roosting and foraging habitat for small shorebirds. These features, along with suitable habitat for small shorebirds available in other locations around the project ponds and the plentiful availability of mudflat throughout the South Bay, are expected to benefit small shorebirds, offsetting the loss of intertidal mudflat habitat in Charleston Slough. The reductions to small shorebird habitat are not expected to produce substantial declines in flyway-level populations or reduce the populations 20 percent below baseline levels. For these reasons, the impacts of Alternative Mountain View C would be less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. The USFWS would continue to operate and maintain the ponds in accordance with ongoing management practices that have been in place since the implementation of Phase 1 actions. The A8 Ponds are managed as subtidal ponds with muted tidal action. During the summer months, they are managed as deep-water habitat, and during the wet season, water levels may be drawn down to provide flood storage capacity for the Santa Clara Valley Water District. Also, the armored notch is opened following the end of outmigration of juvenile salmonids and closed again before the next outmigration begins. The width and duration of this opening is part of ongoing experiments and monitoring as part of the project's AMP and are unrelated to Phase 2 project implementation. These operations have minimal effects on small shorebird populations. With regard to birds, the A8 Ponds are used largely as forage habitat by diving and dabbling birds. Suitable habitat for small shorebirds is minimal in these ponds.

No changes to the A8 Ponds would take place under Alternative A8 A. Therefore, small shorebirds would not be impacted.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Alternative A8 B actions would include the addition of two habitat transition zones to the interior of the ponds. Current management practices would not change due to these additions, though they may change as part of the AMP and SBSP Restoration Project's Science Program. Overall habitat function and pond water management would be the same as described in the No Action Alternative. With the exception of the habitat transition zones and additional fill, the ponds would continue to be managed in the same manner. Existing small shorebird habitat would not be adversely impacted. Potentially, the habitat transition zones would provide additional foraging and roosting habitat. Any reductions to small shorebird habitat that may occur are not expected to produce substantial declines in flyway-level populations or reduce the populations 20 percent below baseline levels. Therefore, Alternative A8 B would have no impact under CEQA and be beneficial under NEPA.

Alternative A8 B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), the ponds would be maintained in their current condition. The ponds would continue to function as seasonal ponds. The outboard levees along Ponds R3 and R4 provide inland flood protection and would be maintained or repaired as needed. The ponds are currently isolated from tidal action and bay connectivity. The dry salt flats present in summer months are ideal habitat for nesting western snowy plovers, which are treated separately in Impact 3.5-3 and so not considered in this impact. In the winter and spring months, the seasonal ponds provide shallow water foraging habitat for small shorebirds. Outer levees would be maintained for flood control so that the ponds would not transition into tidal marsh. Under the No Action Alternative, there would be no change in impacts to small shorebird habitat or populations.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would be converted to tidal marsh. A habitat transition zone would also be created in Pond R4. Ponds R5 and S5 would be restored to enhanced managed pond habitat. The intertidal areas along the marsh channels and sloughs found in the restored tidal marshes that would develop in Pond R4 and the habitat transition zone are expected to continue providing foraging habitat for small shorebirds. Pond R3 would remain a seasonal pond that would continue to provide high-tide roosting habitat. A water control structure would be installed on Pond R3 to allow for better control of water levels and water quality in the borrow ditches and historic slough traces within Pond R3. Water control structures would also allow direct management of water quality in that pond, which is expected to improve the habitat for shorebirds during winter, in particular. The diversified tidal marsh expected to develop in Pond R4 would offer shelter and some foraging habitat for small shorebirds. The increased foraging and roosting in the habitat transition zones and the improved foraging along the marsh channels and sloughs would benefit small shorebird foraging; however, they would be impacted by the loss of nesting habitat within the currently seasonal ponds. Due to the abundance of shorebird habitat throughout the South Bay, this reduction would have a less-than-significant impact on small shorebird populations through the completion of Phase 2 projects and is unlikely to reduce flyway-level populations 20 percent below baseline levels. Future project phases would

depend on the AMP and other program-level decision-making processes to determine whether additional habitat conversion would bring a significant impact.

Alternative Ravenswood B Level of Significance: Less than Significant

Alternative Ravenswood C. Alternative Ravenswood C is similar to Alternative Ravenswood B with the exception of certain features designed to increase small shorebird habitat. First, Ponds R5 and S5 would be enhanced managed ponds, graded and operated to simulate intertidal mudflats. These ponds would provide foraging habitat for shorebirds and an easily accessible viewing opportunity for bird-watchers. Second, a second water control structure installed on Pond R3 would allow for better control of water levels and water quality in the borrow ditches and historic slough traces within Pond R3. Water control structures would also allow direct management of water quality in that pond, which is expected to improve the habitat for shorebirds during winter, in particular. An additional habitat transition zone would be constructed to provide additional high-tide roosting habitat and foraging habitat for shorebirds. Finally, the diversified tidal marsh expected to develop in Pond R4 would offer shelter and foraging habitat for small shorebirds, offsetting the reduction of the seasonal pond habitat that currently exists in Pond R4. The increased foraging habitat in Ponds R5 and S5 would be a benefit to small shorebirds. Therefore, the impact of Alternative Ravenswood C is considered less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood D. Alternative Ravenswood D is similar to Alternatives Ravenswood B and Ravenswood C with the exception that Ponds R5 and S5 would be enhanced managed ponds modified to accept peak stormwater runoff flows from the nearby Bayfront Canal. When not being used for such temporary salinity treatment and stormwater detention, they would be managed to provide deep-water habitat for diving and dabbling ducks as opposed to shorebirds. This change would require that water levels in Ponds R5 and S5 be lowered before storm events in the winter to provide flood storage capacity. Also, the salinity in these ponds would be reduced due to the freshwater storm runoff. In the summer, the ponds would function as managed ponds, as proposed in Alternative Ravenswood B. The addition of freshwater flows into Ponds R5 and S5 would not have a significant impact on small shorebirds. Like Alternative Ravenswood B, the diversified tidal marsh expected to develop in Pond R4 and the creation of habitat transition zones would offer shelter and foraging habitat for small shorebirds, offsetting the seasonal pond habitat that currently exists in Pond R4. Due to the abundance of shorebird habitat throughout the South Bay, the reduction in pond habitat would have a less-than-significant impact on small shorebirds through the completion of Phase 2 projects and is unlikely to reduce flyway-level populations 20 percent below baseline levels. Future project phases would depend on the AMP and other program-level decision-making processes to determine whether additional habitat conversion would bring a significant impact.

Alternative Ravenswood D Level of Significance: Less than Significant

Phase 2 Impact 3.5-2: Loss of intertidal mudflats and reduction of habitat for mudflat-associated wildlife species.

Potential program-level impacts are addressed in Section 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 actions are assessed.

Shorebirds are the primary users of intertidal mudflats, and the habitat- and population-related effects on small shorebirds from Phase 2 actions were covered extensively in Impact 3.5-1. Resident and migratory shorebirds forage on invertebrates found in mudflats during low tide. Gulls and some dabbling ducks forage on exposed mudflats as well. During high tides, fish move over these mudflats to feed on invertebrates.

Restoration of former salt ponds to tidal habitats is expected to increase the availability of intertidal mudflat foraging area at low tide within the ponds in the short term. Some of the breached ponds would provide large areas of intertidal mudflat habitat for some time before accreting enough sediment for vegetation to colonize. Eventually, this mudflat habitat within the ponds would be converted to tidal marsh.

Mudflats outside of the ponds could be affected by scour and changes in sediment transport. As the ponds are breached, increased tidal flux is expected to cause short-term scouring and loss of some of the mudflat area outside of the ponds alongside stream outflows, sloughs, and channels until an equilibrium has been reached. Mudflat loss is also expected as ponds are breached because sediments from existing mudflats would be transported into the breached subsided ponds and the ponds would then be colonized with vegetation (2007 EIS/R). However, intertidal mudflats are one of the dominant habitats of the South Bay (the other being former salt-ponds), and only a minimal percentage of the total area of mudflats would be affected by the Phase 2 actions.

Numerous species of invertebrates, birds, and fish use intertidal mudflats. As a result, a decline in mudflat availability could result in declines in abundance of these species; however, because the Phase 2 project areas represent a small fraction of the total South Bay mudflat area, these declines would be minimal. Also, productivity within the former salt ponds is expected to increase with tidal restoration, as tidal water brings nutrients and organisms into the salt ponds. Though not known with certainty, tidal marsh restoration is expected to result in increased productivity in the benthic invertebrate food chain, potentially increasing the density of the invertebrate prey base available to the various bird and fish species that forage on intertidal mudflats. Such increases in productivity may offset, at least to some extent, the adverse effects of mudflat loss outside of the ponds on South Bay animals such as invertebrates, fish, and birds. In addition, minimal amounts of foraging habitat for some mudflat foragers would be created along the margins of the sloughs and channels that would form in restored marshes, as discussed in the 2007 EIS/R.

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh. These ponds are currently transitioning to vegetated tidal marsh habitat as a result of activities implemented under the ISP. Because these ponds have been opened to tidal action, some intertidal mudflats currently exist within the ponds and will provide habitat functions in the short term. In the long term, most of the mudflats within the ponds would become vegetated as sediment accretion continues. As the breaches expand with time or the levees erode, increasing the tidal prism, some mudflat habitat along the Coyote Creek or Mud Slough channels outside of the ponds could be scoured and lost. In the long term, an equilibrium in the mudflat would be reached.

In the developed tidal marsh, narrow intertidal mudflats along marsh channels and sloughs would form and provide habitat for mudflat-associated wildlife species. Compared to pre-breach conditions, mudflat habitat has been increasing and would continue to do so in the short term as the levees scour away and erode. In the long term, the area of mudflats would decrease as the ponds become vegetated, though some mudflat habitat would remain along the channels and sloughs. Relative to the existing amounts of mudflat habitat for wildlife species in the South Bay, this change would be less than significant.

Alternative Island A Level of Significance: Less than Significant

Alternative Island B. Under Alternative Island B, actions—including breaching, lowering, and removing different portions of the levees around Ponds A19 and A20—would be taken to enhance the habitat connectivity during and after the transition to tidal marsh. Pond A19's levees would be breached and lowered along Mud Slough, and the levees between Ponds A19 and A20 would be removed. Further, all breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations.

Like Alternative Island A, mudflat habitat would continue to increase in the short term, and the longer-term transition to tidal marsh would proceed in a similar manner. Scour along Mud Slough would be greater under Alternative Island B due to the increased tidal prism in that waterway. However, scour in Coyote Creek may be reduced somewhat. In the long term, some mudflat habitat would be available within the transitional areas from marsh plain to channel along the channel networks that develop within the ponds and also potentially in areas where sidecast material is placed. The change in mudflat area (increases within the ponds and decreases outside of the ponds) would be minimal relative to the existing amount of mudflat habitat in the South Bay; as a result, Alternative Island B would have a less-than-significant impact on mudflat habitat for wildlife species in the South Bay.

Alternative Island B Level of Significance: Less than Significant

Alternative Island C. Under Alternative Island C, all the components of Alternative Island B are included with the addition of more levee breaches, additional levee lowering at Pond A20, and the cutting of pilot channels into Pond A19. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. The purpose is to further increase habitat connectivity during and after the transition from ponds to tidal marsh.

Like Alternatives Island A and Island B, mudflat habitat would continue to exist in the short term but decrease over the long term. Scour along Mud Slough would be greater in that waterway due to the increased tidal flux. However, scour in Coyote Creek may be reduced somewhat. The changes in mudflat habitat would be similar to those described in Alternative B and minimal relative to the existing amount of mudflat habitat in the South Bay; as a result, Alternative Island C would have a less-than-significant impact on mudflat habitat for wildlife species in the South Bay.

Alternative Island C Level of Significance: Less than Significant

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. Ponds A1 and A2W are managed ponds. Levees would be maintained and the ponds would continue to provide the same habitat function. Currently the only intertidal mudflat habitat within the boundaries of the Phase 2 analysis for the Mountain View Ponds is in

Charleston Slough and in a narrow area along Mountain View Slough between Ponds A1 and A2W. Intertidal mudflats also exist outside the Phase 2 ponds on the bayward sides of Mountain View Slough and Whisman Slough below Stevens Creek. None of these mudflats would be disturbed with the No Action Alternative; therefore, Alternative Mountain View A would have no impact on intertidal mudflat habitat for wildlife species in the South Bay.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Under Alternative Mountain B, levees would be breached to restore tidal action to Ponds A1 and A2W. Ponds A1 and A2W would gradually transition to tidal marsh. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add more concrete to expand the footings around the bases of transmission towers.

The construction of the boardwalk north of Pond A1's bayside levee would reduce the total availability of mudflat habitat, though this amount is minimal relative to the amount of mudflat in the Bay and the mudflat habitat that would be created by the project. Sediment accretion during the transition to tidal marsh would result in temporary intertidal mudflat habitat, though it could take many years for these deeply subsided ponds to reach the elevation necessary to create mudflats. This mudflat habitat would in turn become vegetated as a tidal marsh. The existing mudflats along and outside of Mountain View Slough and Whisman Slough would likely experience some scour and reduced area. The existing mudflats in Charleston Slough would not be affected.

The planned tidal restoration would likely eventually result in more extensive channel networks, higher-order sloughs, and overall greater habitat diversity. Intertidal mudflat habitat is expected to develop along the channels and sloughs in the restored tidal marsh and along the shallow sloping features of the habitat transition zones and islands There would also be some loss of mudflat due to scour from the increased tidal flux outside of the ponds and in adjacent sloughs. The addition of the habitat transition zones and the creation of interior channels would result in a small amount of increase in intertidal mudflat habitat around these features. The net of these areas of change to existing mudflats is expected to be small and would thus constitute a less-than-significant impact on mudflat habitats for wildlife species in the South Bay.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Alternative Mountain View C also proposes to restore tidal action to the ponds, but there would be more breaches into Ponds A1 and A2W to improve the habitat connectivity of the restoration in these ponds. The same PG&E infrastructure improvements noted for Alternative Mountain View B would also be made in Alternative C. In addition, Charleston Slough would be breached, and the levee between it and Pond A1 would be lowered, providing tidal action to facilitate the transition of Charleston Slough's existing mudflats to tidal marsh. The south and west levees of Charleston Slough will be raised and improved to meet City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance.

The impacts of the PG&E infrastructure improvement on the mudflats would be the same as under Alternative Mountain View B, where slight reductions would occur north of the Pond A1 bayside levee. Additional actions proposed for PG&E and recreational access are not expected to impact the mudflats.

As Charleston Slough's mudflat habitat transitions into tidal marsh, much of the current intertidal mudflat in the slough would be lost. The conversion of 53 acres of Charleston Slough to tidal marsh is a requirement of a BCDC permit obtained by the City of Mountain View when it took ownership of Charleston Slough from Cargill/Leslie Salt, the previous owner. This transition is supposed to be occurring already, but Mountain View has not been successful in previous efforts to begin establishing tidal marsh in the slough. With time, even in the absence of a Phase 2 action at the Mountain View Ponds, Charleston Slough is intended to transition to tidal marsh. Under Alternative Mountain View C, the Phase 2 actions would cause this transition to occur sooner and with more certainty.

On a local scale, Charleston Slough is an important resource mudflat-associated wildlife species. The conversion of the slough to tidal marsh would locally decrease tidal mudflats and a portion of the habitat they provide. However, and due to the presence of large amounts of mudflat habitat throughout the South Bay this decrease is not expected to be limiting for populations of mudflat-associate species.

Like Alternative Mountain View B, there may also be some loss of mudflat due to scour from the increased tidal flux outside of the ponds and in adjacent sloughs under Alternative Mountain View C. The planned tidal restoration would likely result in more extensive channel networks, higher-order sloughs, and overall greater habitat diversity. The addition of habitat transition zones and the creation of marsh channels and sloughs would result in a small amount of long-term increase in the development of intertidal mudflat habitat around these features.

As noted, one goal of Alternative Mountain View C is to assist mudflats in Charleston Slough to transition to tidal marsh, so there would necessarily be some loss of that mudflat. However, due to the presence of substantial amounts of mudflat habitat elsewhere in the South Bay, the impacts of these small changes in mudflat habitat for wildlife species would be less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. Ponds A8 and A8S would continue to be managed as reversibly muted tidal habitat. Intertidal mudflats are not a significant habitat at the A8 Ponds; those mudflats that are present would not be affected by the No Action Alternative.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Alternative A8 B proposes to add habitat transition zones to the southern levee of Pond A8S. The A8 Ponds are currently deeply subsided, so the construction of habitat transition zones would not directly reduce the area of existing mudflats. The gradual slope of the habitat transition zones would increase suitable conditions for intertidal mudflat habitat to develop. Overall intertidal mudflat habitat increases at the A8 Ponds would be minimal compared to the extent of mudflats in the South Bay. Because no intertidal mudflat is present at the A8 Ponds and the Phase 2 actions would have no effect on any adjacent mudflats, Alternative A8 B would have a less-than-significant impact on mudflat habitat for wildlife species in the South Bay.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), the ponds would be maintained in their current condition. The ponds would continue to function as seasonal ponds. The outboard levees along Ponds R3 and R4 provide inland flood protection and would be maintained or repaired as needed. The ponds are isolated from tidal action and do not contain intertidal mudflat habitat. The areas of intertidal mudflat that exist in the adjacent sloughs and outside of the pond complex would remain in their current condition. Under the No Action Alternative, it is expected that intertidal mudflats would not be impacted.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would be converted to tidal marsh by breaching it to restore tidal flows. A habitat transition zone would also be created in Pond R4. Ponds R5 and S5 would be enhanced managed pond habitat, and Pond R3 would receive a water control structure on its outer levee to allow more active management of water levels within the pond. This structure may improve foraging habitat by allowing tidal water to enter historic sloughs, but would have little impact on mudflat habitat.

No intertidal mudflat habitat exists in these ponds; however, there is mudflat outside of the ponds in the adjacent sloughs and bay. There could be some scouring of these existing tidal mudflats as a result of the increased tidal flux. However, after a time, equilibrium would be reached, and mudflats are expected to re-form along the new channel and slough margins. During the transition to tidal marsh, intertidal mudflat habitat would also temporarily increase in Pond R4 as sediment accretion raises the pond elevation to a level that can support tidal marsh vegetation. After conversion to tidal marsh, these temporary mudflats would become vegetated, and intertidal mudflat habitat would remain along marsh channels and sloughs.

Alternative Ravenswood B would result in temporary and beneficial formation of mudflats and small changes in existing mudflats along the margins of the adjacent sloughs. These changes to mudflat habitat are minor compared to the amount of existing mudflat habitat for wildlife species in the South Bay, and therefore the impact of these changes would be less than significant.

Alternative Ravenswood B Level of Significance: Less than Significant

Alternative Ravenswood C. Alternative Ravenswood C is similar to Alternative Ravenswood B with the exception of certain features designed to increase intertidal mudflat habitat. With regard to mudflats, the main difference between the alternatives is that under Alternative C Ponds R5 and S5 would be converted to simulated intertidal mudflats and that an additional habitat transition zone would be built along the southern levee of Pond R4. Two water control structures would also be installed at Pond R3. These structures may improve foraging habitat by allowing tidal water to enter historic sloughs, but would have little impact on mudflat habitat.

The increases in mudflat habitat in Ponds R5 and S5 in Alternative Ravenswood C would be greater than the relatively minor and/or temporary impacts discussed for Alternative Ravenswood B. This increase would lead to Alternative C having a less-than-significant impact under CEQA and being beneficial under NEPA.

Alternative Ravenswood C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood D. Alternative Ravenswood D is similar to Alternative Ravenswood B with the exception that Ponds R5 and S5 would be enhanced managed ponds that would also be modified to accept peak stormwater runoff flows from the nearby Bayfront Canal and Atherton Channel. When not being used for such temporary stormwater detention and salinity treatment, these ponds would be managed to provide habitat for diving and dabbling ducks as opposed to shorebirds. Like Alternative Ravenswood C, Alternative D would also provide water control structures on Pond R3.

The additional intertidal mudflat habitat along the historic sloughs of the restored tidal marsh in Pond R4 and the intertidal mudflat along the gradual slopes of habitat transition zones would slightly increase overall intertidal mudflat habitat relative to baseline. Small changes in mudflat habitat for wildlife species outside of the ponds as a result of scour from the increased tidal flux would result in an impact that is considered less than significant.

Alternative Ravenswood D Level of Significance: Less than Significant

Phase 2 Impact 3.5-3: Potential habitat conversion impacts to western snowy plovers.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the South Bay Salt Pond Restoration Project's 2007 EIS/R. The project-level impacts of the implementation of Phase 2 are assessed in this Final EIS/R.

Western snowy plovers have found suitable breeding and nesting conditions in some former salt ponds . Plovers prefer open spaces with no vegetation, away from trails and predator perches. Plovers often nest on former salt-production ponds with salt-encrusted surfaces that are dry during the spring and summer nesting seasons, though the levees of remote ponds and islands in ponds have also been used. Although western snowy plovers in San Francisco Bay occasionally nest on levees and islands, the majority of nests are currently found on flats within dry or partially dry ponds (2007 EIS/R). Individuals could also forage in adjacent shallow ponds or tidal sloughs. Some of these ponds would be converted to tidal marsh during pond restoration efforts, potentially impacting western snowy plover habitat. Recovery goals for the entire San Francisco Bay are to support 250 breeding pairs. Recovery goals for the SBSP Restoration Project area are to support 125 breeding pairs. The Pacific Coast population of this species is federally listed as threatened and substantial losses in the San Francisco Bay population could be significant in the context of the Pacific Coast population (2007 EIS/R).

Alviso-Island Ponds

Alternative Island A (No Action). The Island Ponds currently do not provide snowy plover habitat, and changes in this pond cluster would neither increase nor decrease snowy plover habitat. Alternative Island A would have no impact on western snowy plover.

Alternative Island A Level of Significance: No Impact

Alternative Island B. The Island Ponds currently do not provide snowy plover habitat and changes in this pond cluster would neither increase nor decrease snowy plover habitat. Alternative Island B would have no impact on western snowy plover.

Alternative Island B Level of Significance: No Impact

Alternative Island C. The Island Ponds currently do not provide snowy plover habitat and changes in this pond cluster would neither increase nor decrease snowy plover habitat. Alternative Island C would have no impact on western snowy plover.

Alternative Island C Level of Significance: No Impact

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. The Mountain View Ponds currently do not provide snowy plover habitat, and changes in this pond cluster would neither increase or decrease snowy plover habitat. Alternative Mountain View A would have no impact on western snowy plover.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Under Alternative Mountain View B, Ponds A1 and A2W would be converted to tidal marsh. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add more concrete to expand the footings around the bases of transmission towers.

Neither deep pools nor tidal marsh habitats are well-suited for western snowy plover, but the transitional mudflat habitat would provide temporary foraging opportunities for western snowy plover. Construction of the PG&E boardwalk north of Pond A1 would have some small impacts on mudflat habitat, but due to the lack of nesting habitat in the area, it is not likely that this area is heavily used by foraging plovers. The islands that would be built in Ponds A1 and A2W could provide some western snowy plover habitat, but an existing gull colony in Pond A1 may limit the success of nesting on these islands without management efforts to control gull use of that area. The creation of the islands would help offset the minor losses of existing nesting or roosting habitat on the outboard levees of the ponds, but these levees are not known to have been used by plovers. Because habitat is limited and impacts and benefits balance, the impacts on western snowy plover under Alternative Mountain View B would be less than significant.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Alternative Mountain View C is similar to Alternative Mountain View B with the addition of more breaches in Pond A1 levees and levee lowering between Pond A1 and Charleston Slough to increase the speed of tidal marsh transition. The south and west levees of Charleston Slough would be raised and improved to meet City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance. The same PG&E infrastructure improvements noted for Alternative Mountain View B would also be made in Alternative Mountain View C. Alternative C also has minor changes to the habitat transition zone and increased recreational access.

The impacts of PG&E infrastructure improvements would be the same as under Alternative Mountain View B. Like Alternative B, islands would be built in Ponds A1 and A2W to provide nesting habitat that could benefit snowy plovers, but would likely be used by other species unless managed specifically for snowy plovers. The creation of the islands would help offset the minor losses of existing nesting and roosting habitat along the outboard levees that would be lost through levee breaches or disturbed through recreational trails; however, snowy plovers have not been seen using these levees to nest in the past.

The mudflat habitat in Charleston Slough could serve as foraging habitat for western snowy plovers during low tide. Although this area is already designed to transition to tidal marsh, under Alternative Mountain View C, this transition would be facilitated, decreasing the availability of this foraging habitat sooner. Due to the existing abundance of intertidal mudflats in the South Bay, the loss of this mudflat would be a less-than-significant impact on western snowy plover.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. During Phase 1, Pond A8 was converted to a deep, muted tidal habitat, which is not conducive to snowy plover nesting. The A8 Ponds currently do not provide snowy plover habitat, and changes in this pond cluster would neither increase nor decrease snowy plover habitat. Alternative A8 A would have no impact on western snowy plover.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Alternative A8 B proposes to create a habitat transition zone along the southern levee of Pond A8S. The A8 Ponds currently do not provide snowy plover habitat, and changes in this pond cluster would neither increase nor decrease snowy plover habitat. Alternative A8 B would have no impact on western snowy plover.

Alternative A8 B Level of Significance: No Impact

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), all Ravenswood Ponds would function as managed seasonal ponds, and outboard levees would be maintained to provide flood protection. Seasonal ponds that are dry in the spring and summer provide suitable snowy plover habitat, and snowy plover nests have been observed at Ponds R4 and R3. Ponds R5 and S5 are also dry seasonal ponds, but they are less frequently used by western snowy plovers because of their small size and proximity to heavily used hiking trails in the adjacent Bedwell Bayfront Park and along the Bay Trail. Ponds R3 and R4 are suitable for snowy plover nesting, because they are dry during the summer months, when snowy plovers are nesting. Thus, they are able to build their nests on the dry salt flats. There are no large trees or towers that would act as predator perches for raptors on these salt flats, and the salt flats are isolated from human disturbances due to the lack of trails accessing the inner and outer levees of the ponds. These larger ponds receive more frequent plover nesting activity.

Independent of the SBSP Restoration Project's Phase 2 actions, the Project Management Team is already planning and implementing a number of habitat enhancements and other management techniques to increase western snowy plover populations. These techniques may include treating the nesting substrates with shells and other surfaces to increase camouflage and thus nesting success (as is taking place at CDFW-owned Eden Landing), constructing habitat islands for to provide isolated nesting areas (as at Eden Landing Ponds E12 and E13 as well as Refuge Ponds A16 and SF2), social attraction experiments currently underway at Ponds SF2 and A16, and harassing predator species. Regardless of which Phase 2 alternative is selected for Phase 2, the Refuge will continue to actively monitor and manage for western snowy plover, adapt and reapply the results of these experiments, and implement the appropriate actions to maintain snowy plover populations and protect their habitat.

Under the No Action Alternative, there would be no impacts to snowy plover habitat or individuals. The Ravenswood Ponds would continue to provide suitable nesting habitat for snowy plovers.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, actions with potential to impact snowy plover habitat include conversion of existing snowy plover habitat in Pond R4 to tidal marsh and in Ponds R5 and S5 to enhanced managed pond habitat. Thus, suitable western snowy plover habitat would be lost in Ponds R4, R5, and S5, though of these three ponds, Pond R4 has been most frequently and repeatedly used for plover nesting. Pond R3 would remain a seasonal pond, though it would be enhanced to improve the nesting and forage habitat quality for western snowy plover.

Under Alternative Ravenswood B, a habitat transition zone would be added to the western edge of Pond R4, but due to the proximity of existing trails, this habitat transition zone would not make ideal snowy plover foraging habitat. An improved levee would be added between Ponds R3 and R4; this levee would not be connected to existing trails and could be used as potential snowy plover nesting habitat. A partial levee would remain as an island in Ponds R5 and S5 which could also be used for nesting by snowy plover. Finally, a fence would be installed along the southern margin of Pond R3 between it and the paved Bay Trail spine. This fence would discourage people and their dogs from entering the pond basin itself and would thereby provide a benefit to snowy plovers.

Alternative Ravenswood B would result in the loss of snowy plover habitat in Pond R4 but would preserve and enhance the habitat in Pond R3. A water control structure would be added to the eastern levee of Pond R3 to connect it to Ravenswood Slough. This structure would allow Refuge staff to control water levels and thereby provide improvements to foraging habitat by increasing circulation in the existing borrow ditches and the historic slough traces in Pond R3. Snowy plovers are opportunistic breeders, moving around the South Bay to take advantage of ponds with suitable conditions. Therefore, loss of habitat in the Ravenswood Ponds could potentially be offset by the availability of suitable habitat in or around other South Bay ponds.

Independent of the SBSP Restoration Project's Phase 2 actions, the Project Management Team is already planning and implementing a number of habitat enhancements and other management techniques to increase western snowy plover populations. These techniques may include treating the nesting substrates with shells and other surfaces to increase camouflage and thus nesting success (as is taking place at CDFW-owned Eden Landing), constructing habitat islands for to provide isolated nesting areas (as at Eden Landing Ponds E12 and E13 as well as Refuge Pond SF2), social attraction experiments currently underway at Ponds SF2 and A16, and harassing predator species. Regardless of which Phase 2 alternative is selected for Phase 2, the Refuge and CDFW will continue to actively monitor and manage for western snowy plover, adapt and reapply the results of these experiments, and implement the appropriate actions to maintain snowy plover populations and protect their habitat. Finally, other project features in Phase 2 (e.g., islands created at the Mountain View Ponds) could provide some supplemental nesting habitat.

For these reasons, particularly the improvement of habitat enhancements in Pond R3 and the Refuge management techniques described above, impacts to western snowy plover from habitat conversion under Alternative Ravenswood B would be less than significant.

Alternative Ravenswood B Level of Significance: Less than Significant

Alternative Ravenswood C. In Alternative Ravenswood C, seasonal nesting habitat for snowy plovers would be lost in Ponds R4, R5, and S5, as described for Alternative Ravenswood B. Also as in Alternative Ravenswood B, the water control structure at Pond R3's eastern levee would be added to improve water level management and enhance plover habitat. In Alternative Ravenswood C, however, an additional water control structure would be added to the western side of Pond R3 at its intersection with Pond S5 to further improve control over water levels and overall snowy plover habitat. Also, a habitat transition zone would be added along the proposed improved levee between Ponds R3 and R4. Ponds R5 and S5 would be managed as intertidal mudflats. A partial levee would remain as an island in Ponds R5 and S5; this partial levee could provide potential snowy plover nesting habitat. The mudflats would provide potential foraging habitat. Finally, a fence would be installed along the southern margin of Pond R3 between it and the paved Bay Trail spine. This fence would discourage people and their dogs from entering the pond basin itself and would thereby provide a benefit to the snowy plover.

Actions under Alternative Ravenswood C would result in the loss of snowy plover habitat in Pond R4 but would preserve and enhance the habitat in Pond R3. Snowy plovers are opportunistic breeders, moving around the South Bay to take advantage of locations with suitable conditions. Therefore, loss of habitat in the Ravenswood Ponds could potentially be offset by improved suitable habitat in other ponds. In addition, the same ongoing experiments and management actions to maintain or increase western snowy plover population described in Alternative Ravenswood B (e.g., adding nesting islands, improving nesting substrate enhancements, predator harassment, social attraction experiments) would be implemented in Alternative Ravenswood C.

The improved habitat in Pond R3 is expected to improve nesting success and offset the loss of western snowy plover habitat elsewhere at the Ravenswood Ponds. The overall impact of western snowy plover habitat conversion would be less than significant.

Alternative Ravenswood C Level of Significance: Less than Significant

Alternative Ravenswood D. Alternative Ravenswood D would provide similar snowy plover habitat changes as Alternative Ravenswood C with the exception of Ponds R5 and S5 being managed as enhanced managed ponds instead of mudflats. Ponds R5 and S5 would be configured to accept peak stormwater runoff from the Bayfront Canal during storm events. Alternative D would provide the same water control structures in Pond R3 to improve snowy plover habitat as in Alternative C. Finally, a fence would be installed along the southern margin of Pond R3 between it and the paved Bay Trail spine. This fence would discourage people and their dogs from entering the pond basin itself.

Actions under Alternative Ravenswood D would result in the loss of snowy plover habitat in Pond R4 but would preserve and enhance the habitat in Pond R3. Snowy plovers are opportunistic breeders, moving around the South Bay to take advantage of ponds with suitable conditions. Therefore, loss of habitat in the Ravenswood Ponds could potentially be offset by the availability of suitable habitat in other South Bay ponds. In addition, the same ongoing experiments and management actions to maintain or increase western snowy plover population described in Alternative Ravenswood B (e.g., adding nesting islands, improving nesting substrate enhancements, predator harassment, social attraction experiments) would be implemented in Alternative Ravenswood D.

The improved habitat in Pond R3 is expected to improve nesting success and offset the loss of western snowy plover habitat elsewhere in the Ravenswood Ponds. The overall impact of western snowy plover habitat conversion would be less than significant.

Alternative Ravenswood D Level of Significance: Less than Significant

Phase 2 Impact 3.5-4: Potential reduction in the numbers of breeding, pond-associated waterbirds (avocets, stilts, and terns) using the South Bay due to reduction in habitat, concentration effects, displacement by nesting California gulls, and other project-related effects.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. The project-level impacts of the implementation of Phase 2 are assessed in this Final EIS/R.

American avocets, black-necked stilts, Forster's terns, and Caspian terns are colonial waterbirds that nest and forage within portions of the SBSP Restoration Project. These birds nest on islands within ponds and on pond levees, in dry salt panne habitat, in marshes on higher ground around marsh ponds, and in other bayside habitats such as water treatment plant settling ponds. Avocets and stilts forage in ponds, marshes, ponds, and alternative habitats such as water treatment plants. Avocets also forage on intertidal mudflats when they are not inundated. The terns forage on fish, which they catch in the Bay; along slough channels; in lower-salinity ponds within the SBSP Restoration Project area; and in artificial ponds, lagoons, and reservoirs throughout the South Bay (2007 EIS/R).

Restoration of managed ponds to tidal marsh could result in a loss of nesting and foraging habitat. Large areas of unoccupied nesting habitat are available and could offset habitat loss due to conversion to tidal marsh. If available habitat is concentrated, it could make populations more vulnerable to predation. California gulls use the same habitat type as avocets, stilts, and terns. Gulls displaced by loss of nesting habitat due to tidal marsh restoration could disrupt avocet, stilt, and tern colonies (2007 EIS/R).

Overall, the loss of habitat in ponds that would be converted to tidal habitats in Phase 2 is expected to impact relatively small numbers of breeding avocets, stilts, and terns through loss of nesting and foraging habitat. These adverse impacts may be offset by the creation of nesting islands for these species and the improvements to other ponds that are designated to become enhanced managed ponds as part of Phase 2 or a future project phase. Furthermore, the adverse impacts that may result from the encroachment of displaced California gulls on other pond-associated nesting birds would be addressed by active gull management implemented under the AMP.

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh. These ponds are currently transitioning to tidal marsh habitat as a result of activities implemented under the ISP. The Island Ponds currently provide limited roosting habitat for pond-associated water birds on the levees surrounding the ponds; under Alternative Island A, these levees will degrade over time. The shallow ponds and developing intertidal mudflats would provide short-term foraging habitat. The adjacent sloughs and channels that form within the marsh over time are expected to provide improved habitat for fish and invertebrates that make up the diet of pond-associated waterbirds.

Under Alternative Island A, there would be small changes in available roosting, and foraging habitat for pond-associated waterbirds over time. These changes are unlikely to cause the populations of pond-associated waterbirds to decline 10 percent or greater relative to the NEPA/CEQA baseline and would therefore constitute a less than significant impact.

Alternative Island A Level of Significance: Less than Significant

Alternative Island B. Under Alternative Island B, actions would be taken to continue the transition of the Island Ponds to tidal marsh and enhance habitat connectivity while doing so. Pond A19's levees would be breached along Mud Slough and lowered. Internal levees between Ponds A19 and A20 would be removed to improve the habitat connectivity and quality of those ponds for juvenile fish. Further, all breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations.

The impacts under Alternative Island B would be similar to those described under Alternative Island A (the No Action Alternative), but transition to tidal marsh habitat would occur at a faster rate. The removed, lowered, and breached levees would reduce the total roosting habitat for pond-associated birds, but foraging habitat would improve with the creation of temporary mudflats and more complex and widespread channel networks. These changes are small compared to the amount of existing foraging habitat for pond-associated waterbirds in the South Bay and are unlikely to cause the populations of pond-associated waterbirds to decline 10 percent or greater relative to the NEPA/CEQA baseline. For these reasons, the impacts from Alternative Island B would be less than significant.

Alternative Island B Level of Significance: Less than Significant

Alternative Island C. Additional breaches and levee modifications under Alternative Island C would result in the same transition processes as described in Alternatives Island A and Island B, but in more locations along Ponds A20 and A21. Further, all breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. The impacts and benefits for pond-associated waterbirds would be similar to those described for Alternative B. The removed, lowered, and breached levees would reduce the total roosting habitat for pond-associated birds, but foraging habitat would improve with the creation of temporary mudflats and more complex channel networks. These changes are small compared to the amount of existing foraging habitat for pond associated waterbirds in the South Bay and are unlikely to cause the populations of pond-associated waterbirds to decline 10 percent or greater relative to the NEPA/CEQA baseline. For these reasons, the impacts from Alternative Island C would be less than significant.

Alternative Island C Level of Significance: Less than Significant

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. The Mountain View Ponds would continue to function as unenhanced managed ponds. The outboard levees around Ponds A1 and A2W are high-priority levees for inland flood protection and would continue to be maintained for that purpose and for PG&E access. There would be no change to the operation and maintenance of Charleston Slough. Within a few years, the existing islands in A1 and A2W currently used as nesting habitat will degrade and no longer be suitable.

Under the No Action Alternative, there would be no change in impacts to pond-associated waterbirds.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Under Alternative Mountain View B, Ponds A1 and A2W would be breached to support the development of tidal marshes. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve

the existing boardwalk within Pond A2W, and add more concrete to expand the footings around the bases of transmission towers. Habitat transition zones and nesting islands would also be constructed.

The reconstruction of the PG&E boardwalk through Pond A2W would have limited impacts because there is an existing boardwalk in this area. A new, short, section of boardwalk will be constructed but due to its location outside the ponds and its small area, it would not have a significant impact on pond-associated birds. Nesting and roosting habitat for pond-associated waterbirds would be increased through the construction of islands and habitat transition zones. Island features would be designed to provide breeding habitat for avocets, stilts, and terns, at least in the short term. As these constructed habitat features transition to tidal marsh, the usefulness of these islands for nesting birds may decrease. These islands have some potential to create concentration effects, where the large numbers of birds would become targets for predators such as gulls or disease. Gull management would be a part of ongoing Refuge and SBSP Restoration Project management and should help avoid displacement.

During the transition to the tidal marsh habitat, the ponds would provide foraging habitat in the form of mudflats and would enhance the local fisheries. Other than the islands, the long-term restored tidal marsh would offer minimal habitat for avocets, stilts, and terns, but some nesting opportunities may still be available on the surrounding levees, if isolated from terrestrial predators. Small amounts of mudflat foraging habitat outside of the ponds would be lost due to scour from the levee breaches, but improved foraging, in the short term, would be created inside the ponds as they transition to tidal marsh. These changes are small compared to the amount of habitat available for pond-associated waterbirds in the South Bay and are not expected reduce populations 10 percent or greater relative to the NEPA/CEQA baseline. As such, these impacts are considered less than significant.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Alternative Mountain View C would provide the same avocet, stilt, and tern habitat changes and impacts as described in Alternative Mountain View B, though Alternative C would transition Ponds A1 and A2W to tidal marsh more quickly. The same PG&E infrastructure improvements noted for Alternative B would also be made in Alternative C. In addition, Charleston Slough would be breached to the Bay and connected to Pond A1 to provide full tidal action to facilitate its transition to tidal marsh, as required by the City of Mountain View's BCDC permit requirement. The south and west levees of Charleston Slough would be raised and improved to meet City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance.

The construction of the PG&E boardwalk would have little impact on pond-associated waterbirds as described for Alternative Mountain View B. The water intake structure improvements would have temporary effects to waterbirds that use Charleston Slough. Islands and habitat transition zones would be constructed as in Alternative B, but the habitat transition zone in Pond A2W would be smaller to allow connection to Mountain View Marsh and Stevens Creek Marsh. Like Alternative B, the nesting islands have potential to increase concentration effects; gull control would be a part of ongoing Refuge management and should help avoid displacement.

As the ponds and Charleston Slough evolve into tidal marsh, a transitional habitat of intertidal mudflats would offer short-term foraging habitat for avocets and stilts. The large areas of intertidal mudflat that

provide foraging habitat for pond-associated waterbirds present at Charleston Slough would be converted to tidal marsh.

Alternative Mountain View C would add new public access features, including a long trail on the eastern side of Pond A2W's levee and on the remaining levee along the outer (northern) side of Charleston Slough. These features may reduce the effectiveness of the habitat islands to be constructed within the ponds by bringing people nearer to them. These effects are discussed more fully in Impact 3.5-18. In general, however, research (e.g., Trulio et al. 2013) indicates that placing the islands several hundred feet away from trails or observation platforms (the exact distance varies by species) appears to minimize disturbance. Project designs and the choice of exact locations of the constructed islands would incorporate this guidance.

Overall, the foraging habitat for avocets, stilts, and terns, would be reduced with the conversion of the Mountain View Ponds, particularly at Charleston Slough, to tidal marsh, but new nesting and roosting habitat would be available on the constructed islands and habitat transition zones. The habitat changes are small compared to the amount of habitat available for pond-associated waterbirds in the South Bay and are not expected reduce populations 10 percent or greater relative to the NEPA/CEQA baseline. As such, these impacts are considered less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. These ponds are managed as muted tidal ponds that contain subtidal habitat of varying depths that provides foraging habitat for terns and other waterbirds. Surrounding levees are isolated from trails and could provide nesting habitat for avocets, stilts, and terns. The Refuge would continue to operate and maintain the ponds in accordance with ongoing management practices that have been in place since the implementation of Phase 1 actions.

Under Alternative A8 A, there would be no impacts to pond-associated waterbirds.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Under Alternative A8 B, up to two habitat transition zones would be added to the interior of the ponds. The A8 Ponds would be managed and maintained in the same manner as described for the No Action Alternative. Though there would be a nominal decrease in the amount of subtidal forage habitat for water birds, the constructed habitat transition zones would provide increased potential roosting and nesting habitat. These changes are not expected to reduce the populations of pond-associated waterbirds 10 percent or greater relative to the NEPA/CEQA baseline. The overall changes in habitat would be minor under Alternative A8 B and are considered less than significant.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), the Ravenswood Ponds would continue to be maintained as seasonal ponds, with dry salt pannes in the summer and shallow ponding in the winter. Because outboard levees along Ponds R3 and R4 provide

inland flood protection, they would be maintained or repaired as needed. Conditions would not change; therefore, there would be no impacts to avocets, stilts, and terns and their habitat at these ponds.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would be opened to tidal action through a levee breach, and the inner pond levee between Ponds R3 and R4 would be improved. Water control structures would be built to allow Ponds R5 and S5 to be managed as enhanced managed pond habitat. Another water control structure would be added to Pond R3 at its border with Ravenswood Slough to improve control of water levels and thus forage quality along historic sloughs within that pond. A habitat transition zone would be added to Pond R4.

Each of these actions is intended to be beneficial to waterbirds and shorebirds. First, the introduction of tidal action would introduce mudflats that would provide foraging habitat for shorebirds. Over time, vegetation would grow on the mudflats as they transition to tidal marsh. Channels in the tidal marsh would continue to provide intertidal mudflat foraging habitat, especially with the breach planned at the historic slough to provide more dynamic tidal action. Second, the enhanced managed pond habitat in Ponds R5 and S5 would provide some potentially suitable foraging habitat for waterbirds. These additional features could improve waterbird and shorebird habitat overall. These changes are not expected to reduce the populations of pond-associated waterbirds 10 percent or greater relative to the NEPA/CEQA baseline. For these reasons, Alternative Ravenswood B would have a less-than-significant impact under CEQA and be beneficial under NEPA for pond-associated waterbirds.

Alternative Ravenswood B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood C. Impacts for Alternative Ravenswood C are similar to Alternative Ravenswood B with the exception that Ponds R5 and S5 would be managed as intertidal mudflats and an additional habitat transition zone would be installed along the improved inner levee. Also, water control structures would be placed on Pond R3 to improve foraging quality along historic sloughs in Pond R3. A fence would also be installed along the southern edge of Pond R3 to limit disturbance by pedestrians and dogs. Shorebirds, including avocets, are expected to use intertidal mudflat habitat to forage on invertebrates and may also forage in Pond R3 depending on the control structure operation. Any changes caused by Alternative B are unlikely to reduce the populations of pond-associated waterbirds 10 percent or greater relative to the NEPA/CEQA baseline. The habitat transition zone would also provide additional nesting and roosting habitat. These actions would have less-than-significant impacts under CEQA and be beneficial under NEPA for pond-associated waterbirds.

Alternative Ravenswood C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood D. Alternative Ravenswood D would provide features similar to those in Alternative Ravenswood B, the primary difference being that under Alternative D Ponds R5 and S5 would be fitted with water control structures and connected to the Bayfront Canal and Atherton Channel Project (of the City of Redwood City) to accept peak stormwater runoff from large winter storms and address residual salinity in Ponds R5 and S5. When not being used for such temporary stormwater detention, these ponds would be managed as enhanced pond habitat that could provide foraging habitat for shorebirds or other waterbirds. Like Alternative Ravenswood C, water control structures on Pond R3 would increase the foraging habitat within this pond. A fence would be installed along the southern edge of Pond R3 to decrease disturbance by humans and dogs. These actions are not expected to result in a

decline in populations of pond-associated waterbirds by 10 percent or greater relative to the NEPA/CEQA baseline and would therefore have a less-than-significant impact under CEQA and be beneficial under NEPA for pond-associated waterbirds.

Alternative Ravenswood D Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Phase 2 Impact 3.5-5: Potential reduction in the numbers of non-breeding, salt-pond-associated birds (e.g., phalaropes, eared grebes, and Bonaparte's gulls) as a result of habitat loss.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. The project-level impacts of the implementation of Phase 2 are assessed in this Final EIS/R.

Several species of waterbirds that may not otherwise occur in high numbers in the South Bay use the South Bay ponds in considerable numbers. These pond specialists, which include the eared grebe, Wilson's phalarope, red-necked phalarope, and Bonaparte's gull, are closely associated, at least on the scale of San Francisco Bay, with high-salinity ponds. High-salinity ponds generally support high invertebrate biomass, but low species diversity. Eared grebes, phalaropes, and Bonaparte's gulls use primarily moderate- to high-salinity ponds, where they forage on brine shrimp and brine flies (Harvey et al. 1992). Most individuals of all four of these species breed outside of the SBSP Restoration Project area and occur in the project area only during winter or during spring and fall migration (2007 EIS/R).

Eared grebes prefer ponds that are deep enough for them to forage in the underwater column. Phalaropes and Bonaparte's gulls are dabblers preferring shallow ponds. These migratory birds are present during summer and winter months and rely on the high-salinity ponds created for salt production. The restoration of high-salinity ponds into lower-salinity managed ponds and tidal marsh would affect these salt-pond-associated birds.

Within the Phase 2 pond clusters, high-salinity ponds are limited to the Ravenswood Ponds. The Island Ponds and A8 Ponds are tidally influenced, and therefore the salinity depends on the tide (variable between freshwater at 0 parts per thousand (ppt) salinity and ocean water at 32 ppt salinity). The Mountain View Ponds contain deep water year-round, and salinity is variable depending on rainfall (i.e., higher salinity in the summer when ponds are shallower and have reduced freshwater input) and very limited exchange with Bay water through siphons. These ponds never reach the high-salinity levels that are required for the mass production of brine flies. At the Ravenswood pond cluster, summer conditions provide dry salt flats, which convert to high-salinity shallow pools when it rains in the winter.

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no changes to the current configuration of the Island Ponds would take place. They are currently open to tidal action and slowly transitioning to tidal marsh. No high-salinity pond habitat currently exists at the Island Ponds, and none would be created under this alternative. Actions under Alternative A would not impact salt-pond-associated birds.

Alternative Island A Level of Significance: No Impact

Alternative Island B. Under Alternative Island B, levee breaches in Pond A19, the removal of the levee between Ponds A19 and A20, and the lowering of the Pond A19 levees would be implemented to enhance connectivity and transition to tidal marsh. All breached or excavated material would be sidecast into

deeper portions of the ponds to raise bottom elevations. No high-salinity pond habitat currently exists at the Island Ponds, and none would be created under Alternative Island B. Actions under Alternative B would not impact salt-pond-associated birds.

Alternative Island B Level of Significance: No Impact

Alternative Island C. Alternative Island C would be similar to Alternative Island B. In addition to those activities implemented under Alternative B, additional levee breaches on Ponds A20 and A21, pilot channel construction, and levee lowering at Pond A20 would be done to further enhance the connectivity of ponds and waterways as the ponds transition to tidal marsh under Alternative C. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. No high-salinity pond habitat currently exists at the Island Ponds, and none would be created under Alternative C. Actions under Alternative C would not impact salt-pond-associated birds.

Alternative Island C Level of Significance: No Impact

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. The Mountain View Ponds would continue to function as unenhanced managed ponds. Under the No Action Alternative, there would not be an impact on salt-pond-associated, high-salinity specialist birds.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Under Alternative Mountain View B, Ponds A1 and A2W would be breached to support the development of tidal marshes. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add more concrete to expand the footings around the bases of transmission towers.

Currently, there is only very limited use of the Mountain View ponds by phalaropes and somewhat higher use by eared grebes. There would be some reduction in foraging habitat of these species with the conversion to tidal marsh. Few of these birds use the Mountain View Ponds, and changes would be small both intrinsically and relative to habitat present elsewhere in the South Bay. These changes are not expected to reduce populations of non-breeding, salt-pond-associated birds by 50 percent. As such, the impacts of Alternative B would be less than significant.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Alternative Mountain View C would involve breaching levees, as described in Alternative Mountain View B to increase the transition to tidal marsh habitat. The same PG&E infrastructure improvements noted for Alternative B would also be made in Alternative C. Under Alternative C, more levees would be breached so that Ponds A1 and A2W and Charleston Slough would also be breached to the Bay and connected to Pond A1 to provide full tidal action to facilitate transitions to tidal marsh, as required by the City of Mountain View's BCDC permit requirement. Islands and habitat transition zones would be constructed as in Alternative B, but the habitat transition zone in Pond A2W would be smaller to allow future connection to the Mountain View Mitigation Marsh and Stevens Creek Mitigation Marsh. Also, under Alternative C, the south and west levees of Charleston Slough would be raised and improved to meet City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at

the breach. The associated pumps and other utilities would be modified as needed for access and maintenance.

Currently, there is only limited use of the Mountain View ponds by phalaropes and somewhat higher use by eared grebes. There would be some reduction in foraging habitat of these species with the conversion to tidal marsh. However, because few of these birds use the Mountain View ponds and changes would be small intrinsically and relative to habitat present elsewhere in the South Bay, populations are unlikely to decline by 50 percent below baseline levels. For these reasons, the impacts of Alternative C would be less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no changes to the current configuration of the A8 Ponds would take place. These ponds are currently open to muted tidal action and some freshwater inputs when the armored notch is open. No high-salinity pond habitat currently exists at the A8 Ponds, and none would be created under Alternative A8 A. Actions under Alternative A8 A would not impact salt-pond-associated birds.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Under Alternative A8 B, habitat transition zones would be construction in the southern corners of Pond A8S, but no other changes to the current configuration of the A8 Ponds would take place. They are currently open to tidal action and some freshwater inputs when the reversible armored notch is open. No high-salinity pond habitat currently exists at the A8 Ponds, and none would be created under Alternative A8 B. Actions under Alternative A8 B would not impact high-salinity specialist, salt-pond-associated birds.

Alternative A8 B Level of Significance: No Impact

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), the Ravenswood Ponds would continue to be managed as shallow seasonal ponds with no direct connection to tidal influences. The high-salinity water in the borrow ditches and in the historic slough traces offers suitable salt-pond-associated, high-salinity habitat. During the winter, the shallow ponds provide foraging habitat for some salt-pond-associated species. The No Action Alternative would not impact salt-pond-associated, high salinity bird habitat.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would be opened to tidal action and would become tidal marsh, and Ponds R5 and S5 would be enhanced managed ponds. High-salinity water channels in the historic slough of Pond R4 and shallow, high-salinity winter ponding in Ponds R5 and S5 would be lost. This loss could potentially impact foraging habitat for salt-pond-associated birds. Pond R3 would continue to be managed as a seasonal pond, with an added water control structure to control water levels, but one that would contain higher-salinity pools for foraging. Due to the abundance of high salinity ponds in other areas of the South Bay, it is expected that the small reduction in high salinity pond habitat resulting from Alternative Ravenswood B activities would not reduce populations by

50 percent below baseline levels and would therefore have a less-than-significant impact on salt-pond-associated birds.

Alternative Ravenswood B Level of Significance: Less than Significant

Alternative Ravenswood C. Under Alternative Ravenswood C, Pond R 4 would be opened to tidal action and would become tidal marsh, and Ponds R5 and S5 would become managed intertidal mudflats. High-salinity water channels in the historic slough of Pond R4 and shallow high-salinity, winter ponding would be lost. This loss could potentially impact foraging habitat for salt-pond-associated, high-salinity specialist birds. Pond R3 would continue to be managed as a seasonal pond, with water control structures to manage water, and would continue to contain higher-salinity pools for foraging. Due to the abundance of higher-salinity ponds in other areas of the South Bay, it is expected that the small reduction in high salinity pond habitat resulting from Alternative Ravenswood C activities would not reduce populations by 50 percent below baseline levels and therefore would have a less-than-significant impact on salt-pond-associated, high-salinity specialist birds.

Alternative Ravenswood C Level of Significance: Less than Significant

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would be opened to tidal action and transition to tidal marsh habitat, and Ponds R5 and S5 would become enhanced managed ponds as described for Alternative Ravenswood B. The primary difference between Alternative D and Alternative B is that Ponds R5 and S5 would be fitted with water control structures and connected to the Bayfront Canal and Atherton Channel Project (of the City of Redwood City) to accept peak stormwater runoff from large winter storms. This increased freshwater input and associated pond draining would reduce the salinity in Ponds R5 and S5. Also, the high-salinity water channels in the historic slough of Pond R4 would be lost. This loss could potentially impact foraging habitat for salt-pond-associated, high-salinity specialist birds. Pond R3 would continue to be managed as a seasonal pond, with water control structures to manage water and would continue to contain higher-salinity channels for foraging. Due to the abundance of higher-salinity ponds in other areas of the South Bay, it is expected that the small reduction in salt pond habitat resulting from Alternative Ravenswood D would not reduce populations by 50 percent below baseline levels and therefore would have a less-than-significant impact for salt-pond-associated, high-salinity specialist birds.

Alternative Ravenswood D Level of Significance: Less than Significant

Phase 2 Impact 3.5-6: Potential reduction in foraging habitat for diving ducks, resulting in a substantial decline in flyway-level populations.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed. Diving ducks, such as lesser and greater scaup, bufflehead, canvasbacks, and other species, occur in the South Bay primarily during the nonbreeding season (note that ruddy ducks are addressed in Impact 3.5-7 of the Phase 2 impacts). These species forage in relatively shallow aquatic habitats in the South Bay, including shallow subtidal habitats, intertidal habitats (when flooded at high tide), and low-salinity managed ponds. These species have been shown to be negatively affected by decreases in water depth, low dissolved oxygen, and increased salinity (Scullen et al. 2015).

The SBSP Restoration Project could potentially affect the numbers of diving ducks in the South Bay in several ways. By converting ponds that currently provide foraging habitat for diving ducks to tidal

habitats or enhanced managed ponds with a different hydrological regime (e.g., intertidal mudflats in Alternative Ravenswood C), the project would result in an overall loss of deeper, managed pond habitat. This conversion would be expected to adversely affect habitat for bufflehead, which occur in the South Bay primarily in managed ponds and make relatively little use of tidal waters. However, subtidal habitat in sloughs and larger channels within restored ponds would provide foraging habitat for species such as canvasbacks and scaup, potentially offsetting the effects of the loss of managed pond habitat (2007 EIS/R).

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh.

No pond habitat suitable for diving duck foraging currently exists at the Island Ponds, though they may temporarily provide some diving duck foraging habitat during high tides. Sloughs and channels would also form, offering limited foraging habitat within the vegetated tidal marsh. Although no action would be conducted, there would be changes over time to the baseline foraging habitat of diving ducks at the Island Ponds. Because there is so little existing forage habitat for diving ducks at the Island Ponds now, Phase 2 activities are unlikely to cause a population decline of 20 percent below baseline level or substantially reduce flyway-level populations. For these reasons, the changes under Alternative Island A would be less than significant.

Alternative Island A Level of Significance: Less than Significant

Alternative Island B. Under Alternative Island B, levee breaches on Pond A19, the removal of the levee between Ponds A19 and A20, and the lowering of the Pond A19 levees would be implemented to enhance habitat connectivity during and after the transition to tidal marsh. Further, all breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. The impacts and benefits of Alternative Island B would be similar to those described for Alternative Island A, though with a different spatial distribution in Pond A19 and Mud Slough. Because there is so little existing forage habitat for diving ducks in the Island Ponds now, Phase 2 activities are unlikely to cause a population decline of 20 percent below baseline level or substantially reduce flyway-level populations. Therefore, the changes under Alternative Island would be less than significant.

Alternative Island B Level of Significance: Less than Significant

Alternative Island C. Alternative Island C would be similar to Alternative Island B. In addition to those activities implemented under Alternative B, additional levee breaches on Ponds A20 and A21, pilot channel construction, and levee lowering at Pond A20 would be done to further enhance habitat connectivity during the transition to tidal marsh under Alternative C. Further, all breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. The impacts and benefits of Alternative C would be similar to those described for Alternative B but would also occur in Ponds A20 and A21. Because there is so little existing forage habitat for diving ducks in the Island Ponds now, Phase 2 activities are unlikely to cause a population decline of 20 percent below baseline level or substantially reduce flyway-level populations. For these reasons, the changes under Alternative Island C would be less than significant.

Alternative Island C Level of Significance: Less than Significant

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (No Action Alternative), no new action would be taken. Ponds A1 and A2W currently function as year-round ponds with suitable diving duck foraging and roosting habitat. These ponds would be maintained in their current condition and would continue to provide the same habitat functions. There would be no impacts to diving duck foraging habitat.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Alternative Mountain View B would restore Ponds A1 and A2W to tidal marsh by breaching the outer levees. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add concrete to expand the footings around the bases of the transmission towers.

The conversion of Ponds A1 and A2W to tidal marsh would result in a long-term loss of the existing pond habitat, which currently provides foraging and roosting diving duck habitat. The sheltered, still-water habitat the ponds now provide to several hundred diving ducks per day in winter would be changed to tidal. Foraging habitat would remain for a decade or two while sediment accretes in these deeply subsided ponds. Some foraging habitat would permanently remain in the open water areas of Charleston Slough, Mountain View Slough, and Stevens Creek/Whisman Slough and slough channels created within the existing ponds. Temporary disturbance to diving duck foraging would occur during construction of the PG&E boardwalk through Pond A2W. Although some foraging habitat would be lost, substantial amounts of foraging habitat would still be available in the open waters of the Bay and in nearby managed ponds.

Implementation of ongoing monitoring and management actions would persist using the AMP. Examples of management changes that may be implemented in response to reductions in bird populations or the amounts of bird use of the ponds include social attraction to increase nesting, gull harassment, predator exclusion, recreational use of the nearby levees and ponds, or other habitat enhancements that have been shown to be effective.

Due to this availability of additional foraging habitat nearby and implementation of monitoring and adaptive management actions, these changes are not expected to produce substantial declines in flyway-level populations or reduce the population of diving ducks 20 percent below baseline levels. The impacts of Alternative Mountain View B on diving ducks would be less than significant.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Under Alternative Mountain View C, Ponds A1 and A2W would be restored to tidal marsh, as in Alternative Mountain View B, but it would also include additional levee breaches and the lowering of the levee connecting Pond A1 and Charleston Slough to connect these two water bodies. The south and west levees of Charleston Slough would be raised and improved to meet City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance. The same PG&E infrastructure improvements noted for Alternative B would also be made for Alternative C.

The habitat changes in Ponds A1 and A2W would generally be similar to those discussed above for Alternative Mountain View B. The increased connection with Charleston Slough would result in the conversion of mudflat habitat in that area to tidal marsh on a faster scale; however, water in Charleston Slough is rarely deep enough for diving ducks to use for foraging. Impacts from PG&E construction would be the same as in Alternative B and temporary in nature. Open water habitat for diving ducks is present elsewhere in the South Bay.

Implementation of ongoing monitoring and management actions would persist using the AMP. Examples of management changes that may be implemented in response to reductions in bird populations or the amounts of bird use of the ponds include social attraction to increase nesting, gull harassment, predator exclusion, recreational use of the nearby levees and ponds, or other habitat enhancements that have been shown to be effective.

Due to the availability of additional foraging habitat nearby and the implementation of monitoring and adaptive management actions, these changes are not expected to produce substantial declines in flyway-level populations or reduce the population of diving ducks 20 percent below baseline levels. The impact of Alternative Mountain View C on diving ducks would be less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. These ponds are currently open to muted tidal action through a pair of culverts and the armored notch, which was opened in 2011 as part of Phase 1 actions. The notch is opened seasonally and allows for some tidal and fluvial waters to enter the ponds, but due to restrictions in the size of the opened notch and the depth of these subsided ponds, not all the water leaves the ponds. The result is pond habitat suitable for foraging diving ducks. With time, this open water habitat will be lost as the ponds accrete sediment and begin to transition to tidal marsh. Open water habitat for diving ducks is present elsewhere in the South Bay. Due to the availability of additional foraging habitat nearby, these changes are not expected to produce substantial declines in flyway-level populations or reduce the population of diving ducks 20 percent below baseline levels. The impact of Alternative A8 A on diving ducks would be less than significant.

Alternative A8 A Level of Significance: Less than Significant

Alternative A8 B. Alternative A8 B proposes to add habitat transition zones to the southern corners of Pond A8S. The area of these habitat transition zones is very small relative to the size of the ponds themselves, and their placement would be on the southernmost corners, adjacent to the landfill access road and other activities. These are the least likely areas of the ponds to be used by diving ducks. Plentiful foraging habitat would remain within these ponds and be available in the open waters of the Bay and in nearby managed ponds. As under Alternative A8 A, this pond habitat would ultimately transition to tidal marsh. Due to the presence of diving duck foraging habitat in the South Bay, the reduction of foraging habitat as part of Alternative A8 B would not significantly reduce flyway-level populations or reduce populations 20 percent below baseline. Therefore, the impact of Alternative A8 B on diving ducks would be less than significant.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), the Ravenswood Ponds would continue to be managed as shallow seasonal ponds with no direct connection to tidal influences. No foraging habitat for diving ducks exists at the Ravenswood Ponds; therefore, this habitat would not be impacted.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would transition to tidal marsh habitat, and Ponds S5 and R5 would become enhanced managed ponds suitable for use by diving ducks. The levee at Pond R4 would be breached at the historic slough to allow tidal flows in the pond, and water control structures would connect Ponds R5 and S5 to Pond R4 (and indirectly to the Bay) and Flood Slough. There would also be a water control structure to connect Pond R3 to Ravenswood Slough, though Pond R3 would remain managed as a seasonal pond.

These Ravenswood Ponds are dry throughout much of the year and only collect rainfall, which then evaporates or seeps into groundwater; they do not currently provide much quality habitat for diving ducks. Under Alternative B, Ponds R5 and S5 would be managed as subtidal ponds, which are deep enough to provide for diving duck foraging habitat. Also, diving ducks may be able to forage in the historic sloughs within Pond R4, if they are sufficiently deep.

The combined effect of these actions would be an increase in the area and availability of habitat for diving ducks in this portion of the Refuge, and these actions would be unlikely to cause a decline to 20 percent below the baseline level in population. Alternative Ravenswood B would have a less-than-significant impact under CEQA and be beneficial under NEPA.

Alternative Ravenswood B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood C. Alternative Ravenswood C offers similar components and resultant diving duck habitat as Alternative Ravenswood B, with the exception of the goal of the enhanced managed ponds at Ponds R5 and S5. Pond R4 would still transition to tidal marsh habitat, and Ponds S5 and R5 would be graded and managed to simulate intertidal mudflats. There would also be water control structures to connect Pond R3 to Ravenswood Slough and to Pond S5, though Pond R3 would remain managed as a seasonal pond.

Although Alternative Ravenswood C would not restore or provide as much habitat for diving ducks in Ponds R5 and S5 as Alternative Ravenswood B would, there could be some improvements in diving duck foraging habitat within the sloughs that would form in Pond R4. These changes would not be expected to produce substantial declines in flyway-level populations or reduce the population of diving ducks 20 percent below baseline levels. Overall, the impact of Alternative C on diving ducks and their habitat would be less than significant.

Alternative Ravenswood C Level of Significance: Less than Significant

Alternative Ravenswood D. Alternative Ravenswood D offers similar components and resultant diving duck habitat as Alternative Ravenswood B. Pond R4 would transition to tidal marsh habitat, and Ponds S5 and R5 would become enhanced managed ponds. There would also be water control structures to connect Pond R3 to Ravenswood Slough and to Pond S5, as noted above. Most important, the City of Redwood City's Bayfront Canal and Atherton Channel Project would be hydraulically connected to the small

triangular forebay of Pond S5 to allow diversion and temporary storage of stormwater and reduction of residual salinity in these small ponds. Due to the need to manage Ponds R5 and S5 for temporary storm water detention, the winter water levels in these ponds would generally be lower, with higher peaks during large storms. The salinity would also be reduced during these episodes.

Although Alternative Ravenswood D would not restore or provide as much habitat for diving ducks in Ponds R5 and S5 as Alternative Ravenswood B would, Ponds R5 and S5 would still function as managed ponds for much of the year, providing valuable foraging habitat for more of the year than they do now. Also, diving ducks may be able to forage in the historic sloughs within Ponds R3 and R4, if the sloughs are sufficiently deep and of the correct salinity. The combined effect of these actions would be an increase in the area of habitat for diving ducks in this portion of the Refuge. These changes are not expected to produce substantial declines in flyway-level populations or reduce the population of diving ducks 20 percent below baseline levels. Alternative D would have a less-than-significant impact under CEQA and be beneficial under NEPA.

Alternative Ravenswood D Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Phase 2 Impact 3.5-7: Potential reduction in foraging habitat for ruddy ducks, resulting in a substantial decline in flyway-level populations.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

Although small numbers of ruddy ducks breed in the South Bay, this species occurs in the project area primarily during their winter and migration. In contrast with most of the diving ducks addressed in Impact 3.5-6, ruddy ducks are diving ducks that, in the South Bay, forage primarily in ponds, with relatively few individuals using tidal habitats in the South Bay. Ruddy ducks were measured to account for 61 to 64 percent of the diving ducks in 46 South Bay ponds (Brand et al. 2014). Diving ducks generally are associated with low- to medium-salinity ponds (Ibid). Other studies (Takekawa et al. 2000) have reported that the South Bay ponds supported up to 27 percent of the Bay's total waterfowl population, including 67 percent of the ruddy ducks. These findings reinforce the information presented in the 2007 EIS/R, which stated that the majority of the ruddy ducks in the entire San Francisco Bay Area were in the South Bay ponds, with only 2 percent in open water tidal habitats in the South Bay.

Ruddy duck numbers were reported as 38,818, representing 10 per cent of all waterbirds in the San Francisco Bay estuary and 36 per cent of the Lower Pacific Flyway population. Of the total ruddy ducks counted, 77 per cent (29,892) were observed in the South Bay Ponds (Richmond et al. 2014). As such, substantial effects on the populations in the South Bay are likely to have a significant impact on the status of the flyway as a whole. The abundance of this species in the South Bay relative to the total flyway population increases the importance of potential effects from project activities.

Because ruddy ducks in the South Bay make little use of tidal waters, the SBSP Restoration Project would likely result in declines in ruddy duck numbers within the South Bay due to conversion of managed ponds to tidal habitats. Changes to existing pond habitat may affect ruddy duck populations by reducing available foraging habitat during a period of increased energetic stress following reproduction and molt (Tome 1984). Reductions in available forage may also increase density-dependent effects on fitness and increase the daily energy expenditure required to meet metabolic demand (Brand et al. 2014). As sedimentation fills the breached former ponds and suitable pond habitat gradually decreases, some

additional energy expenditure would be required for ruddy ducks to move to additional areas. Disease, prey availability, and competitive interactions may increase as a result of reduced wintering habitat. However, despite the potential for decreased fitness, ruddy ducks have shown a strong ability to recover from weight losses associated with molting and laying (Thebault et al. 2008). That observation, in combination with the high levels of primary productivity in the South Bay pond area, mean that food sources are not likely the limiting factor on ruddy duck populations.

Some ruddy ducks displaced from South Bay ponds that are restored to tidal habitats would likely simply shift to other areas, including other managed ponds in the area of the SBSP Restoration Project, Cargill salt ponds, or ponds and lakes elsewhere in the South Bay. Others may be displaced from the South Bay entirely, but may shift to other Bay Area locations or use other central California locations during migration and winter. Unpublished data from the Eden Landing pond complex support this assertion. Pond E9 was breached in September or 2009, converting what had been deep-water pond habitat to tidal lagoons and mudflats. Winter bird counts in that area before and after the levee breach indicate that a spatial redistribution of the ruddy duck population occurred but that a large overall decline did not. Ruddy duck numbers in Pond E9 declined over 95 per cent between 2011 and 2014. However, the adjacent ponds, E2, E4, E6A E6E, E7, E8, E8X, and E10 all saw large increases in ruddy duck numbers. In total, ruddy duck numbers for the Eden Landing pond complex decreased approximately 16 percent after the breach of Pond E9 (C. Strong, pers. comm. 2015).

This decrease in ruddy duck counts is not necessarily evidence of a negative trend in ruddy duck populations in the San Francisco Bay or the Pacific Flyway. Trend analysis of midwinter waterfowl survey results between 1981 and 2012 suggests that ruddy duck numbers in the San Francisco Estuary have been stable over that period even while demonstrating large interannual variability. The scale of the displacement caused by the loss of suitable habitat in Pond E9 is significantly less than the annual variation around the San Francisco Bay. These populations, numbering 38,818 in 2012, shift by many thousands of individuals counted on an annual basis compared to a change of approximately 100 fewer individuals counted within the Eden Landing Pond Complex (Richmond et al. 2014). However, given the importance of San Francisco Bay to Pacific Flyway numbers of ruddy ducks and the relatively high percentage of Bay Area ruddy ducks that occur in South Bay ponds, a decline in the extent of salt ponds in the South Bay may result in flyway-level declines in ruddy duck numbers (2007 EIS/R).

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh. These ponds are currently transitioning to tidal marsh habitat as a result of activities implemented under the ISP.

Currently, a small number of ruddy ducks use the Island Ponds and adjacent sloughs for foraging. As the ponds transition to tidal marsh, they are expected to be used less, though some foraging habitat would still be available within the channels inside the marsh. These changes are not expected to produce substantial declines in flyway-level populations or reduce the population of ruddy ducks 15 percent below baseline levels. Compared to the habitat present for ruddy ducks in the South Bay, the changes to habitat would be small and less than significant.

Alternative Island A Level of Significance: Less than Significant

Alternative Island B. Under Alternative Island B, levee breaches on Pond A19, the removal of the levee between Ponds A19 and A20, and the lowering of Pond A19 levees would be implemented to enhance habitat connectivity as the ponds continue to transition to tidal marsh. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. A small amount of habitat currently being used by ruddy ducks would be lost, as described in Alternative Island A. These changes are not expected to produce substantial declines in flyway-level populations or reduce the population of ruddy ducks 15 percent below baseline levels. Compared to the habitat present for ruddy ducks in the South Bay, the changes to habitat would be small and less than significant.

Alternative Island B Level of Significance: Less than Significant

Alternative Island C. Alternative Island C would be similar to Alternative Island B. In addition to those activities implemented under Alternative B, additional levee breaches on Ponds A20 and A21, pilot channel construction, and levee lowering at Pond A20 would be done to further enhance habitat connectivity as the ponds continue to transition to tidal marsh. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. A small amount of habitat currently being used by ruddy ducks would be lost, as described in Alternative Island A. These changes are not expected to produce substantial declines in flyway-level populations or reduce the population of ruddy ducks 15 percent below baseline levels. Compared to the habitat present for ruddy ducks in the South Bay, the changes to habitat would be small and less than significant.

Alternative Island C Level of Significance: Less than Significant

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. Ponds A1 and A2W currently function as year-round ponds with suitable ruddy duck foraging habitat. These ponds would be maintained in their current condition and would continue to provide the same habitat functions. There would be no impacts to ruddy duck foraging habitat.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Alternative Mountain View B would restore Ponds A1 and A2W to tidal marsh by breaching the outer levees. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add concrete to expand the footings around the bases of transmission towers.

The conversion to tidal marsh would result in a loss of existing pond habitat that currently provides foraging and roosting ruddy duck habitat. Seasonal permitted hunting in Refuge ponds near the Mountain View Ponds may make the availability of these ponds to ruddy ducks more important. Construction of the PG&E boardwalk could result in temporary disturbance. After restoration, some foraging habitat would remain in the open water areas of the former ponds, Charleston Slough and Mountain View Slough, though these sloughs are smaller and shallower than Ponds A1 and A2W. Foraging habitat for ruddy ducks is also available in nearby managed ponds and elsewhere in the South Bay. The project would not impact breeding habitat.

The ruddy duck is a stable species in the South Bay (Richmond et al. 2014). The threshold for a significant impact to ruddy ducks is a 15 percent decline in population. Given the wide availability of other ponds in the South Bay the conversion of these ponds to marsh would not cause a 15 percent population decline. With the availability of foraging habitat nearby and no impacts to breeding or nesting habitat, Alternative Mountain View B is expected to have a less-than-significant impact on the ruddy duck population.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Under Alternative Mountain View C, additional breaches would be made, and the levee between Pond A1 and Charleston Slough would be lowered to enhance connectivity and incorporate Charleston Slough in the transition to tidal marsh. The south and west levees of Charleston Slough will be raised and improved to meet City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added at the levee breach location between Pond A1 and Charleston Slough. The associated pumps and other utilities would be modified as needed for access and maintenance. The same PG&E infrastructure improvements noted for Alternative Mountain View B would also be made for Alternative Mountain View C.

Alternative Mountain View C results in similar habitat losses and temporary construction disturbances as those described for Alternative Mountain View B because deep-water foraging habitat would be lost in Ponds A1 and A2, but would also include Charleston Slough. This slough, which currently provides intertidal mudflat habitat, does not currently serve as foraging habitat for ruddy ducks, so its inclusion would not contribute to additional impacts. Foraging habitat for ruddy ducks is also available in nearby managed ponds. These changes are not expected to produce substantial declines in flyway-level populations or reduce the population of ruddy ducks 15 percent below baseline levels. With the availability of foraging habitat nearby and no impacts to breeding or nesting habitat, Alternative Mountain View C is expected to have a less-than-significant impact on the ruddy duck population.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no action would take place. These ponds are currently open to muted tidal action through a pair of culverts and the armored notch, which was opened in 2011 as part of Phase 1 actions. The notch is opened seasonally and allows for some tidal and fluvial waters to enter the ponds, but due to restrictions in the size of the opened notch and the depth of these subsided ponds, not all the water leaves the ponds. The result is seasonally muted tidal pond habitat suitable for foraging ruddy ducks. With time, this open water habitat would be lost as the pond transitions to tidal marsh. However, open water habitat for ruddy ducks is present elsewhere in the South Bay. Due to the availability of additional foraging habitat nearby, and because Alternative A8 A proposes no short-term changes to the habitat or management in the A8 Ponds, neither substantial declines in flyway-level populations nor a 15 percent reduction in population are expected. For these reasons, the impacts of Alternative A8 A on ruddy ducks would be less than significant.

Alternative A8 A Level of Significance: Less than Significant

Alternative A8 B. Alternative A8 B proposes to add habitat transition zones to the southern corners of Pond A8S. The total area of lost foraging habitat would be very small in absolute terms and relative to the rest of the pond and nearby managed ponds. As under Alternative A8 A, this pond habitat would

ultimately transition to tidal marsh. Due to the presence of other ruddy duck foraging habitat in the South Bay, the reduction of foraging habitat as part of Alternative A8 B would be unlikely to cause either substantial declines in flyway-level populations or a 15 percent reduction in population. As such, impacts to ruddy ducks would be less than significant.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), the Ravenswood Ponds would continue to be managed as shallow seasonal ponds with no direct connection to tidal influences. Because this alternative would result in no changes, there would be no impact to ruddy ducks under the No Action Alternative.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would transition to tidal marsh habitat and Ponds S5 and R5 would become enhanced managed ponds. The levee at Pond R4 would be breached at the historic slough to allow tidal flows in the pond, and water control structures would connect Ponds R5 and S5 to Pond R4 (and indirectly to the Bay) and Flood Slough. An additional water control structure would connect Pond R3 to Ravenswood Slough, though Pond R3 would remain managed as a seasonal pond.

These Ravenswood Ponds are dry throughout much of the year and only collect rainfall, which then evaporates or seeps into groundwater; they do not currently provide much quality habitat for ruddy ducks, and are minimally used. Under Alternative Ravenswood B, Ponds R5 and S5 would be managed as subtidal ponds that are deep enough to provide for ruddy duck foraging habitat. Also, ruddy ducks may be able to forage in the historic sloughs within Pond R4, if the sloughs are sufficiently deep. These changes are not expected to produce substantial declines in flyway-level populations or reduce the population of ruddy ducks 15 percent below baseline levels. Overall, Alternative Ravenswood B would have a less-than-significant impact on ruddy ducks under CEQA and be beneficial under NEPA.

Alternative Ravenswood B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood C. Alternative Ravenswood C offers similar components and resultant ruddy duck habitat as Alternative Ravenswood B, with the exception of the goal of the enhanced managed ponds at Ponds R5 and S5. Pond R4 would still transition to tidal marsh habitat, but Ponds S5 and R5 would be graded and managed to simulate intertidal mudflats. There would also water control structures to connect Pond R3 to Pond S5, though Pond R3 would remain managed as a seasonal pond.

Although Alternative Ravenswood C would not restore or provide as much habitat for ruddy ducks in Ponds R5 and S5 as Alternative Ravenswood B would, there could be some improvements in ruddy duck foraging habitat within the sloughs that would form in Ponds R3 and R4, if the sloughs are sufficiently deep and of low enough salinity. These changes are not expected to produce substantial declines in flyway-level populations or reduce the population of ruddy ducks 15 percent below baseline levels. Overall, the impacts on diving ruddy ducks and their habitat would be less than significant.

Alternative Ravenswood C Level of Significance: Less than Significant

Alternative Ravenswood D. Alternative Ravenswood D offers similar components and resultant ruddy duck habitat as Alternative Ravenswood B. Pond R4 would transition to tidal marsh habitat, and Ponds R5 and S5 would become enhanced managed ponds. There would also be water control structures to connect Pond R3 to Ravenswood Slough and to Pond S5, as noted above. Most important, the City of Redwood City's Bayfront Canal and Atherton Channel Project would be hydrologically connected to the small triangular forebay of Pond S5 to allow diversion and temporary storage of stormwater. Due to the need to manage Ponds R5 and S5 for temporary stormwater detention, the winter water levels in these ponds would generally be lower than in the rest of the year, with higher peak-water levels during large storms. The salinity would also be reduced during these episodes.

Although Alternative Ravenswood D would not restore or provide as much habitat for ruddy ducks in Ponds R5 and S5 as Alternative Ravenswood B would, Alternative D would provide more than Alternative Ravenswood C. Ponds R5 and S5 would still function as managed ponds for much of the year, providing valuable foraging habitat. Also, ruddy ducks may be able to forage in the historic sloughs within Pond R4, if the sloughs are sufficiently deep. The combined effect of these actions would be an increase in the area of habitat for ruddy ducks in this portion of the Refuge. Alternative D would not cause substantial declines in flyway-level populations or cause a 15 percent reduction in population and would therefore be a less-than-significant impact under CEQA and beneficial under NEPA.

Alternative Ravenswood D Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Phase 2 Impact 3.5-8: Potential habitat conversion impacts on California least terns.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

California least terns are classified as both a federally and a state endangered species. No critical habitat has been proposed or designated for California least terns; therefore, none would be adversely modified by the project. California least terns have bred in the vicinity of the SBSP Restoration Project area in small numbers in the past, but now occur in the South Bay primarily as post-breeding dispersants. Most California least terns in the San Francisco Bay Area currently nest in Alameda County, and most foraging during the breeding season (e.g., to feed chicks) occurs outside the Phase 2 pond areas. This species currently uses the South Bay primarily as a post-breeding staging area in late summer. Former salt ponds are used for both foraging (in lower-salinity ponds supporting fish) and roosting (on levees, islands, and artificial structures such as boardwalks). Although large foraging concentrations are noted in salt ponds, this species frequently forages on the Bay and in channels as well (2007 EIS/R).

Foraging habitat for California least terns in deep managed ponds is expected to decline under alternatives where those deep managed ponds are converted to tidal or seasonal habitats. However, tidal restoration is expected to benefit prey fish populations for the California least tern, and miles of sloughs and channels that would provide foraging habitat for this species are proposed to be restored by the project. California least terns "displaced" from current South Bay foraging locations would likely find alternative foraging areas, either within the project area, the larger South Bay, or elsewhere in the Bay Area. The degree to which a reduction in foraging habitat in ponds would be offset by increases in habitat and prey abundance in the Bay and in restored sloughs and whether the SBSP Restoration Project would have considerable impacts on the species at all are unknown (2007 EIS/R).

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh. The existing habitat and future vegetated tidal marsh habitat at the Island Ponds provide minimal foraging and roosting habitat for the California least tern. Foraging habitat may improve over time as tidal channels and tidal marsh form, providing higher-quality fish nurseries. Overall, Alternative Island A would have no impact on the California least tern or its habitat.

Alternative Island A Level of Significance: No Impact

Alternative Island B. Under Alternative Island B, levee breaches on Pond A19, the removal of the levee between Ponds A19 and A20, and the lowering of the Pond A19 levees would be implemented to enhance habitat connectivity as the ponds transition to tidal marsh. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Like Alternative Island A, the existing habitat and future vegetated tidal marsh habitat at the Island Ponds would provide minimal foraging and roosting habitat for the California least tern. The benefits of tidal marsh would still occur, but in somewhat different locations. Overall, Alternative Island B would have no impact on the California least tern or its habitat.

Alternative Island B Level of Significance: No Impact

Alternative Island C. Alternative Island C would be similar to Alternative Island B. In addition to those activities implemented under Alternative B, additional levee breaches on Ponds A20 and A21, pilot channel construction, and levee lowering at Pond A20 would be done to further enhance habitat connectivity as the ponds transition to tidal marsh under Alternative C. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Like Alternatives Island A and Island B, the existing habitat and future vegetated tidal marsh habitat at the Island Ponds would provide minimal foraging and roosting habitat for the California least tern. The benefits of tidal marsh would still occur, but in more and different locations. Overall, Alternative Island C would have no impact on the California least tern or its habitat.

Alternative Island C Level of Significance: No Impact

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. Levees would be maintained and the ponds would continue to function as deep managed ponds. The currently deep water in Ponds A1 and A2W would continue to provide foraging habitat. Levees and islands within the Mountain View Ponds would continue to provide roosting habitat. The No Action Alternative would have no significant impact on the California least tern or its habitat.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. In Alternative Mountain View B, Ponds A1 and A2W would be restored to tidal marsh by breaching the levee. PG&E infrastructure improvements would involve adding a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raising and improving

the existing boardwalk within Pond A2W, and adding more concrete to the footings around the bases of transmission towers. Constructed islands and habitat transition zones would be included in the restoration.

Currently, California least terns forage in the Mountain View Ponds. After breaching, terns would most likely continue to use these areas and adjacent open water for foraging. The islands and remaining levees would also provide opportunities for roosting and nesting habitat. There could be temporary disturbance to California least tern roosting habitat during levee modifications, but the construction of habitat islands would result in a small net change in the amount of roosting habitat while increasing the quality of that habitat. Deep-water foraging within Ponds A1 and A2W would be lost, but over time the tidal marsh would develop into fish nursery habitat that could improve deep-water foraging in the adjacent sloughs and the channels that form within the ponds. Temporary impacts to foraging and roosting habitat through disturbance could also occur during construction of the PG&E boardwalk and tower foundations. Impacts to the California least tern associated with the loss of foraging habitat in Ponds A1 and A2W would be partially offset through improved foraging in adjacent sloughs and the creation of roosting islands in the ponds. Therefore, Alternative Mountain View B would not be expected to impact California least tern or its habitat enough to contribute to a population decline. Due to these improvements and the availability of adjacent open bay foraging habitat, impacts to the California least tern would be less than significant.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Under Alternative Mountain View C, additional breaches would be made, and the levee between Pond A1 and Charleston Slough would be lowered to connect these two water bodies as they transition to tidal marsh. The south and west levees of Charleston Slough would be raised and improved to meet City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance. The same PG&E infrastructure improvements noted for Alternative Mountain View B would also be made for Alternative C.

Alternative Mountain View C would provide similar California least tern habitat features as described in Alternative Mountain View B. Due to the improvements provided by improved fisheries, creation of nesting islands, and presence of nearby deep-water habitat that would provide improved foraging, as described for Alternative B, impacts to California least tern would be less than significant under Alternative C.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. The ponds would continue to be managed as muted tidal ponds that currently provide suitable foraging habitat for the California least tern. Over the very long term, these muted tidal ponds are expected to accrete sufficient sediment to begin transitioning to tidal marsh, which would be a reduction in the quantity of least tern foraging habitat, but would provide an increase in foraging quality by providing additional fisheries nursery habitat. The No Action Alternative at the A8 Ponds would have a less-than-significant impact on the California least tern.

Alternative A8 A Level of Significance: Less than Significant

Alternative A8 B. Alternative A8 B proposes to add habitat transition zones to the southern corners of Pond A8S. Because the combined area of these habitat transition zones is not large in absolute terms or relative to the total area of the ponds, the resulting configuration would still provide adequate foraging habitat in the short term. Also, the surrounding levees and additional habitat transition zones would provide short-term roosting habitat that could benefit California least terns. In the long term, as in Alternative A8 A, these ponds would accrete sediment, reach marsh plain elevation, and begin growing marsh vegetation, which would reduce least tern foraging habitat within the pond and potential roosting habitat in the habitat transition zones. However, this long-term transition would also provide an increase in foraging quality by providing additional fisheries nursery habitat. Due to the availability of foraging habitat nearby and improved fish habitat quality, the impact of Alternative A8 B on the California least tern would be less than significant.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), the ponds would be maintained in their current condition. The ponds would continue to function as seasonal ponds, with dry salt pannes in the summer and shallow ponding in the winter. The outboard levees along Ponds R3 and R4 provide inland flood protection and would be maintained or repaired as needed. The ponds are isolated from tidal action and Bay connectivity. Under the No Action Alternative, there would be no impacts to the California least tern.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would be breached to allow transition to tidal marsh habitat, and Ponds R5 and S5 would become managed subtidal ponds. A habitat transition zone and an improved inner levee would be added to Pond R4. There would also be a water control structure to connect Pond R3 to Ravenswood Slough, though Pond R3 would be continue to be managed as a dry salt panne.

Currently, the Ravenswood Ponds do not provide foraging habitat for the California least tern. Potential roosting habitat exists on levees, but is not used in these areas. Under Alternative Ravenswood B, some roosting habitat would be lost as levees are breached and Pond R4 is converted to tidal marsh habitat. However, these losses would not be significant because the habitat is not being used.

Overall, the Alternative Ravenswood B actions would be beneficial to the California least tern because they would improve foraging habitat. The introduction of tidal action in Pond R4 would provide additional slough habitat for foraging. As the tidal marsh develops, improved fisheries could increase the foraging quality within sloughs and channels in Pond R4 and also outside of this pond. Also, Ponds R5 and S5, functioning as enhanced managed ponds, may provide some potential foraging habitat for least terns. Under Alternative B, there would be no impact under CEQA because no California least terns currently utilize this habitat and actions would be beneficial under NEPA.

Alternative Ravenswood B Level of Significance: No Impact (CEQA); Beneficial (NEPA)

Alternative Ravenswood C. Under Alternative Ravenswood C, Pond R4 would still transition to tidal marsh habitat, but Ponds R5 and S5 would become managed intertidal mudflats. There would also be water control structures to connect Pond R3 to Ravenswood Slough and to Pond S5.

The tidal sloughs and fisheries habitat improvements described for Alternative Ravenswood B would also apply under Alternative Ravenswood C, and the same types of beneficial habitat improvements would result, but the benefit of increased foraging habitat in Ponds R5 and S5 would be somewhat less under Alternative Ravenswood C than in Alternative Ravenswood B. The loss of potential roosting habitat in Pond R4 and on the levees would be the same, as these areas are not being used. Under Alternative Ravenswood C, there would be no impact under CEQA because no California least terns currently utilize this habitat and actions would be beneficial under NEPA.

Alternative Ravenswood C Level of Significance: No Impact (CEQA); Beneficial (NEPA)

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would transition to tidal marsh habitat, and Ponds R5 and S5 would become enhanced managed ponds. There would also be water control structures to connect Pond R3 to Ravenswood Slough and to Pond S5. Most important, the City of Redwood City's Bayfront Canal and Atherton Channel Project would be hydraulically connected to the small triangular forebay of Pond S5 to allow diversion and temporary storage of stormwater. Due to the need to manage Ponds R5 and S5 for temporary stormwater detention, the winter water levels in these ponds would generally be lower, with higher peaks during large storms. The salinity would also be reduced during these episodes.

Alternative Ravenswood D provides similar benefits as Alternative Ravenswood B. Under Alternative D, there would be no impact under CEQA because no California least terns currently utilize this habitat and actions would be beneficial under NEPA.

Alternative Ravenswood D Level of Significance: No Impact (CEQA); Beneficial (NEPA)

Phase 2 Impact 3.5-9: Potential loss of pickleweed-dominated tidal salt marsh habitat for the salt marsh harvest mouse and salt marsh wandering shrew and further isolation of these species' populations due to breaching activities and scour.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

Tidal restoration would require direct alteration of habitats (e.g., levee breaching, levee lowering, and installation of water-control structures) that would affect levees and small amounts of tidal marsh, generally on the outboard side of the ponds. Also, tidal marsh restoration would re-create larger tidal prisms within existing channels, which would be expected to result in an increased level of erosion of existing tidal marshes and scour of the existing channels. However, in the long term, there would be an overwhelmingly positive benefit to tidal marsh-associated species from tidal restoration, as thousands of acres of new marsh would be created, albeit over an extended period. However, there is very little pickleweed-dominated tidal salt marsh in the area of the SBSP Restoration Project, and the existing narrow corridors of habitat between larger blocks of habitat are necessary for dispersal of mice and shrews among core habitat areas. Therefore, even the limited habitat present in these corridors has high value as dispersal habitat (2007 EIS/R).

Because tidal restoration efforts are being phased, new pickleweed-dominated habitat is expected to form from early phases of restoration before later breaching actions and associated scour occur elsewhere in the Refuge. In the long term, tidal restoration is expected to result in substantial increases in habitat

connectivity through marsh establishment. The 2007 EIS/R concluded that these sorts of project benefits would occur before short-term reductions in dispersal capability have substantial effects on populations in core habitat areas (2007 EIS/R). The early results of Phase 1 and ISP activities are supporting this general assertion.

For pickleweed marsh-associated species such as the salt marsh harvest mouse and salt marsh wandering shrew, the SBSP Restoration Project is expected to result in considerable increases in habitat in the long term, thereby augmenting populations far beyond the minor, local impacts that would occur during some construction activities. Monitoring of salt marsh harvest mouse habitat and numbers would occur as part of the AMP to monitor the success of the SBSP Restoration Project with respect to these species (2007 EIS/R).

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh. These ponds are currently transitioning to tidal marsh habitat as a result of activities implemented under the ISP.

Small losses of pickleweed-dominated tidal marsh may occur at ponds where uncontrolled breaching occurs, due to erosion and scour. Because such breaches would be unintentional, the locations and extent of habitat loss would not be controlled at all, and thus salt marsh harvest mouse and wandering shrew dispersal in any given area may be adversely affected in the short term. However, in the long term, uncontrolled breaching of levees would ultimately result in increases in tidal marsh habitat, a beneficial effect for tidal marsh-associated wildlife. This increase in habitat would offset any minor short-term impacts to pickleweed-dominated tidal marsh and the dispersal or habitat of marsh-associated species.

Under the No Action Alternative, the salt marsh harvest mouse and salt marsh wandering shrew are expected to benefit from the increase in tidal habitat that would occur due to the natural transition to tidal marsh habitat at the Island Ponds. The impact to the salt marsh harvest mouse and salt marsh wandering shrew would be less than significant under CEQA and beneficial under NEPA.

Alternative Island A Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Island B. Under Alternative Island B, actions would be taken to increase the habitat connectivity and complexity as the Island Ponds transition to tidal marsh. The Pond A19 levee would be breached along Mud Slough and lowered in various places. The levees between Ponds A19 and A20 would be removed. Further, all breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. The removal of levees through breaching, lowering, and full removal would result in temporary losses to the narrow bands of pickleweed marsh habitat that exist along the outside of these levees. However, it is expected that, in the long term, these actions would result in an overall increase in tidal marsh habitat containing pickleweed-dominated habitat.

Under Alternative Island B, the salt marsh harvest mouse and salt marsh wandering shrew are expected to benefit from the increase in tidal habitat that would occur due to the natural transition to tidal marsh habitat at the Island Ponds. The impact to the salt marsh harvest mouse and salt marsh wandering shrew would be less than significant under CEQA and beneficial under NEPA.

Alternative Island B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Island C. In addition to the actions listed under Alternative Island B, Alternative Island C offers additional actions to further enhance the habitat connectivity and complexity as all three Island Ponds transition to tidal marsh. The actions would include widening and adding breaches and excavating pilot channels cut into the marsh to further facilitate sediment accretion and marsh development. Further, all breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. The removal of levees through breaching, lowering, and full removal would result in temporary losses to the narrow bands of pickleweed marsh habitat that exist along these levees. In the long term, the actions in Alternative Island C would result in a large overall increase in tidal marsh habitat containing pickleweed-dominated habitat.

Under Alternative Island C, the salt marsh harvest mouse and salt marsh wandering shrew are expected to benefit from the increase in tidal habitat that would occur due to the natural transition to tidal marsh habitat at the Island Ponds. The impact to the salt marsh harvest mouse and salt marsh wandering shrew would be less than significant under CEQA and beneficial under NEPA.

Alternative Island C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. The Mountain View Ponds would continue to function as managed ponds, and Charleston Slough would remain the muted tidal mudflat that it is. The outboard levees around Ponds A1 and A2W are high-priority levees to be maintained for inland flood protection.

Under the No Action Alternative, the Mountain View Ponds would be maintained in their current condition; therefore, this alternative would have no impact on pickleweed-dominated tidal salt marsh habitat or dependent species.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Under Alternative Mountain View B, Ponds A1 and A2W would be breached to transition from pond to tidal marsh habitat. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add concrete to expand the footings around the bases of the transmission towers.

The PG&E infrastructure and levee improvements within the ponds would not affect pickleweed habitat. The addition of the new boardwalk section north of Pond A1 would be in an area that is a mixture of marshes and mudflats; there could be some lost pickleweed habitat there. All PG&E boardwalks would include anti-predator gates to reduce the chance of terrestrial predators using the boardwalk to access marsh areas and attempt to prey on marsh species. Also, the new length of boardwalk would provide some potential new perching habitat for raptors that may prey on salt marsh harvest mice; however, no new towers or power lines would be added. The new section of boardwalk and the improvements to existing boardwalk will necessitate additional PG&E Section 7 consultation under the federal Endangered Species Act.

Narrow corridors of pickleweed habitat would be lost when levees are breached to connect to the channels outside the ponds. The habitat losses at breaching points would be a short-term impact to pickleweed habitat. In the long-term, the breaches are expected to result in the creation of large extents of diverse

tidal marsh habitat. A diverse tidal marsh habitat would be interspersed with pickleweed, offering increased habitat and dispersal corridors for the salt marsh harvest mouse and the salt marsh wandering shrew.

Overall, Alternative Mountain View B would increase the total area of pickleweed-dominated tidal marsh habitat in the long term. Any losses would be temporary and would be more than offset by the restoration of tidal marsh habitat in Ponds A1 and A2W. The impact to the salt marsh harvest mouse and salt marsh wandering shrew would be less than significant under CEQA and beneficial under NEPA.

Alternative Mountain View B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Mountain View C. Under Alternative Mountain View C, additional breaches would be made, and the levee between Pond A1 and Charleston Slough would be lowered to connect these two waterbodies. The south and west levees of Charleston Slough would be raised and improved to meet City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance. The same PG&E infrastructure improvements and associated effects noted for Alternative Mountain View B would also be made for Alternative C.

Alternative Mountain View C includes restoration of tidal marsh habitat in Charleston Slough and proposes several more breaches than the number proposed under Alternative Mountain View B. The additional breaches would impact more existing pickleweed habitat corridors. Similar to Alternative Mountain View B, though, these impacts would be temporary. Further restoration of tidal marsh habitat in Charleston Slough would result in more pickleweed-dominated marsh habitat than offered in Alternative Mountain View B.

Therefore, Alternative Mountain View C would increase the total area of pickleweed-dominated tidal marsh habitat in the long term. Any losses would be temporary and would be more than offset by the restoration of tidal marsh habitat in Ponds A1 and A2W and Charleston Slough. The impact to the salt marsh harvest mouse and salt marsh wandering shrew would be less than significant under CEQA and beneficial under NEPA.

Alternative Mountain View C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. The USFWS would continue to operate and maintain the ponds in accordance with ongoing management practices that have been in place since the implementation of Phase 1 actions. The A8 Ponds are managed as subtidal ponds with muted tidal action. During the summer months they are managed as deep-water habitat and during the wet season water levels may be drawn down so as to provide flood storage capacity for the Lower Guadalupe River Project.

Under the No Action Alternative, the A8 Ponds would be managed and maintained in their current condition. Therefore, there would be no change in impacts to pickleweed-dominated tidal salt marsh habitat.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Alternative A8 B proposes to add habitat transition zones to the southern corners of Pond A8S. Under Alternative A8 B, the A8 Ponds would be managed and maintained in the same manner as described for the No Action Alternative. Potential short-term losses of pickleweed habitat could occur during the installation of the habitat transition zone if this habitat type exists where the habitat transition zone would be installed. However, in general the pond edges are very steep, so there is not much space for pickleweed-dominated marsh to grow. Also, the temporary losses would be offset by the construction of more gently sloped habitat transition zones, which would greatly increase the space for new pickleweed habitat to form in the habitat transition zones. The habitat transition zones would be designed with a gradual slope to encourage the development of diverse tidal marsh habitats that would include an elevation range suitable for pickleweed-dominated tidal salt marsh habitat.

Overall, the impact of the temporary losses of pickleweed habitat would be less than significant, and the addition of new pickleweed habitat on the habitat transition zones would be beneficial under NEPA.

Alternative A8 B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), the ponds would be maintained in their current condition. The ponds would continue to function as seasonal ponds. The outboard levees along Ponds R3 and R4 provide inland flood protection and would be maintained or repaired as needed. The ponds are isolated from tidal action and Bay connectivity. Narrow corridors of pickleweed habitat exist on the outboard side of the Ravenswood Ponds and in a small portion of Pond S5.

Under the No Action Alternative, there would be no impact to pickleweed-dominated tidal salt marsh habitat.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would be converted to tidal marsh by breaching the eastern levee and lowering a portion of the northwestern levee. There would also be construction of a habitat transition zone along one edge. Ponds R5 and S5 would be enhanced managed ponds; the installation of water control structures would allow the water levels of the ponds to be managed. Pond R3 would be enhanced with a water control structure for better control of water levels and forage quality in its slough traces and borrow ditches.

Impacts to pickleweed-dominated habitat would be caused by the breaching and lowering of the outboard levees of Pond R4 and to a lesser extent in the western section of Pond S5 and eastern section of R3, where the water control structures would be placed. Also in Pond S5, existing pickleweed habitat would be flooded as the area transitions to managed pond habitat. These impacts would be more than offset by the restoration of tidal marsh in Pond R4. The Ravenswood Ponds are adjacent to large pickleweed marshes, and their elevation is appropriate for marsh formation; therefore, pickleweed habitat is expected to quickly colonize and develop along restored tidal sloughs and habitat transition zones in the restored marsh.

Overall, Alternative Ravenswood B would increase pickleweed-dominated tidal marsh habitat in the long run. Any losses of this vegetation type would be temporary and would be more than offset by the restoration of tidal marsh habitat in Pond R4. Restored tidal marsh habitat in Pond R4 would offer

increased habitat and dispersal corridors for the salt marsh harvest mouse and salt marsh wandering shrew. The impact of Alternative B would be less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood C. Under Alternative Ravenswood C, Pond R4 would be converted to tidal marsh by breaching the eastern levee and lowering a portion of the northwestern levee. A habitat transition zone would also be constructed along one edge. Ponds R5 and S5 would be enhanced to simulate intertidal mudflats. The installation of water control structures in R5 and S5 would allow the ponds to be operated to replicate daily tidal cycles. Pond R3 would be enhanced with two water control structures for better control of water levels and forage quality in its slough traces and borrow ditches.

Impacts to pickleweed-dominated habitat would be caused by the breaching and lowering of the outboard levees of Pond R4 and to a lesser extent in the western section of Pond S5 and the eastern section of Pond R3, where the water control structure would be placed. Also in Pond S5, existing pickleweed habitat would be regularly flooded as the area transitions to mudflat. These impacts would be more than offset by the restoration of tidal marsh in Pond R4. The Ravenswood Ponds are adjacent to large pickleweed marshes and their elevation is appropriate for marsh formation; therefore, pickleweed habitat is expected to quickly colonize and develop along restored tidal sloughs and habitat transition zones in the restored marsh.

Overall, Alternative Ravenswood C would increase pickleweed-dominated tidal marsh habitat in the long run. Any losses of this vegetation type would be temporary and would be more than offset by the restoration of tidal marsh habitat in Pond R4. Restored tidal marsh habitat in Pond R4 would offer increased habitat and dispersal corridors for the salt marsh harvest mouse and salt marsh wandering shrew. The impact of Alternative C would be less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood C Level of Significance: Less than Significant (CEQA), Beneficial (NEPA)

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would be converted to tidal marsh by breaching the eastern levee and lowering a portion of the northwestern levee. Habitat transition zones would also be constructed along two interior edges of the pond. Ponds R5 and S5 would be enhanced managed ponds; the installation of water control structures and a connection to the Bayfront Canal and Atherton Channel Project would allow the ponds to be operated to temporarily detain peak stormwater flows and address residual salinity in Ponds R5 and S5. Pond R3 would be enhanced as described in Alternative Ravenswood C.

Impacts to pickleweed-dominated habitat would be caused by the breaching and lowering of the outboard levees of Pond R4 and to a lesser extent in the western section of Pond S5, where the water control structure would be replaced. Also in Pond S5, existing pickleweed habitat would be flooded as the area transitions to managed pond habitat and stormwater detention basin. These impacts would be more than offset by the restoration of tidal marsh in Pond R4. The Ravenswood Ponds are adjacent to large pickleweed marshes and their elevation is appropriate for marsh formation; therefore, pickleweed habitat is expected to quickly colonize and develop along restored tidal sloughs and habitat transition zones in the restored marsh.

Overall, Alternative Ravenswood D would increase pickleweed-dominated tidal marsh habitat in the long run. Any losses of this vegetation type would be temporary and would be more than offset by the restoration of tidal marsh habitat in Pond R4. Restored tidal marsh habitat in Pond R4 would offer increased habitat and dispersal corridors for the salt marsh harvest mouse and salt marsh wandering shrew. The impact of Alternative D would be less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood D Level of Significance: Less than Significant (CEQA), Beneficial (NEPA)

Phase 2 Impact 3.5-10: Potential construction-related loss of or disturbance to special-status, marsh-associated wildlife.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

Construction related to the implementation of the SBSP Restoration Project could potentially disturb some special-status wildlife species, and in some cases could lead to the loss of individuals. Wildlife species that occur in tidal marsh habitats in the project area include special-status species such as the salt marsh harvest mouse, salt marsh wandering shrew, California Ridgway's rail, saltmarsh common yellowthroat, Alameda song sparrow, and northern harrier (2007 EIS/R).

Tidal restoration would require direct alteration of habitats (e.g., levee breaching and installation of water control structures) that would affect levees and small amounts of tidal marsh. Such activities could potentially result in direct injury or mortality to marsh-associated species and their nests, eggs, and young, though such direct effects are expected to be minor due to the limited nature of direct impacts. Also, restoration activities associated with both tidal restoration and enhancement of managed ponds (e.g., grading, island and berm construction, water-control structure installation and maintenance) would involve the movement of heavy equipment, loud noise, and human presence in and adjacent to existing marsh habitats. These activities may result in the disturbance of wildlife within those habitats, possibly causing individuals to flee areas adjacent to construction activities or abandon their nests or territories in these areas. Such occurrences would be short-term adverse effects. It is anticipated that a number of measures to avoid and minimize impacts to federally listed species, such as seasonal work windows and biological monitoring as described below, would be required by the BO for this project (2007 EIS/R).

Seasonal work windows and biological monitoring may be used to avoid and minimize construction-related impacts to special-status, marsh-associated wildlife. Work in areas that could cause disturbance or direct take of nesting birds (e.g., accidental crushing of individuals or nests) would be limited to the period September 1 through February 1, to the extent practicable. At any time of year, work within tidal salt marsh could impact California Ridgway's rails or salt marsh harvest mice. If seasonal avoidance is not possible, pre-construction surveys would be conducted for California Ridgway's rails and salt marsh harvest mice, and if these species are detected, project implementation would be delayed or redesigned, are a biological monitor would be present during construction to minimize potential impacts (2007 EIS/R).

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), there would be no construction, and thus no construction-related impacts would occur.

Alternative Island A Level of Significance: No Impact

Alternative Island B. Alternative Island B would involve lowering and removing portions of levees and adding two new breaches to the north side of Pond A19. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Small fringe areas of marsh habitat exist along the levees in the Island Ponds. Potential impacts to California Ridgway's rails or salt marsh harvest mice or their habitat could occur during construction, but impacts would be minor and limited to small areas immediately adjacent to breaches or other levee alterations. Any potential minor impacts to marsh-associated wildlife due to construction activities would be greatly offset by the much larger restoration of vegetated tidal marsh over the long term. Such habitat restoration would increase the extent of habitat for all special-status, marsh-associated wildlife species substantially.

Seasonal work windows and biological monitoring would be used to avoid and minimize construction-related impacts to special-status, marsh-associated wildlife. Work in areas that could cause disturbance or direct take of nesting birds (e.g., accidental crushing of individuals or nests) would be limited to the period September 1 through February 1, to the extent practicable. At any time of year, work within tidal salt marsh could impact California Ridgway's rails or salt marsh harvest mice. If seasonal avoidance is not possible, pre-construction surveys would be conducted for California Ridgway's rails and salt marsh harvest mice, and if these species are detected, project implementation would be delayed, redesigned, or biological monitoring would be present during construction to minimize potential impacts.

With the implementation of the avoidance and minimization measures described above, the overall effect would be less than significant.

Alternative Island B Level of Significance: Less than Significant

Alternative Island C. Alternative Island C would involve lowering and removing portions of levees, adding two new breaches, widening existing breaches, and excavating pilot channels to better distribute flows and sediment within Pond A19 and increase connectivity and complexity in Ponds A20 and A21. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Construction impacts would be the same as those listed in Alternative Island B but would occur over wider areas. As in Alternative Island B, these temporary impacts would be more than offset by full marsh formation and thus increased habitat for these special-status species. Also, the avoidance and minimization measures proposed in Alternative Island B would be implemented to reduce the potential impact as a result of construction activities to a less-than-significant level.

Alternative Island C Level of Significance: Less than Significant

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), there would be no construction, and thus no construction-related impacts would occur.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Alternative Mountain View B would involve adding habitat islands, constructing habitat transition zones, improving a levee, adding five new breaches, and constructing a small portion of trail and viewing platform between Pond A1 and Charleston Slough. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add concrete to expand the footings around the bases of the transmission towers.

The construction impacts associated with these activities could include visual/noise disturbance associated with equipment operation, crushing of individuals or nests, and habitat loss. Small fringe areas of marsh habitat exist along the levees in the Mountain View Ponds and in outer Charleston Slough. Potential impacts could occur to marsh habitat during construction, but impacts would be minor and limited to small areas. These impacts to marsh-associated wildlife due to construction activities would be greatly offset by the creation of approximately 750 acres of vegetated tidal marsh over the long term. Habitat transition zones and habitat islands would be included to increase marsh habitat diversity. Such habitat restoration would increase the extent of habitat for all special-status, marsh-associated wildlife species substantially.

Seasonal work windows and biological monitoring may be used to avoid and minimize construction-related impacts to special-status, marsh-associated wildlife. Work in areas that could cause disturbance or direct take of nesting birds (e.g., accidental crushing of individuals or nests) would be limited to the period September 1 through February 1, to the extent practicable. At any time of year, work within tidal salt marsh could impact California Ridgway's rails or salt marsh harvest mice. If seasonal avoidance is not possible, pre-construction surveys would be conducted for California Ridgway's rails and salt marsh harvest mice, and if these species are detected, project implementation would be delayed, redesigned, or biological monitoring would be present during construction to minimize potential impacts.

With the implementation of the avoidance and minimization measures discussed above, the overall effect of Alternative Mountain View B would be less than significant.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Alternative Mountain View C involves a similar construction process as that outlined in Alternative Mountain View B with additional breaches, an improved levee on the south and west sides of Charleston Slough, and a lowered levee between Charleston Slough and Pond A1. The same PG&E infrastructure improvements noted for Alternative B would also be made for Alternative C. Charleston Slough would also be opened to full tidal flows instead of its current muted tidal flows. The intent of this change would be to provide tidal marsh formation in Charleston Slough, as the BCDC is requiring of the City of Mountain View, which owns the slough. The south and west levees of Charleston Slough would be raised and improved to meet the City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance.

The construction impacts would be similar to those listed for Alternative Mountain View B, except the overall schedule would be increased due to the additional components and the footprint associated with levee alterations along Charleston Slough would be increased. The area along Charleston Slough contains suitable marsh habitat for special-status wildlife. The salt marsh harvest mouse has been observed in this area, and the footprint of these levee improvements would be substantially wider than the current

footprint. The precautions outlined in the Programmatic Biological Opinion for special-status, marsh-associated wildlife would be taken during construction to minimize impacts. The avoidance and minimization measures proposed in Alternative B would be implemented to reduce the potential for impact as a result of construction activities. Over the long term, new habitat creation would offset any temporary construction impacts, and the overall effect would be less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), there would be no construction, and thus no construction-related impacts would occur.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Alternative A8 B proposes to add habitat transition zones to the southern corners of Pond A8S. Construction of the habitat transition zones could result in visual/noise disturbance associated with equipment operation, the crushing of individuals or nests, and habitat loss. Small fringe areas of marsh habitat exist along the levees in the A8 Ponds. Potential impacts could occur to marsh habitat during construction, but impacts would be minor and limited to small areas of marsh habitat. Any potential minor impacts to marsh-associated wildlife due to construction activities would be temporary and offset by the creation of the larger habitat transition zones, which would offer increased areas of suitable habitat for marsh-associated wildlife.

Seasonal work windows and biological monitoring may be used to avoid and minimize construction-related impacts to special-status, marsh-associated wildlife. Work in areas that could cause disturbance or direct take of nesting birds (e.g., accidental crushing of individuals or nests) would be limited to the period September 1 through February 1, to the extent practicable. At any time of year, work within tidal salt marsh could impact California Ridgway's rails or salt marsh harvest mice. If seasonal avoidance is not possible, pre-construction surveys would be conducted for California Ridgway's rails and salt marsh harvest mice, and if these species are detected, project implementation would be delayed, redesigned, or biological monitoring would be present during construction to minimize potential impacts.

With the implementation of the avoidance and minimization measures discussed above, the overall effect of Alternative A8 B would be less than significant.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), there would be no construction, and thus no construction-related impacts would occur.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Alternative Ravenswood B would involve converting Pond R4 to tidal marsh with a pilot channel and breach at the entrance of the historic slough, converting Ponds R5 and S5 to deep manager ponds, adding a habitat transition zone, adding a water control structure to increase control over water levels in Pond R3, improving the interior levee between Ponds R3 and R4, lowering an outboard levee of Pond R4, and installing a viewing platform and an viewing platform.

The construction impacts associated with these activities could involve the visual/noise disturbance associated with equipment operation, the crushing of individuals or nests, and habitat loss. Because existing conditions contain minimal marsh habitat, construction-related impacts to marsh-associated wildlife species would be expected to be minimal. Small fringe areas of marsh habitat exist along the levees in the Ravenswood Ponds, and potential impacts to these areas would occur during construction. These impacts would be minor and limited to small areas, and potential impacts to marsh-associated wildlife due to construction activities would be greatly offset by the restoration of Pond R4 to tidal marsh. The habitat transition zone would increase marsh habitat diversity. The recreation and public access features would be located in places that are not habitat for these species or that are already being modified as part of the Phase 2 actions. Such habitat restoration would increase the extent of habitat for all special-status, marsh-associated wildlife species substantially.

Seasonal work windows and biological monitoring may be used to avoid and minimize construction-related impacts to special-status, marsh-associated wildlife. Work in areas that could cause disturbance or direct take of nesting birds (e.g., accidental crushing of individuals or nests) would be limited to the period September 1 through February 1, to the extent practicable. At any time of year, work within tidal salt marsh could impact California Ridgway's rails or salt marsh harvest mice. If seasonal avoidance is not possible, pre-construction surveys would be conducted for California Ridgway's rails and salt marsh harvest mice, and if these species are detected, implementation would be delayed, redesigned, or biological monitoring would be present during construction to minimize potential impacts.

With the implementation of the avoidance and minimization measures discussed above, the overall effect would be less than significant.

Alternative Ravenswood B Level of Significance: Less than Significant

Alternative Ravenswood C. Under Alternative Ravenswood C, Pond R4 would be converted to tidal marsh by breaching the eastern levee and breaching and lowering a portion of the northwestern levee. Alternative C would also involve the construction of habitat transition zones. Ponds R5 and S5 would be enhanced to simulate intertidal mudflats. Water control structures would also be installed to manage flows into and out of Ponds R3, R5, and S5. In addition, a boardwalk trail leading to a viewing platform in the northwestern corner of Pond R4 and interpretative platforms along the Pond R5 levee would be constructed.

Construction activities for Alternative Ravenswood C would have similar temporary impacts to fringe marsh habitat along levees as Alternative Ravenswood B. In addition to the tidal marsh habitat improvements listed in Alternative B, improvements to habitat for marsh-associated wildlife for Alternative Ravenswood C would include a tidal mudflat in Ponds R5 and S5 and a habitat transition zone along the improved interior Pond R3/R4 levee. Such habitat restoration would increase the extent of habitat for all special-status, marsh-associated wildlife species substantially.

Construction-related impacts would be minimized through the implementation of the measures described in Alternative Ravenswood B, and the overall effect of Alternative Ravenswood C would be less than significant.

Alternative Ravenswood C Level of Significance: Less than Significant

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would be converted to tidal marsh by breaching the eastern levee and lowering a portion of the northwestern levee. There would also

be construction of habitat transition zones. Ponds R5 and S5 would be enhanced managed ponds; the installation of water control structures and a connection to the Bayfront Canal and Atherton Channel Project would allow the ponds to be operated to temporarily to detain peak stormwater flows and address residual salinity in Ponds R5 and S5. Water control structures would be installed on Pond R3. Recreational access would be similar to that proposed in Alternative Ravenswood B, except the northwestern trail would not be a boardwalk; rather, it would be on a levee crest. Construction impacts to habitat for marsh-associated wildlife for Alternative Ravenswood D would be similar in type and extent to those listed for Alternatives Ravenswood B and Ravenswood C. Small fringe areas of marsh habitat exist along the levees in the Ravenswood Ponds. Potential impacts could occur to marsh habitat during construction, but impacts would be minor and limited to small areas of marsh habitat. Any potential minor impacts to marsh-associated wildlife due to construction activities would be greatly offset by the restoration of Pond R4 to tidal marsh habitat over the long term.

Construction-related impacts would be minimized through the implementation of the measures described in Alternative Ravenswood B, and the overall effect of Alternative Ravenswood D would be less than significant.

Alternative Ravenswood D Level of Significance: Less than Significant

Phase 2 Impact 3.5-11: Potential construction-related loss of or disturbance to nesting pond-associated birds.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

Construction related to the implementation of the SBSP Restoration Project could potentially disturb some wildlife species and in some cases could lead to the loss of individuals. Birds that nest in managed pond habitats may be adversely affected by construction activities. Such species include the double-crested cormorant, Caspian tern, Forster's tern, black skimmer, California gull, American avocet, black-necked stilt, and western snowy plover (2007 EIS/R).

Because these species occasionally nest on levees or their side-slopes or fringing marshes, tidal restoration activities such as levee breaching or lowering and pond enhancement activities such as berm construction, island construction, or installation of water-control structures could result in the direct alteration of levees and islands on which these birds nest. Levee breaching would also result in the flooding of some ponds that are currently dry, which could destroy nests placed on dried pond bottoms or islands or internal berms and levees. Construction activities would also involve the movement of heavy equipment, loud noise, and human presence in and adjacent to existing nesting habitat. These activities may result in the disturbance of birds nesting within ponds, potentially resulting in the abandonment of nests, eggs, or young, or may facilitate predation on eggs or young by causing adults to flee (2007 EIS/R).

To minimize such impacts, several measures are incorporated into the project. Work in and adjacent to potential bird-nesting habitat would be conducted outside of the avian nesting season to the extent practicable. Work in these areas that could cause disturbance or direct take (e.g., accidental crushing of individuals or nests) would be limited to the period September 1 through January 31, to the extent practicable. This condition would minimize potential impacts to nesting birds. If seasonal avoidance is not possible, pre-construction surveys would be conducted for nesting birds. If any nesting pond-associated waterbirds are detected in areas that could be disturbed by construction activities, the implementation would be delayed, redesigned, a biological monitor would be present to minimize potential impacts to

actively nesting birds, or other measures could be taken to avoid impacts in consultation with USFWS and CDFW (2007 EIS/R).

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), there would be no construction, and thus no construction-related impacts would occur.

Alternative Island A Level of Significance: No Impact

Alternative Island B. Alternative Island B would involve lowering and removing portions of levees and adding two new breaches. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Impacts during construction for Alternative Island B would be concentrated on the levees which are not used by nesting birds (except perhaps Canada geese (*Branta canadensis*)). However, with implementation of the minimization measures (e.g., seasonal avoidance of nesting birds, pre-construction surveys, and biological monitoring) described above, impacts to nesting birds as a result of construction-related disturbance would be less than significant.

Alternative Island B Level of Significance: Less than Significant

Alternative Island C. Construction impacts under Alternative Island C would be similar to those under Alternative Island B with the addition of two more levee breaches (into Ponds A20 and A21), longer extents of levee lowering, and two pilot channels cut into Pond A19 at existing breaches. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. The result would be an increased footprint of construction activities and increased construction schedule. However, with implementation of the minimization measures (e.g., seasonal avoidance of nesting birds, pre-construction surveys, and biological monitoring) described above, impacts to nesting birds as a result of construction-related disturbance would be less than significant.

Alternative Island C Level of Significance: Less than Significant

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), there would be no construction, and thus no construction-related impacts would occur.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Alternative Mountain View B would involve adding habitat islands, constructing habitat transition zones, improving a levee, adding five new breaches, and constructing a small portion of a trail and a viewing platform between Pond A1 and Charleston Slough. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add concrete to expand the footings around the bases of the transmission towers.

The Mountain View Ponds contain suitable habitat for nesting pond-associated birds. Various California gull, Forster's tern, and avocet colonies, are located here, as are other nesting birds. Construction activities could impact these nesting pond-associated birds. Visual and noise impacts from construction equipment could temporarily disturb nesting birds, and construction and breaching could directly impact nesting birds through nest flooding or crushing. The creation of nesting islands and improved invertebrate habitat and fisheries would be expected to offset the short-term construction impacts and provide an

overall (at least short-term) benefit to nesting pond-associated birds. With implementation of the minimization measures (e.g., seasonal avoidance of nesting birds, pre-construction surveys, and biological monitoring) described above, impacts to nesting birds as a result of construction-related disturbance would be less than significant.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Alternative Mountain View C would involve a similar construction process as that outlined in Alternative Mountain View B with the inclusion of extra breaches, larger improved levees with a trail on the south and west sides of Charleston Slough, a new trail along the PG&E access route on the east side of Pond A2W, a lowered levee between Charleston Slough and Pond A1, and the opening of Charleston Slough to full tidal flows. The south and west levees of Charleston Slough would be raised and improved to meet City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance. The same PG&E infrastructure improvements noted for Alternative B would also be made for Alternative C.

Construction impacts would be similar to those listed for Alternative Mountain View B with the additional construction impacts and increased construction schedule associated with levee alterations along Charleston Slough and the additional trail features. The lowering of this levee may result in increased construction disturbance and reduce the long-term benefit of levee habitat for nesting; this area contains levees and islands with suitable habitat for nesting pond-associated birds. Also, the creation of nesting islands and improved invertebrate habitat and fisheries is expected to offset the short-term construction impacts and provide an overall benefit to nesting birds. With implementation of the minimization measures (e.g., seasonal avoidance of nesting birds, pre-construction surveys, and biological monitoring) described above, impacts to nesting birds as a result of construction-related disturbance would be less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), there would be no construction, and thus no construction-related impacts would occur.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Alternative A8 B would involve adding habitat transition zones to the southern edges of Pond A8S. The levees and adjacent ponds around the A8 Ponds contain suitable habitat for nesting pond-associated birds. The construction work would be limited to the southeastern and southwestern corners of the pond, which is already flanked by the landfill access road. These locations are one of the least likely places for birds to build nests, making impacts in these areas unlikely. Potential temporary impacts to this habitat could occur during construction activities (e.g., visual and noise disturbance, crushing of individuals or nest, habitat disturbance). With implementation of the minimization measures (e.g., seasonal avoidance of nesting birds and pre-construction surveys) described above, impacts to nesting birds as a result of construction-related disturbance would be less than significant.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), there would be no construction, and thus no construction-related impacts would occur.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Alternative Ravenswood B would involve converting Pond R4 to tidal marsh with a pilot channel and breach at the entrance of the historic slough, converting Ponds R5 and S5 to deep managed ponds, adding a habitat transition zone, adding water control structures, improving the All-American Canal (AAC), lowering an outbound levee, and installing a viewing platform. Impacts during construction would take place on levees and in the interior of ponds. Construction activities would temporarily impact suitable habitat for nesting pond-associated birds that use the Ravenswood Ponds and surrounding areas. However, with implementation of the minimization measures (e.g., seasonal avoidance of nesting birds and pre-construction surveys) described above, impacts to nesting birds as a result of construction-related disturbance would be less than significant.

Alternative Ravenswood B Level of Significance: Less than Significant

Alternative Ravenswood C. Alternative Ravenswood C is similar to Alternative Ravenswood B except that Ponds R5 and S5 would be enhanced so that they could be managed to simulate intertidal mudflats. There would also be a second levee breach in Pond R4, additional public access features, and additional water control structures. Alternative C also proposes a second habitat transition zone in Pond R4, which could increase levels of disturbance related to hauling in the fill necessary to create the habitat transition zone. Alternative C would have similar temporary impacts to suitable habitat for nesting pond-associated birds as Alternative Ravenswood B, though in more locations and for a longer construction period. However, with implementation of the minimization measures (e.g., seasonal avoidance of nesting birds and pre-construction surveys) described above, impacts to nesting birds as a result of construction-related disturbance would be less than significant.

Alternative Ravenswood C Level of Significance: Less than Significant

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would be converted to tidal marsh by breaching the eastern levee. Ponds R5 and S5 would be enhanced managed ponds; the installation of water control structures and a connection to the Bayfront Canal and Atherton Channel Project would allow the ponds to be operated to temporarily detain peak stormwater flows and reduce residual salinity in Ponds R5 and S5. A trail leading to a viewing platform in the northwestern corner of Pond R4 and an interpretative platform along the Pond R5 levee would be constructed. Two water control structures would be installed in Pond R3, and habitat transition zones would be constructed in Pond R4.

Construction impacts to suitable habitat for nesting pond-associated birds for Alternative Ravenswood D would be similar in extent to those listed for Alternatives Ravenswood B and Ravenswood C. With implementation of the minimization measures (e.g., seasonal avoidance of nesting birds and pre-construction surveys) described above, impacts to nesting birds as a result of construction-related disturbance would be less than significant.

Alternative Ravenswood D Level of Significance: Less than Significant

Phase 2 Impact 3.5-12: Potential disturbance to or loss of sensitive wildlife species due to ongoing monitoring, maintenance, and management activities.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

Management, maintenance, and monitoring are expected to occur over the life of the SBSP Restoration Project. Many of these activities would be directed toward the monitoring of, or management for, particular resources of concern, and thus the net effect of these activities would be beneficial. However, these activities have the potential to adversely affect biological resources, at least in the short term. Specifically, monitoring and management activities have the potential to cause disturbance to breeding species and even site, nest, or colony abandonment. These activities may inadvertently contribute to lowered population numbers (2007 EIS/R).

Monitoring activities would include surveys of managed ponds and restored marshes. Monitoring would, for example, entail surveys for vegetation, birds, and harbor seals conducted on foot, by car, and possibly by boat and airplane or other methods. Monitoring for nesting success at bird colonies would entail entering the colonies to count and measure. Monitoring of harvest mouse populations would entail live-trapping within restored marshes. Vegetation mapping would be conducted using aerial photos and ground-truthing. Monitoring of fish would be conducted through counts (e.g., of salmonids) and sampling with nets or other methods (for estuarine fish). Impacts would primarily be minor and short term (e.g., flushing individual birds or seals along the survey route) (2007 EIS/R).

Following the breaching of levees around a pond restored to tidal action, some of the main management activities that may occur within restored tidal habitats are predator management and invasive plant management. Vector control activities—including monitoring and mosquito abatement—would also occur periodically, particularly along habitat transition zones. Therefore, management and maintenance activities associated with the SBSP Restoration Project would occur primarily in managed ponds, restored marshes, and in recreational access areas such as trails. Examples of such activities include:

- Raising or lowering water levels within ponds via inlet and outlet structures;
- Controlling vegetation on islands, in areas designed as open water habitat and along trails using mechanical control, spraying with saltwater, spraying with approved herbicides, or other means;
- Predator management, including trapping and removal of mammals and nuisance birds;
- Periodic augmentation of sediment, oyster shell, or other ground cover on islands; and
- Maintenance of levees, berms, trails, boat launches, viewing platforms, gates, and water-control structures and other features.

As part of USFWS current practices under the AMP, the SBSP Restoration Project incorporates measures to minimize impacts from monitoring, maintenance, and management, and it is anticipated that a number of measures, including seasonal work windows, pre-construction surveys, and biological monitoring, to avoid and minimize such impacts to federally listed species would be required by the BO for this project. Activities that are sufficiently loud or obtrusive enough to cause disturbance of nesting birds or pupping harbor seals or direct take (e.g., accidental crushing of individuals or nests) would be limited to the period

September 15 through February 1, to the extent practicable, to minimize potential impacts to breeding species. If seasonal avoidance is not possible, habitat assessments and/or pre-construction surveys would be conducted for nesting birds, salt marsh harvest mice, and other sensitive species. If any nesting pond-associated waterbirds are detected in areas that could be disturbed by project-related construction activities, project implementation would be delayed or redesigned to minimize potential impacts to actively nesting birds (2007 EIS/R).

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), there would be no increase in monitoring, maintenance, and management relative to existing levels. Currently, levees are not maintained except for the levee associated with the Union Pacific Railroad track. The existing Union Pacific railroad track and associated levee would continue to be maintained, but other levees would be allowed to naturally degrade. Existing monitoring and maintenance informs adaptive management activities that are adjusted to benefit species. Impacts to sensitive wildlife species due to ongoing monitoring, maintenance, and management activities would be less than significant.

Alternative Island A Level of Significance: Less than Significant

Alternative Island B. Alternative Island B offers incremental actions to enhance the transition to tidal marsh habitat. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Monitoring, maintenance, and management activities under Alternative Island B would be expected to be extremely similar to those described for Alternative Island A. The impact on wildlife from these activities would be less than significant.

Alternative Island B Level of Significance: Less than Significant

Alternative Island C. Alternative Island C offers incremental actions to enhance the transition to tidal marsh habitat. Monitoring, maintenance, and management activities under Alternative Island C would be expected to be extremely similar to those described for Alternative Island A. The impact on wildlife from these activities would be less than significant.

Alternative Island C Level of Significance: Less than Significant

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. Ponds A1 and A2W would continue to function as managed ponds, and Charleston Slough would remain the muted tidal mudflat it is. The outboard levees around Ponds A1 and A2W are high-priority levees to be maintained for inland flood protection, so those levees would continue to be inspected and maintained as they presently are. As under current conditions, the ponds are actively managed , which involves circulating water as needed to maintain dissolved oxygen and control other parameters. Existing trails on many of the levees along the boundary of the Alviso-Mountain View pond cluster would continue to be maintained. The current use of water in Charleston Slough to supply the water to Shoreline Park would continue. Monitoring, including bird surveys and nest success surveys, would continue. Impacts to sensitive wildlife species due to ongoing monitoring, maintenance, and management activities would be less than significant.

Alternative Mountain View A Level of Significance: Less than Significant

Alternative Mountain View B. Under Alternative Mountain View B, monitoring would include annual bird surveys, nest success, and other activities as described in the AMP. Maintenance activities would include trail upkeep, predator control, general vegetation control, invasive plant species control, and vandalism repairs. Fewer outboard levees would be maintained (or repaired on failure) than in Alternative Mountain View A, but the Pond A2W eastern levee and the armored and bridged breaches in it would be maintained to continue to provide PG&E access to the power lines. Maintenance of the PG&E boardwalk through Pond A2W would be similar to what would occur under Alternative A, but the new PG&E boardwalk north of Pond A1 would also need to be maintained. Overall, Alternative B could result in a minor decrease in the amount of levee maintenance and repair and a similarly minor increase in boardwalk inspection and maintenance relative to Alternative A and to current conditions.

The results of monitoring would inform adaptive management and the design of future phases of restoration. With implementation of avoidance and minimization measures from the AMP, impacts to biological resources as a result of monitoring, maintenance, and management activities would be less than significant.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Monitoring, maintenance, and management activities for Alternatives Mountain View B and Mountain View C are expected to be similar, except monitoring and maintenance would be more extensive under Alternative C due to an increased number of constructed elements. The same PG&E infrastructure improvements noted for Alternative B would also be made in Alternative C. In addition, Alternative C would include additional levee breaches, a new location for the City of Mountain View's water intake system for Shoreline Park's sailing lake, a new trail along Pond A2W, and another trail extending on a remnant levee projecting into outer Charleston Slough. Rather than the improved levee being on the west side of Pond A1, as in Alternative B, the improved levees would be on the south and west sides of Charleston Slough and would include a reconstructed trail.

Monitoring under Alternative Mountain View C would include annual bird surveys and other activities as described in the AMP. Maintenance activities would include trail upkeep, predator control, general vegetation control, and vandalism repairs. Outboard levees would be maintained (or repaired on failure) as described in the Alternative Mountain View A. The improved south and west levees of Charleston Slough, the sailing lake water intake, and associated utilities would all need more monitoring and maintenance than in the baseline condition or in Alternative A. Alternative C would also contain more public access features and trails to the outboard levees along Pond A2W and along the west side of Charleston Slough. These features and trails would increase trail maintenance activities for Alternative C.

Alternative Mountain View C would also include increased maintenance of the new water intake and associated pumps, sumps, and other infrastructure for Shoreline Park's sailing lake. Some of these maintenance activities (e.g., backflushing and cleaning the intake) would be similar to existing practices but would take place in a new location. Other actions would increase maintenance activities (e.g., there are two more sediment sumps in Alternative C than currently exist).

The results of the monitoring would inform adaptive management and the design of future phases of restoration. With implementation of program-level avoidance and minimization measures from the 2007 EIS/R, the AMP, and other Refuge and City of Mountain View management documents as well as compliance with expected permit and BO conditions, impacts to biological resources as a result of monitoring, maintenance, and management activities would be less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), there would be no change or increase in monitoring, maintenance, and management relative to existing activities or levels. USFWS would continue to operate and maintain the ponds in accordance with ongoing management practices that have been in place since the implementation of the Phase 1 actions. These management practices include the wet season management of tidal exchange between Pond A8 and Alviso Slough to avoid fish trapping and maintain existing levels of flood protection; inspections of pond infrastructure to ensure that the pond is operating as intended, tidal connectivity is achieved as intended, and water quality requirements are being met; monitoring of restoration performance; and summer water level recording. Monitoring, including bird surveys and nest success, would continue. Maintenance and management would have a net benefit on biological resources by maintaining desirable conditions, and the results of monitoring would inform adaptive management and the design of future phases of restoration. There would be no new impacts to sensitive wildlife species due to ongoing monitoring, maintenance, and management activities.

Alternative A8 A Level of Significance: Less than Significant

Alternative A8 B. Under Alternative A8 B, USFWS would continue to operate and maintain the ponds almost entirely in accordance with ongoing management practices that have been in place since the implementation of the Phase 1 actions. These are the same management practices outlined in AlternativeA8 A. The additional activities necessary to maintain the habitat transition zones would include predator control, general and invasive vegetation control, and mosquito abatement. These activities occur already but would increase somewhat after implementation of this alternative.

Monitoring under Alternative A8 B would include bird surveys and other activities described in the AMP. The results of monitoring would inform adaptive management and the design of future phases of restoration. With implementation of the avoidance and minimization measures from the 2007 EIS/R, the AMP, and other Refuge management documents, impacts to biological resources as a result of monitoring, maintenance, and management activities would be less than significant.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), there would be no increase in monitoring, maintenance, and management relative to existing levels. USFWS would continue to operate and maintain the ponds in accordance with current management practices. Monitoring, including bird surveys and nest success, would continue. Maintenance and management would benefit biological resources by maintaining desirable conditions, and the results of monitoring would inform adaptive management and the design of future phases of restoration. The ponds would continue to function as seasonal ponds. The outboard levees along Ponds R3 and R4 provide inland flood protection and would continue to be maintained or repaired, as needed. Vegetation and predator control would continue to take place. There would be no new impacts to sensitive wildlife species due to ongoing monitoring, maintenance, and management activities.

Alternative Ravenswood A Level of Significance: Less than Significant

Alternative Ravenswood B. Under Alternative Ravenswood B, general monitoring at the Ravenswood Ponds would include annual bird surveys and other activities as described in the AMP. Maintenance activities would include trail upkeep, predator control, general vegetation control, and vandalism repairs. The outboard levees of Pond R3 would be maintained (or repaired on failure) as described in Alternative Ravenswood A, but most of Pond R4's outboard levees would be allowed to degrade with the tides. The improved levees around the AAC would also be maintained.

Alternative Ravenswood B management activities in Ponds R5 and S5 would involve managing for deep pond habitat. Water levels in Ponds R5 and S5 would be actively managed year-round using the water control structures that would be installed as a part of meeting the habitat restoration goals of these ponds. Water surface elevation in Ponds R5 and S5 would be managed to create managed pond habitat for diving and dabbling ducks and other birds by maintaining bottom depths at subtidal elevations. The salinity of these ponds could also be somewhat controlled through the use of the water control structures. Alternative B would also involve operating the water control structure on the eastern levee of Pond R3, and its outboard levee would be maintained as it is now.

With implementation of the avoidance and minimization measures from the 2007 EIS/R, the AMP, and other Refuge management documents, substantial impacts to biological resources as a result of monitoring, maintenance, and management activities would not be anticipated. Rather, maintenance and management would benefit biological resources by maintaining desirable conditions, and the results of monitoring would inform adaptive management and the design of future phases of restoration. Therefore, impacts would be less than significant.

Alternative Ravenswood B Level of Significance: Less than Significant

Alternative Ravenswood C. Under Alternative Ravenswood C, monitoring at the Ravenswood Ponds would include annual bird surveys and other activities, as described in the AMP. Maintenance activities would include trail upkeep, predator control, general vegetation control, and vandalism repairs. The outboard levee of Pond R3 would be maintained (or repaired on failure) as described in Alternative Ravenswood A, but Pond R4's levees would be allowed to degrade with the tides. The improved levees around the AAC would also be maintained.

The Alternative Ravenswood C management activities in Ponds R5 and S5 would involve managing for intertidal mudflat habitat. The water levels in Ponds R5 and S5 would be actively managed year-round using the water control structures that would be installed as a part of meeting the habitat restoration goals of these ponds. Water surface elevation in Ponds R5 and S5 would be managed to receive regular damped or muted tidal flows and maintain the pond bottoms at an intertidal elevation to form mudflats for shorebirds. The salinity of these ponds could also be somewhat controlled through the use of the water control structures. Also, water could be controlled to flow into Pond R4 as needed for flood control as an overflow stormwater detention pond from Ponds R5 and S5 or for other management purposes.

The water levels of the borrow ditches and sloughs in Pond R3 and the pond itself would be actively managed using the two new water control structures to provide for the improvement of the existing western snowy plover habitat in Pond R3.

With implementation of avoidance and minimization measures from the 2007 EIS/R, the AMP, and other Refuge management documents, substantial impacts to biological resources as a result of monitoring, maintenance, and management activities would not be anticipated. Rather, maintenance and management would benefit on biological resources by maintaining desirable conditions, and the results of monitoring

would inform adaptive management and the design of future phases of restoration. Therefore, the impacts would be less than significant.

Alternative Ravenswood C Level of Significance: Less than Significant

Alternative Ravenswood D. Under Alternative Ravenswood D, monitoring at the Ravenswood Ponds would include annual bird surveys and other activities as described in the AMP. Maintenance activities would include trail upkeep, predator control, general vegetation control, and vandalism repairs. The outboard levees of Pond R3 would be maintained (or repaired on failure) as described in Alternative Ravenswood A, but Pond R4's levees would largely be allowed to degrade. The improved levees around the AAC would also be maintained.

The Alternative Ravenswood D management activities in Ponds R5 and S5 would involve managing for enhanced managed pond habitat. The water levels in Ponds R5 and S5 would be actively managed year-round using the water control structures that would be installed as a part of meeting the habitat restoration goals for these ponds. The water surface elevation in Ponds R5 and S5 would be managed to create managed pond habitat for diving and dabbling ducks and other birds; the bottom depths would be maintained at subtidal elevations except during storm events. Before and during storm events when the tide in Flood Slough is high, the ponds would be drawn down to provide capacity for temporary detention of stormwater runoff from Redwood City's Bayfront Canal and Atherton Channel Project. This stormwater would then be discharged back into Flood Slough when the tide is low and the slough can accept that volume of stormwater. This stormwater would enter into Pond S5 through the improved canal and culvert system that would be installed to connect the Bayfront Canal to the forebay of Pond S5. Water would be discharged from Pond S5 into Flood Slough through the water control structure between the pond and the slough. Also, water could be controlled to flow into Pond R4 as needed for flood control as an overflow stormwater detention pond from Ponds R5 and S5 or for other management purposes.

The water levels in the borrow ditches and sloughs in Pond R3 and the pond itself would be actively managed using the two new water control structures to provide for the improvement of the existing western snowy plover foraging habitat in Pond R3.

With implementation of the avoidance and minimization measures from the 2007 EIS/R, the AMP, and other Refuge management documents, substantial impacts to biological resources as a result of monitoring, maintenance, and management activities would not be anticipated. Rather, maintenance and management would benefit on biological resources by maintaining desirable conditions, and the results of monitoring would inform adaptive management and the design of future phases of restoration. Therefore, the impacts would be less than significant.

Alternative Ravenswood D Level of Significance: Less than Significant

Phase 2 Impact 3.5-13: Potential effects of habitat conversion and pond management on steelhead.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

The federally listed threatened steelhead, California Central Coast DPS, is known to spawn in non-tidal portions of several South Bay creeks, including Coyote Creek, Stevens Creek, San Francisquito Creek, Alameda Creek, and the Guadalupe River. This anadromous species makes use of tidal habitats during its

migrations between freshwater, non-tidal habitats, and oceanic habitats. Tidal brackish channels provide habitat for juveniles during the process of smoltification (i.e., physiological adaptation to the saltwater environment). As a result, steelhead are expected to use channels within tidal marshes in the South Bay, potentially anywhere in the Phase 2 project areas, but particularly along the sloughs leading to and from spawning streams (2007 EIS/R).

The SBSP Restoration Project is expected to have a net benefit to steelhead by increasing estuarine habitat. Such habitat may be especially important as rearing habitat for juveniles. However, it is possible that adult steelhead migrating upstream or downstream or juveniles foraging in estuarine habitats could inadvertently enter managed ponds and become trapped. Depending on conditions within the ponds, they could be a benefit or detriment to individual steelhead. If such fish are able to tolerate the conditions within the ponds and eventually return to tidal sloughs via pond outlets, the impact on such fish would likely not be substantial. However, managed ponds may have more shallow water, higher salinity, lower dissolved oxygen (DO) levels, or increased predation pressure (due to more limited plant cover or concentrations of fish in smaller areas) than tidal habitats. As a result, entrainment in managed ponds may impair the health or cause the mortality of steelhead (2007 EIS/R).

There is also some potential for steelhead to become temporarily "stranded" in restored marshes. For example, steelhead may enter marshes during high tides and become trapped in marsh ponds or pools (e.g., pools that form within borrow ditches, behind borrow ditch blocks). Such fish could potentially be subject to increased predation by being concentrated in small areas, but they are unlikely to perish due to low water quality or lack of food before another high tide enables them to "escape" back into channels. Finally, construction activities associated with restoration actions may create opportunities for steelhead to be entrained in cofferdams or be injured by dewatering and other activities. However, standard best management practices for in-water construction – including exclusion nets and flushing cofferdams prior to closure – will be used to reduce these risks to a level where they are less than significant.

Overall, marsh restoration is expected to have a net benefit on steelhead by providing numerous channels that would serve as rearing habitat for juveniles. Most marshes that are actively restored, as opposed to those forming unintentionally from accidental breaches (e.g., under the No Action Alternative), are expected to be well drained, with complex channel networks that would provide extensive foraging habitat and cover for steelhead without the threat of entrapping them (2007 EIS/R).

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh. Because of the location of the Island Ponds (between Coyote Creek and Mud Slough, which are known to contain steelhead), these aquatic habitats are expected to be used by steelhead. These ponds are currently transitioning to tidal marsh habitat as a result of activities implemented under the ISP. As a result, Alternative A's diversified estuarine habitat would continue to develop, offering shelter and foraging habitat for juvenile steelhead.

Under Alternative Island A, the current habitat transitions would continue, and steelhead habitat would continue to improve. Impacts to steelhead under Alternative A would be less than significant under CEQA and beneficial under NEPA.

Alternative Island A Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Island B. Under Alternative Island B, actions would be taken to enhance habitat connectivity as the Island Ponds transition to tidal marsh. Pond A19's levees would be breached and lowered along Mud Slough. Internal levees between Ponds A20 and A19 would be removed. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. In-water work would be timed to the extent possible to avoid impacts to steelhead that might be migrating through Coyote Creek or Mud Slough. Overall, Alternative B would improve habitat connectivity for juvenile steelhead; Alternative B would provide access to more and better estuarine habitat for steelhead between upstream spawning areas of Coyote Creek and the marine waters of the Bay.

Actions taken in Alternative Island B would continue to create diversified estuarine habitat offering shelter and foraging habitat for juvenile steelhead. Therefore, impacts to steelhead under Alternative B would be less than significant under CEQA and beneficial under NEPA.

Alternative Island B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Island C. Under Alternative Island C, actions would be taken to enhance habitat connectivity as the Island Ponds transition to tidal marsh. Levees would be breached in Ponds A19, A20, and A21, and levees would be lowered in Ponds A19 and A20. Internal levees between Ponds A19 and A20 would be removed. Pilot channels would be cut into Pond A19. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. In-water work would be timed to the extent possible to avoid impacts to steelhead that might be migrating through Coyote Creek and Mud Slough. Overall, Alternative C would improve habitat connectivity for juvenile steelhead; Alternative C would also provide access to more and better estuarine habitat for steelhead migrating between upstream spawning areas of Coyote Creek and the marine waters of the Bay. Cutting pilot channels into Pond A19 would increase ease of access to tidal marsh habitat for steelhead.

Actions taken in Alternative Island C would continue to create diversified estuarine habitat offering shelter and foraging habitat for juvenile steelhead. Therefore, impacts to steelhead under Alternative C would be less than significant under CEQA and beneficial under NEPA.

Alternative Island C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. The Mountain View Ponds would continue to function as managed ponds. Under the No Action Alternative, there would be no impact to steelhead because the ponds would be maintained and managed to preserve their current function and condition.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Under Alternative Mountain View B, actions would include breaching Ponds A1 and A2W to restore them to tidal marsh, constructing habitat transition zones, and providing a variety of other habitat enhancements (e.g., islands for birds). PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add concrete to expand the footings around the bases of the transmission towers.

The breach locations would be chosen in part to provide easier access to the ponds for steelhead smolts. In particular, Pond A2W would be breached adjacent to the mouth of Stevens Creek/Whisman Slough.

Stevens Creek contains upstream steelhead spawning habitat and access to tidal marsh at the mouth of Stevens Creek/Whisman Slough would create beneficial habitat for out-migrating steelhead in the form of nursery habitat where they could forage and grow larger prior to continuing their migration into the Bay itself. Because of the location of the Mountain View Ponds (adjacent to Stevens Creek, which has connectivity to upstream steelhead spawning areas), these restored aquatic habitats are expected to be used by steelhead. Steelhead are not expected to be in Pond A2W when the PG&E boardwalk improvements are conducted. However, there could be short-term construction impacts and minimal long-term shading impacts associated with the new PG&E boardwalk north of Pond A1. In-water work would be timed to the extent possible to avoid impacts to steelhead that might be migrating through Stevens Creek/Whisman Slough. If fish rescue and/or relocation are required during construction, these activities would be completed under an agency-approved plan to limit impacts.

The water intake for Shoreline Park's sailing lake (at the foot of Charleston Slough's southern end) currently takes in 8 to 10 million gallons per day. This intake has some limited potential to entrain steelhead that enter the muted tidal Charleston Slough through the outer levee's tide gate structure and swim the length of the slough. There are no reported instances of steelhead or other special-status fish species entering this intake. Under Alternative Mountain View B, there would be no operational change to this intake, and no changes in the associated impacts to steelhead would be expected.

Actions taken in Alternative Mountain View B would continue to create diversified estuarine habitat offering shelter and foraging habitat for juvenile steelhead. The net effect of actions taken under Alternative Mountain View B would be less than significant under CEQA and beneficial under NEPA.

Alternative Mountain View B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Mountain View C. Under Alternative Mountain View C, steelhead would receive the same habitat enhancements via access to the newly opened ponds as in Alternative Mountain View B. The main difference between Alternatives B and C that could impact steelhead habitat would be additional breaches in Charleston Slough under Alternative C to open the slough to fully tidal flows, with the purpose of enhancing habitat connectivity during the transition from mudflat to vegetated tidal marsh. In Alternative C, two additional breaches are proposed for Charleston Slough. In both alternatives, Pond A2W would be breached adjacent to the mouth of Stevens Creek/Whisman Slough. The south and west levees of Charleston Slough would be raised and improved to meet City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance. The same PG&E infrastructure improvements noted for Alternative B would also be made for Alternative C.

Stevens Creek/Whisman Slough contains upstream steelhead spawning habitat, and access to tidal marsh at the mouth of Stevens Creek would create beneficial habitat for out-migrating steelhead, as described for Alternative Mountain View B. Because of the location of the Mountain View Ponds (adjacent to Stevens Creek, which has connectivity to upstream steelhead spawning areas), these restored aquatic habitats are expected to be used by steelhead.

General construction impacts and the avoidance measures described for Alternative Mountain View B would apply to Alternative Mountain View C. However, the restored tidal marsh in Charleston Slough would create increased beneficial habitat for out-migrating steelhead. Actions taken in Alternative C would continue to create diversified estuarine habitat offering shelter and foraging habitat for juvenile

steelhead. Actions proposed for Alternative C could be more beneficial than those proposed under Alternative B because increased estuarine habitat would result from the restored tidal marshes in Charleston Slough.

However, the enhanced habitat connectivity could increase the potential for steelhead to enter the water intake systems for Shoreline Park's sailing lake in either the new location at the breach between Pond A1 and Charleston Slough or the current location (which would be left in place as a secondary or backup intake). The water intake for Shoreline Park's sailing lake currently takes in 8 to 10 million gallons per day. The current risks of entraining steelhead (discussed under Alternative Mountain View B) would increase in the new location due to the increased use of the adjacent ponds by smolts and juvenile fish. However, as noted above, Alternative Mountain View C would provide large areas of improved estuarine habitat for steelhead, particularly in the smolt stage. Overall, the improvement in nursery and foraging habitat that would be created by the restoration of Charleston Slough and Ponds A1 and A2W to tidal marsh would outweigh the potential impact to steelhead from entrainment at the sailing lake water intake (Hobbs, pers. comm., December 14, 2014). As a result, the impact of Alternative C on steelhead is expected to be less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. The USFWS would continue to operate and maintain the ponds in accordance with ongoing management practices that have been in place since the implementation of Phase 1 actions. These management practices include the wet season management of tidal exchange between Pond A8 and Alviso Slough to avoid fish trapping and maintain existing levels of flood protection.

During Phase 1, a reversible, variable-size notch was emplaced along Alviso Slough to allow for muted tidal flow into Pond A8. Steelhead use Alviso Slough to migrate between marine waters and upstream spawning areas in the Guadalupe River, and migrating fish could potentially enter Pond A8 through its intake structure. However, because of the seasonal closure of the notch, few steelhead would be expected to be adversely affected by entrapment. Currently, the gates on the reversible armored notch at Pond A8 are kept shut during the smolt outmigration to prevent entrapment, though there are ongoing discussions with NOAA Fisheries and experiments being conducted to see how many smolts enter and/or leave the A8 Ponds through the notch. Any fish that enters through the open structures could potentially exit the same way, but may also become trapped or face increased predation.

In this experiment, smolts are collected and tagged with electronic transceivers in the headwaters of the Guadalupe River, and detector arrays are placed in the river just below the tagging location and at the notched entrance to the A8 Ponds. The idea is that smolts will be counted as they begin their migration and again at the point where they either safely enter the Bay or enter the A8 Ponds through the notch. A second detection by the sensors at the notch would indicate that the individual smolt was able to successfully exit the pond. If the experiment shows that fish do get trapped in the pond, then seasonal closures of the notch during migration will continue.

The preliminary results of the first-year of the smolt tracking experiment (Hobbs et al. 2014) were somewhat inconclusive due to the extremely low amounts of rainfall and runoff through Alviso Slough and the technical failure of sensors during a large portion of the smolt migration period. There were 70 individual smolts tagged with the electronic transceivers, and 6 of them were detected at the upstream

array below the location where they were collected and tagged. The rest of the individuals either did not migrate this year or passed by that upstream detector array without being detected. Later, the array at the A8 notch detected one smolt passing through it. That was the only smolt tracked at that location, and it was during an ebb tide when water is flowing out of the notch. The researchers inferred that the detected individual was leaving the pond when detected because smolts are generally not strong swimmers and tend to float with the downstream flows or tides more often than they swim against them.

Overall, due to appropriate management of the notch opening, entrapment of steelhead within the pond would likely result in a very low-level effect. Under the No Action Alternative, there would be no change in the impacts of pond management to steelhead.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Under Alternative A8 B, the impacts to steelhead would be similar to impacts under Alternative A8 A. One or two habitat transition zones would be added to the southern interior corners of Pond A8S. USFWS would continue to operate and maintain the ponds and the water intake structure in accordance with ongoing management practices that have been in place since the implementation of the Phase 1 actions, as described above.

The construction of the habitat transition zones would be expected to result in little, if any, increased impact to steelhead relative to baseline and future management. Impacts would be the same as in the baseline condition and would be similar to impacts under Alternative A, pending the results of the experiments on smolt use of the A8 Ponds. In the long term, the conversion to tidal marsh would be expected to be beneficial due to the additional habitat created, which would outweigh the minor short-term impacts associated with the construction of the habitat transition zones. Thus, the impact of Alternative B would less than significant.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), the ponds would be maintained in their current condition. The ponds would continue to function as seasonal ponds. The outboard levees along Ponds R3 and R4 provide inland flood protection and would be maintained or repaired as needed. The ponds are isolated from tidal action, Bay connectivity, and steelhead habitat due to the lack of existing breaches in the levee system surrounding the Ravenswood Ponds.

Under the No Action Alternative, there would be no change in pond management and no impacts to steelhead.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would be breached and opened to tidal action. Water control structures installed on Ponds R5 and S5 would control water flow between these ponds, Pond R4, and Flood Slough. Another water control structure would be added to connect Pond R3 to Ravenswood Slough and control water levels in the pond. The breaching of Pond R4 would result in an increase in tidal marsh estuary habitat, which could potentially be used by migrating steelhead. However, there are no steelhead spawning streams adjacent to the Ravenswood Ponds, and therefore steelhead are not expected to migrate through sloughs or waterways nearby. Thus, steelhead are

unlikely to stray into Pond R4. Because it is unlikely that steelhead will be in the vicinity of the Ravenswood Ponds, actions here would have no impacts to steelhead.

Alternative Ravenswood B Level of Significance: No Impact

Alternative Ravenswood C. Under Alternative Ravenswood C, actions with potential impacts to steelhead in Pond R4 would be similar to those described for Alternative Ravenswood B (e.g., the breaching of Pond R4 and conversion to tidal marsh). As discussed for Alternative Ravenswood B, because steelhead are not expected to enter this pond, actions performed under Alternative C would similarly have no impact on steelhead.

Alternative Ravenswood C Level of Significance: No Impact

Alternative Ravenswood D. Under Alternative Ravenswood D, actions with potential impacts to steelhead in Pond R4 would be similar to those described for Alternative Ravenswood B (e.g., the breaching of Pond R4 and conversion to tidal marsh). As discussed for Alternative Ravenswood B, because steelhead are not expected to enter this pond, actions performed under Alternative D would similarly have no impact on steelhead.

Alternative Ravenswood D Level of Significance: No Impact

Phase 2 Impact 3.5-14: Potential impacts to estuarine fish.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

Overall, SBSP Restoration Project effects on estuarine fish are expected to be beneficial. In the South Bay, managed ponds support lower diversity of native fishes than tidal habitats, and only a few species are present in managed ponds in large numbers. Conversely, many of the fish recorded in the South Bay use tidal channels and mudflats at high tide, when they are inundated. These tidal habitats are particularly important as nursery habitat for juvenile fish. Thus, these tidal channels and mudflats are productive foraging habitats for estuarine fish in this system (Harvey 1988), and conversion of managed ponds to tidal habitats is expected to result in substantial increases in estuarine fish populations in the South Bay (2007 EIS/R).

Effects to green sturgeon (*Acipenser medirostris*) and longfin smelt (*Spirinchus thaleichthys*) are also covered with estuarine fish. Green sturgeon are anadromous fish that spend most of their adult life in the ocean or Bay, only entering freshwater rivers of the Sacramento River Basin to spawn (Moyle 2002). Juveniles spend 1 to 4 years rearing in freshwater, occupying shallow, low-flowing environments and feeding on amphipods and mysid shrimp. Green sturgeon are known to occur in the South Bay, but do not spawn in this area and are not expected to enter the ponds. Longfin smelt are present year-round in the South Bay. They have been caught in Coyote Creek and Alviso Slough and could be present in Pond A8 but have not yet been detected there. The longfin smelt a state-listed threatened species that is also a candidate for listing under the federal Endangered Species Act. The potential for adverse effects of restoration on estuarine fish is primarily from low water quality in discharges from managed ponds. However, through adaptive management, USFWS and CDFW have developed methods for minimizing low DO discharges. Finally, construction activities associated with restoration actions may create opportunities for fish to be entrained in cofferdams or be injured by dewatering and other activities. However, standard best management practices for in-water construction – including exclusion nets and

flushing cofferdams prior to closure – will be used to reduce these risks to levels where they are less than significant.

The conversion of managed ponds to tidal habitats as part of the SBSP Restoration Project would further reduce this potential impact (2007 EIS/R). Further, because Phase 2 actions would generally increase the transition of former salt-production ponds into tidal marsh, the expectation is that there would be and improvement in the amount and quality of habitat for estuarine fish.

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh. These ponds are currently transitioning to tidal marsh habitat as a result of activities implemented under the ISP. As a result, Alternative A's, diversified tidal marsh would continue to develop, offering shelter and foraging habitat for estuarine fish.

Under Alternative Island A, the current habitat transitions would continue, and estuarine fish habitat would continue to improve. Impacts to estuarine fish under Alternative Island A would be less than significant under CEQA and beneficial under NEPA.

Alternative Island A Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Island B. Under Alternative Island B, actions would be taken to enhance habitat connectivity as the Island Ponds transition to tidal marsh. Pond A19's levees would be breached and lowered along Mud Slough. The internal levees between Ponds A19 and A20 would be removed. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. In-water work would be timed to the extent possible to avoid impacts to estuarine fish that might be present within the ponds or adjacent sloughs. Overall, Alternative Island B would improve habitat connectivity for estuarine fish; Alternative Island B would provide access to more and better connectivity between estuarine habitat and the existing open waters of the Bay. The impacts and benefits associated with Alternative B would be similar to those under Alternative Island A.

Under Alternative Island B, the current habitat transitions would continue, and estuarine fish habitat would continue to improve. Impacts to estuarine fish under Alternative Island B would be less than significant under CEQA and beneficial under NEPA.

Alternative Island B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Island C. Under Alternative Island C, actions would be taken to enhance habitat connectivity as the Island Ponds transition to tidal marsh. Levees would be breached and lowered along Mud Slough in all ponds. Internal levees between Ponds A19 and A20 would be removed. Alternative Island C offers additional breaches and pilot channels cut into the marsh to further facilitate the development of subtidal channels and sloughs that are present in a diversified tidal marsh habitat. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. In-water work would be timed to the extent possible to avoid impacts to estuarine fish that might be present within the ponds or adjacent sloughs. The benefits associated with Alternative C would be the same as those under Alternatives Island A and Island B.

Under Alternative Island C, the current habitat transitions would continue, and estuarine fish habitat would continue to improve. Impacts to estuarine fish under Alternative C would be less than significant under CEQA and beneficial under NEPA.

Alternative Island C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. The Mountain View Ponds would continue to function as managed ponds. Existing impacts to estuarine fish could include low water quality in discharges from managed ponds; however, these impacts are generally minor because pond managers monitor and manage for low water quality discharges. Also, there is some potential for entrapment of estuarine fish within the managed ponds. No activities or pond management changes would be proposed under Alternative A; therefore, there would be no impacts to estuarine fish relative to the baseline condition as a result of this alternative.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Under Alternative Mountain View B, actions would include breaching Ponds A1 and A2W to restore them tidal marsh, constructing habitat transition zones, and constructing habitat islands. The breach locations would be chosen in part to provide easier access to the ponds for juvenile fish and to align with historic slough locations that would facilitate the development of complex estuary habitats. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add concrete to expand the footings around the bases of the transmission towers.

The construction and improvement of the PG&E boardwalk and tower foundations would have temporary construction and minimal long-term shading impacts (for the new segment outside of Pond A1). In-water work would be timed to the extent possible to avoid impacts to estuarine fish that might be present within the ponds or adjacent sloughs. If fish rescue and/or relocation would be required during construction, these activities would be completed under an agency-approved plan to limit impacts. The planned tidal restoration would likely result in more extensive channel networks, higher-order sloughs, and overall greater habitat diversity that is expected to be beneficial to estuarine fish.

The water intake for Shoreline Park's sailing lake (at the foot of Charleston Slough's southern end) currently takes in 8 to 10 million gallons per day. This intake has some potential to entrain estuarine fish that enter the muted tidal Charleston Slough through the outer levee's tide gate structure and swim the length of the slough. There are no reported instances of large numbers of fish kills in this intake; the City of Mountain View is required to report kills of over 100 fish. Under Alternative Mountain View B, there would be no operational change to this intake, and no changes in associated impacts to estuarine fish are expected.

Impacts to estuarine fish under Alternative Mountain View B would be less than significant under CEQA and beneficial under NEPA.

Alternative Mountain View B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Mountain View C. Under Alternative Mountain View C, estuarine fish would receive the same habitat enhancements via access to the newly opened ponds as in Alternative Mountain View B.

The difference in Alternative Mountain View C is that additional breaches in Ponds A1 and A2W and at Charleston Slough and the removal of the levee between Pond A1 and Charleston Slough would result in a larger and more connected estuarine habitat as the ponds and Charleston Slough transition to tidal marshes. The south and west levees of Charleston Slough would be raised and improved to meet City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance. The same PG&E infrastructure improvements noted for Alternative B would also be made for Alternative C.

In-water work would be timed to the extent possible to avoid impacts to estuarine fish that might be present within the ponds or adjacent sloughs. If fish rescue and/or relocation are required during construction, it would be completed under an agency-approved plan to limit impacts. Tidal marsh also provides valuable nursery habitat for fish, and the transition to tidal marsh habitat at an increased rate is expected to benefit fish species.

However, the enhanced habitat connectivity could increase the potential for estuarine fish to enter the water intake systems for Shoreline Park's sailing lake in either the new location at the breach between Pond A1 and Charleston Slough or the current location (which would be left in place as a secondary or backup intake). The sailing lake water intake currently takes in 8 to 10 million gallons per day. The current risks of entraining fish (discussed in Alternative Mountain View B) would increase in the new location and with the increased habitat connectivity and expected increase in use of Ponds A1 and A2W by estuarine fish. Overall, the improvement in nursery and foraging habitat, particularly for juvenile life stages, that would be created by the restoration of Charleston Slough and Ponds A1 and A2W to tidal marsh would outweigh the potential impact to estuarine fish from entrainment at the sailing lake intake systems. As a result, impacts to estuarine fish under Alternative Mountain View C would be less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. The USFWS would continue to operate and maintain the ponds in accordance with ongoing management practices that have been in place since the implementation of the Phase 1 actions. These management practices include the wet season management of tidal exchange between Pond A8 and Alviso Slough to avoid fish trapping and maintain existing levels of flood protection.

During Phase 1, a reversible, variable-size notch was emplaced along Alviso Slough, allowing for muted tidal flow into Pond A8. Estuarine fish could potentially enter Pond A8 through its intake structure. However, because of the seasonal closure of the notch, few fish are expected to be adversely affected by entrapment. Any fish that enter through the open structures could exit the same way, but is likely to become stranded in the pond. Under the No Action Alternative, there would be no change in the pond notch configuration or operations and thus no impacts to estuarine fish habitat.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Under Alternative A8 B, two habitat transition zones would be added to the southern interior corners of Pond A8S. The impacts to estuarine fish would be the similar to those under Alternative A8 A because the placement of fill material to construct habitat transition zones would be

done while the notch is closed, thus limiting the potential to affect fish. Once the habitat transition zones are in place, the USFWS would continue to operate and maintain the ponds and water intake structure in accordance with ongoing management practices that have been in place since the implementation of Phase 1 actions. Under Alternative B there would be no change in the pond notch configuration or operations and thus no impacts to estuarine fish habitat.

Alternative A8 B Level of Significance: No Impact

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), the ponds would be maintained in their current condition. The ponds would continue to function as seasonal ponds. The outboard levees along Ponds R3 and R4 provide inland flood protection and would be maintained or repaired as needed. The ponds are isolated from tidal action, Bay connectivity, and lack suitable habitat for estuarine fish due to the absence of existing breaches in the levee system surrounding the Ravenswood Ponds. Under the No Action Alternative, there would be no impacts to estuarine fish habitat.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, actions with potential to affect estuarine fish habitat would include tidal marsh restoration in Pond R4. A water control structure would be added at the location of a historic slough at Pond R3's border with Ravenswood Slough. The water control structures installed on Ponds R5 and S5 would control water flow between these ponds, Pond R4, and Flood Slough. Pond R4 would be breached and opened to tidal action; the result would be an increase in tidal marsh at Pond R4, providing additional habitat for estuarine fish. Green sturgeon are known to occur near the Ravenswood pier; although they do not use the tidal marsh habitat for spawning, they could benefit from improved habitat for their prey species.

Actions taken in Alternative Ravenswood B would create a diversified tidal marsh offering shelter and foraging habitat for estuarine fish. Therefore, impacts would be less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood C. Under Alternative Ravenswood C, Pond R4 would be breached and restored to tidal marsh, as described for Alternative Ravenswood B. An additional breach would be provided in the northwest corner to provide connectivity with Greco Island. A water control structure would be at the location of a historic slough at Pond R3, and water control structures on Ponds R5 and S5 would also be constructed to manage flows. Additional habitat transition zones along the Pond R3/R4 levee would decrease the total area being restored to tidal marsh in Pond R4 relative to Alternative B.

The benefit to estuarine fish in the development of tidal marsh habitat in Pond R4 would be the same as described for Alternative Ravenswood C. The connection to Greco Island would add additional value to this habitat. Green sturgeon are known to occur near the Ravenswood pier; although they do not use the tidal marsh habitat for spawning, they could benefit from improved habitat for their prey species. The water control structure on Pond R3 has some potential to lead to the entrainment of fish within Pond R3, but would be carefully managed to limit entrainment. The structure would only be opened periodically, and efforts would be made to scare fish away from the structure before opening. The potential impact of

entrapment is small relative to the benefits provided by the tidal marsh habitat. Therefore, impacts would be less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood C Level of Significance: Less than Significant

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would be breached and restored to tidal marsh, as described for Alternatives Ravenswood B and Ravenswood C. Unlike Alternative C, there would be no levee lowering for improved connections to Greco Island, but water control structures would still be provided at Ponds R3, R5, and S5, and the habitat transition zones would still be constructed as described above. Alternative D would also include construction to connect Pond S5 with the Bayfront Canal to allow temporary floodwater detainment during storm events.

The benefits and impacts associated with Alternative Ravenswood D would be similar to those described for Alternative Ravenswood C. It is unlikely that estuarine fish in Ponds R5/S5 would be adversely affected by the occasional stormwater inputs from the Bayfront Canal and Atherton Channel Project. Estuarine fish could, however, use the created tidal marsh habitat. Therefore, impacts would be less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood D Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Phase 2 Impact 3.5-15: Potential impacts to piscivorous birds.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

The piscivorous birds (e.g., pelicans, cormorants, grebes) of the South Bay forage in a variety of habitats and locations where prey fish are available. The low-salinity ponds that support fish, tidal sloughs and channels, edges of intertidal mudflats, channels, and artificial lakes such as Shoreline Lake provide the highest-quality foraging areas. Large "frenzies" of feeding activity may be observed at these locations, presumably when conditions result in large fish concentrations. Brown pelicans plunge-dive for fish and therefore require water several feet deep, but American white pelicans and cormorants swim while feeding and can thus feed in shallower water. Although double-crested cormorants, western grebe (*Aechmophorus occidentalis*) and Clark's grebes (*Aechmophorus clarkii*), and brown pelicans forage to varying degrees within the open waters of the Bay, American white pelicans do not, instead preferring non-tidal waterbodies (Cogswell 2000; Harvey 1988;) (2007 EIS/R).

The effects of the SBSP Restoration Project on foraging piscivores depend in part on the project's effects on both the abundance and the availability of prey fish. Existing managed ponds with connections to the Bay may concentrate fish, thus potentially facilitating their capture by piscivorous birds. As a result, conversion of some low-salinity ponds to tidal habitats would reduce foraging habitat in managed ponds. However, as noted in the discussion of estuarine fish (Phase 2 Impact 3.5-14), tidal restoration is expected to result in a considerable increase in the abundance of estuarine fish in the South Bay, and the tidal sloughs and channels that would develop in restored marshes are expected to be used heavily by foraging piscivores. The SBSP Restoration Project is expected to have a net benefit to most piscivorous species, because the minor impacts from the loss of managed ponds would be offset by improvements in foraging quality through increased shallow-water habitat for fish and invertebrates (2007 EIS/R).

The most important piscivorous species addressed in this section that may decline substantially due to the loss of managed pond habitat is the American white pelican (California species of special concern on their

nesting grounds only), which does not forage heavily in tidal habitats (2007 EIS/R). However, the American white pelican does not nest in the SBSP Restoration Project area, and foraging of other pond-associated piscivorous birds is expected to redistribute to other managed ponds in the area (e.g., adjacent managed ponds). Therefore losses from the South Bay are not expected to result in substantial declines on the scale of the west coast or continental populations.

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh.

These shallow ponds currently provide limited foraging opportunities for piscivorous birds. The ongoing restoration of tidal marsh habitat is expected to increase the abundance of estuarine fish. This increase would be beneficial to piscivorous birds, because it would increase their prey base. Therefore, Alternative Island A would have a less-than-significant impact under CEQA and be beneficial under NEPA.

Alternative Island A Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Island B. Under Alternative Island B, actions would be taken to enhance habitat connectivity and complexity as the Island Ponds transition to tidal marsh. Pond A19's levees would be breached and lowered along Mud Slough. Internal levees between Ponds A19 and A20 would be removed. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations.

As under Alternative Island A, the restoration to tidal marsh is expected to increase the abundance of prey (estuarine fish) for piscivorous birds. These actions would further improve the ponds' ability to offer habitat for estuarine fish by providing increased connectivity and complexity. Therefore, the impact of Alternative B would be less than significant under CEQA and beneficial under NEPA.

Alternative Island B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Island C. Under Alternative Island C, actions would be taken to enhance habitat connectivity and complexity as the Island Ponds transition to tidal marsh. Levees would be breached and lowered along Mud Slough in all ponds. The internal levees between Ponds A19 and A20 would be removed. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Alternative C would offer additional breaches and pilot channels cut into the marsh to further enhance the development of the subtidal channels and sloughs that are present in a diversified tidal marsh habitat.

Like Alternative Island B, actions taken in Alternative Island C would improve the ponds' ability to offer improved estuarine fish habitat that would benefit piscivorous birds. Therefore, the impact of Alternative C would be less than significant under CEQA and beneficial under NEPA.

Alternative Island C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. The Mountain View Ponds would continue to function as

they do now. The outboard levees around Ponds A1 and A2W are high-priority levees to be maintained for inland flood protection and for PG&E access and would continue to be maintained for those purposes.

Piscivorous birds would not be impacted under Alternative Mountain View A. The Mountain View Ponds currently offer a mix of low-salinity pond foraging habitat in Ponds A1 and A2W and intertidal mudflat habitat in Charleston Slough. The No Action Alternative would maintain the managed low-salinity ponds in their current state, which provides suitable habitat for piscivorous birds.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Under Alternative Mountain View B, Ponds A1 and A2W would be breached to support the development of tidal marshes. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add concrete to expand the footings around the bases of the transmission towers. Nesting and roosting habitat would be increased through the construction of nesting islands and habitat transition zones. With selective breaching along historic slough meanders and the addition of island habitat, these restored aquatic areas would develop into complex tidal marsh habitat with benefits to piscivorous bird species that forage in the tidal channels, sloughs, and open subtidal habitats.

The construction and improvements of the PG&E boardwalks could result in some temporary disturbance of foraging piscivorous birds. Also, some small amounts of levee that could provide roosting habitat would be removed when Ponds A1 and A2W are breached. Pond-associated piscivores, such as the American white pelican, would likely decline locally as a result of the loss of managed pond habitat. However, some redistribution of foraging birds (e.g., to adjacent managed ponds) would be expected, and losses from the South Bay would not be expected to result in substantial declines on the scale of the west coast or continental populations.

Actions taken in Alternative Mountain View B would benefit piscivorous bird species that use tidal channels, sloughs, and open subtidal habitats through improved forage of estuarine fish, but pond-associated piscivorous bird species may decline locally. However, redistribution to suitable managed pond habitat would be expected, and the declines would not be expected to be substantial on the scale of the west coast or continental populations. Therefore, the impact of Alternative Mountain View B would be less than significant under CEQA.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Alternative Mountain View C is similar to Alternative Mountain View B, with the addition of more breaches in Pond A1 levees and levee lowering between Pond A1 and Charleston Slough to increase the habitat connectivity between these two waterbodies as they transition to tidal marsh. The same PG&E infrastructure improvements noted for Alternative B would also be made in Alternative C. Alternative C would also have minor changes to the habitat transition zones, increased recreational access, a new water intake in a different location for Shoreline Park's sailing lake, and improvements to the southern and western levees of Charleston Slough. Nesting islands and habitat transition zones would still be constructed under Alternative C, though the one in Pond A2W would be somewhat smaller.

The construction and improvements of the PG&E boardwalks could result in some temporary disturbance of foraging piscivorous birds. Also, construction of recreational trails could reduce roosting habitat along

the levees. However, under Alternative Mountain View C, constructed islands and habitat transition zones would provide increased roosting habitat for piscivorous birds.

Under Alternative Mountain View C, Charleston Slough would be expected to be more successful in transitioning to tidal marsh, resulting in further increases in fisheries for channel-foraging piscivorous birds. The current mudflat habitat of Charleston Slough provides little foraging habitat for piscivorous birds, so this transition would be a net increase. As described for Alternative Mountain View B, actions taken in Alternative C would benefit piscivorous bird species that use tidal channels, sloughs, and open subtidal habitats, but pond-associated piscivorous bird species may decline locally. However, pond-associated piscivorous birds are expected to redistribute foraging to nearby suitable managed pond habitat, and population declines would not be expected to be substantial on the scale of the west coast or continental populations. Therefore, the impact of Alternative C would be less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. USFWS would continue to operate and maintain the ponds in accordance with the management practices that have been in place since the implementation of the Phase 1 actions.

The A8 Ponds are managed ponds with muted tidal action. The muted tidal ponds provide foraging habitat for pond-associated piscivorous birds, such as the American white pelican (which does not forage in the open bay) and the brown pelican (which needs several feet of water to plunge-dive for fish).

The No Action Alternative would maintain habitat for pond-associated piscivorous bird species. No impacts to piscivorous birds would take place under this alternative.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Under Alternative A8 B, one or two habitat transition zones would be added to the southern interior corners of Pond A8S. USFWS would continue to operate and maintain the ponds as subtidal habitat with muted tidal action.

Current management practices would not change. A small amount of pond habitat would be lost at the location of the habitat transition zones, but this loss would be minor relative to the remaining pond habitat. Under Alternative A8 B, the impacts to piscivorous bird species would be unchanged relative to the baseline conditions and similar to impacts described for the No Action Alternative. Therefore, the impact of Alterative A8 B would be less than significant.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), the ponds would be maintained in their current condition. The ponds would continue to function as seasonal ponds. The outboard levees along Ponds R3 and R4 provide inland flood protection and would be maintained or repaired as needed. The ponds are isolated from tidal action and Bay connectivity and do not currently provide suitable habitat for prey fish species. Nor do many piscivorous birds roost there. Under the No Action Alternative, there would be no impact to piscivorous bird habitat.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would transition to tidal marsh habitat, and Ponds R5 and S5 would become enhanced managed ponds. The levee at Pond R4 would be breached at the historic slough to facilitate tidal flows in the pond. A water control structure would be installed at the location of a historic slough at Pond R3, and water control structures would connect Ponds R5 and S5 to Pond R4 (and indirectly to the Bay) and Flood Slough. A habitat transition zone would be created along Bedwell Bayfront Park, and a portion of levee would be maintained in Ponds R5/S5 for roosting habitat.

The restoration of tidal marsh in Pond R4 would provide increased nursery habitat for estuarine fish. Fish abundance is expected to increase in the new tidal slough and channel networks and in the adjacent sloughs and open water, benefiting piscivorous bird species. Currently, Pond R4 is dry for most of the year and does not contain fish. Ponds R5 and S5 would be enhanced managed ponds, which would provide foraging opportunities for pond-foraging piscivorous birds, such as the American white pelican, although the small size of these ponds and their close proximity to public access areas may limit their use by this species. The island in Ponds R5/S5 would provide some potential roosting habitat.

Actions taken in Alternative Ravenswood B would continue to create a diversified tidal marsh offering improved foraging habitat. Alternative B would benefit piscivorous birds by improving fisheries in the tidal marsh habitat and providing potential additional managed pond habitat for foraging. The impact of Alternative B would be less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood C. Under Alternative Ravenswood C, Pond R4 would be breached and restored to tidal marsh as described for Alternative Ravenswood B. An additional breach would be provided in the northwest corner to provide connectivity with Greco Island. A water control structure would be installed at the location of a historic slough at Pond R3, and water control structures on Ponds R5 and S5 would also be constructed to manage flow. Under Alternative C, mudflat habitat rather than enhanced managed pond habitat would be created at Ponds R5/S5. Additional habitat transition zones along the Pond R3/R4 levee would decrease the total area being restored to tidal marsh in Pond R4 relative to Alternative B.

As described for Alternative Ravenswood B, Alternative Ravenswood C would also benefit piscivorous birds through increased availability of tidal marsh foraging habitat. However, the mudflat habitat created at Ponds R5/S5 would be less beneficial to pond-associated piscivorous birds than the managed pond habitat created under Alternative B. Although less beneficial than Alternative B, the habitat would be improved relative to the baseline. Therefore, the impacts of Alternative C would be less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would be breached and restored to tidal marsh as described for Alternatives Ravenswood B and Ravenswood C. Unlike Alternative C, there would be no connection to Greco Island, but water control structures would still be provided at Ponds R3, R5, and S5 and the habitat transition zones would still be constructed. Alternative D would also include construction to connect Pond S5 with the Bayfront Canal to allow flood storage during storm events.

The impacts and benefits of Alternative Ravenswood D would be similar to those of Alternative Ravenswood B. The creation of tidal marsh in Pond R4 would benefit piscivorous birds. Under Alternative D, water in Ponds R5 and S5 would need to be drawn down in the winter to provide flood capacity for storm events, but would still provide pond foraging habitat during other times of the year. Therefore, the impacts of Alternative D would be less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood D Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Phase 2 Impact 3.5-16: Potential impacts to dabbling ducks.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 actions on dabbling ducks are assessed.

Dabbling ducks forage in a variety of habitats in the South Bay, including mudflats, shallow subtidal habitats, tidal sloughs and marsh channels, marsh ponds, managed and muted tidal marsh, seasonal wetlands, managed ponds, and water treatment plants. In these areas, dabbling ducks feed on a variety of aquatic plants and invertebrates. Because dabbling ducks do not typically dive for food, dabbling ducks usually forage in water less than 12 inches deep (Goals Project 2000). Within ponds, salinity is also important for these birds. The plants on which many dabbling ducks feed cannot tolerate high salinities, and thus dabbling duck abundance tends to be highest on lower-salinity ponds (20 to 63 ppt salinity), with few in ponds greater than 154 ppt salinity (2007 EIS/R).

Because large numbers of dabbling ducks use shallow managed ponds in the South Bay for foraging and roosting, conversion of ponds to tidal habitats is expected to have some effect on South Bay numbers of these birds. However, most dabbling ducks are expected to take advantage of the extensive foraging habitat, roosting habitat, and cover provided by tidal channels and sloughs and marsh ponds, and tidal restoration would also increase nesting habitat availability in high marsh. There is some potential for density-dependent mortality due to disease (such as avian botulism; see Phase 2 Impact 3.5-22), predation, and disturbance by predators and humans as the ducks that use managed ponds are concentrated into fewer areas as a result of pond conversion. However, ongoing restoration should result in dispersion of dabbling ducks over the entire SBSP Restoration Project area, ameliorating such adverse effects of concentration. A possible exception to this expected dispersion is the northern shoveler, which appears to prefer ponds to open bay or tidal marsh habitat. The response of this species to Phase 2 actions will be monitored and adapted to under the AMP.

Overall, tidal restoration is expected to more than offset these adverse effects, and the net effect of tidal restoration is expected to be beneficial (2007 EIS/R).

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh.

The tidal marshes that develop in the breached ponds would be expected to provide roosting and foraging habitat for dabbling ducks. Therefore, the impact of Alternative Island A would be less than significant under CEQA and beneficial under NEPA.

Alternative Island A Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Island B. Under Alternative Island B, actions would be taken to enhance connectivity as the ponds transition to tidal marsh. Pond A19's levees would be breached and lowered along Mud Slough. The internal levees between Ponds A19 and A20 would be removed. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations.

Under Alternative Island B, habitat transition would be similar to that in Alternative Island A, but would occur in different locations in Pond A19 and Mud Slough. Also, active, intentional restoration under the Action Alternatives would involve breaches at strategic locations to take advantage of remnant slough networks and would facilitate the development of complex channel networks. The actions taken in Alternative B would continue to create tidal marsh, offering shelter and foraging habitat for dabbling ducks. The overall impact of Alternative B would be less than significant under CEQA and beneficial under NEPA.

Alternative Island B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Island C. Under Alternative Island C, additional actions would be taken to further enhance connectivity as the ponds transition to tidal marsh. Levees would be breached and lowered along Mud Slough in all ponds. The internal levees between Ponds A19 and A20 would be removed. Alternative C would offer additional breaches and pilot channels cut into the marsh to further facilitate the development of the subtidal channels and sloughs that are present in a diversified tidal marsh habitat. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations.

Habitat transition under Alternative Island C would be similar to that under Alternative Island B, but would occur in different locations in all three ponds and in Mud Slough. The actions taken in Alternative C would continue to create tidal marsh offering shelter and foraging habitat for dabbling ducks. Therefore, the impact of Alternative C would be less than significant under CEQA and beneficial under NEPA.

Alternative Island C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. The Mountain View Ponds would continue to function as managed ponds. The outboard levees around Ponds A1 and A2W are high-priority levees to be maintained for inland flood protection and PG&E access to the power lines above Pond A2W, and they would continue to be maintained for these purposes.

The Mountain View Ponds currently offer managed pond habitat that is used by dabbling ducks, diving ducks, and piscivorous birds. The No Action Alternative would maintain the managed low-salinity ponds in their current state, which provides suitable habitat for dabbling ducks. Under the No Action Alternative, there would be no impact to dabbling duck habitat.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Under Alternative Mountain View B, Ponds A1 and A2W would be breached to support the development of tidal marshes. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add concrete to expand the footings around the bases of the transmission towers. Nesting and roosting habitat would be increased through the construction of nesting islands and habitat transition zones. With selective breaching along historic slough meanders and the addition of island habitat, these restored aquatic areas would develop into complex tidal marsh habitat with benefits to dabbling duck species that forage in the tidal channels, sloughs, and open subtidal habitats.

The construction and improvement of the PG&E boardwalk and tower foundations could result in short-term disturbance to foraging dabbling ducks. However, the planned tidal restoration would likely result in more extensive channel networks, higher-order sloughs, and overall greater habitat diversity, which is expected to provide foraging habitat and cover for dabbling ducks. High marsh habitat in the transition zones could increase nesting habitat.

Pond-associated foraging habitat for dabbling ducks would decline under Alternative Mountain View B, but tidal marsh and mudflat foraging would improve. Dabbling ducks may also benefit from increased nesting and roosting habitat on the islands and habitat transition zones. Further, the implementation of ongoing monitoring and management actions would persist using the AMP. Examples of management changes that may be implemented in response to reductions in bird populations or the amounts of bird use of the ponds include changes in the allowable recreational use of the nearby levees and ponds or other habitat enhancements that have been shown to be effective.

Overall, following the implementation of the AMP, the impact of Alternative Mountain View B to dabbling ducks would be less than significant.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Alternative Mountain View C is similar to Alternative Mountain View B with the addition of more breaches in the Pond A1 levees and levee lowering between Pond A1 and Charleston Slough to increase the speed of tidal marsh transition. The same PG&E infrastructure improvements noted for Alternative B would also be made for Alternative C. Alternative C also has minor changes to the habitat transition zones, increased recreational access, improved levees around the southern and western ends of Charleston Slough, and a new location for the water intake for Shoreline Park's sailing lake. Nesting islands and habitat transition zones would still be constructed under Alternative C.

Alternative Mountain View C would result in temporary disturbance to dabbling duck foraging and roosting during the construction of the PG&E infrastructure and other levee improvements that would be similar to but greater-in-extent than the temporary disturbance under Alternative Mountain View B. Under Alternative C, the levee lowering between Charleston Slough and Pond A1 could result in a faster transition to tidal marsh habitat and decrease the mudflat area more quickly. Dabbling ducks are expected to still forage and use the tidal marsh habitat created under Alternative C, but foraging quality may be reduced from what is currently available in the mudflats of Charleston Slough. The habitat islands and habitat transition zones for nesting and roosting and the tidal marsh foraging habitat created under Alternative C would still be expected to benefit dabbling ducks.

Pond-associated foraging habitat for dabbling ducks would decline under Alternative Mountain View B, but tidal marsh and mudflat foraging would improve. Dabbling ducks would also benefit from increased nesting and roosting habitat on the islands and habitat transition zones. Further, the implementation of ongoing monitoring and management actions would persist using the AMP. Examples of management changes that may be implemented in response to reductions in bird populations or the amounts of bird use of the ponds include changes in the allowable recreational use of the nearby levees and ponds or other habitat enhancements that have been shown to be effective.

Overall, following the implementation of the AMP, the impact to dabbling ducks under Alternative Mountain View C would be less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. USFWS would continue to operate and maintain the ponds in accordance with ongoing management practices that have been in place since the implementation of the Phase 1 actions. The A8 Ponds are managed as subtidal ponds with muted tidal action. Suitable foraging habitat exists at the A8 Pond for dabbling ducks.

No changes to the A8 Pond habitat would take place under Alternative A8 A; therefore, Alternative A would have no impact on dabbling ducks.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Under Alternative A8 B, habitat transition zones would be added to the southern interior corners of Pond A8. Current management practices would not change and the overall habitat function for dabbling ducks would be enhanced. A very small amount of pond habitat would be lost at the location of the habitat transition zones, but this loss would be minor relative to the remaining pond habitat. The habitat transition zones could provide nesting and roosting habitat. Therefore, the impact of Alterative B would be less than significant.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), the ponds would be maintained in their current condition. The ponds would continue to function as seasonal ponds. The outboard levees along Ponds R3 and R4 provide inland flood protection and would be maintained or repaired as needed. The ponds are isolated from tidal action and Bay connectivity. The existing seasonal ponds would provide minimal habitat function for dabbling ducks, though ducks may use the ponds during the winter when ponded. Under the No Action Alternative, there would be no impact to dabbling duck habitat.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would transition to tidal marsh habitat, and Ponds R5 and S5 would become enhanced managed ponds. The levee at Pond R4 would be breached at the historic slough to facilitate tidal flows in the pond. A water control structure would be

installed at the location of a historic slough at Pond R3, and water control structures would also connect Ponds R5 and S5 to Pond R4 (and indirectly to the Bay) and Flood Slough. A habitat transition zone would be created along Bedwell Bayfront Park, and a portion of levee would be maintained in Ponds R5/S5 for roosting habitat.

The tidal marshes that develop in Pond R4 and the habitat transition zone would provide foraging and nesting habitat for dabbling ducks. Dabbling ducks could also use the managed pond habitat that would be created in Ponds R5 and S5. The actions taken in Alternative Ravenswood B would continue to create a diversified tidal marsh offering shelter and foraging habitat. Therefore, potential impacts to dabbling ducks under Alternative Ravenswood B would be less than significant (CEQA) and beneficial (NEPA).

Alternative Ravenswood B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood C. Under Alternative Ravenswood C, Pond R4 would be converted to tidal marsh. Actions would be similar to those described for Alternative Ravenswood B except additional habitat transition zones would be created in Pond R4, and Ponds R5 and S5 would be managed as intertidal mudflat habitat. Pond R4 would be connected to Greco Island, and Pond R3 have water control structures added for management. The tidal marshes that develop in Pond R4 and the habitat transition zone would provide foraging and nesting or roosting habitat for dabbling ducks. Dabbling ducks could also use the intertidal mudflat habitat that would be created in Ponds R5 and S5.

Actions taken in Alternative Ravenswood C would continue to create a diversified tidal marsh offering shelter and foraging habitat. Therefore, the impact of Alternative Ravenswood C to dabbling ducks would be less than significant (CEQA) and beneficial (NEPA).

Alternative Ravenswood C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would be breached and restored to tidal marsh as described for Alternatives Ravenswood B and Ravenswood C. Unlike Alternative C, there would be no connection to Greco Island, but water control structures would still be provided at Ponds R3, R5, and S5, and the habitat transition zones would still be constructed. Alternative D would also include construction to connect Pond S5 with the Bayfront Canal and Atherton Channel to allow flood storage during storm events.

As described above, dabbling ducks would benefit from the creation of tidal marsh habitat and habitat transition zones. Ponds R5 and S5 would be drawn down in the winter, allowing for flood storage from Bayfront Canal during storm events. Plants could grow during these drawdown periods, allowing more forage opportunity for dabbling ducks. Adding stormwater capacity would also decrease the overall salinity of Ponds R5 and S5, which may also promote the growth of plants. Actions taken in Alternative Ravenswood D would continue to create a diversified tidal marsh offering shelter and foraging habitat. Therefore, the impact to dabbling ducks under Alternative Ravenswood D would be less than significant (CEQA) or beneficial (NEPA).

Alternative Ravenswood D Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Phase 2 Impact 3.5-17: Potential Impacts to Harbor Seals.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

Pacific harbor seals are currently the only marine mammals that are permanent residents of San Francisco Bay. Harbor seals forage in nearshore marine habitats on a variety of fishes and invertebrates. Harbor seals have been observed in restored Phase 1 ponds, including Ponds A6 and A17. Seals may use more than 10 sites around the Bay at any given time (Lidicker and Ainley 2000), and any undisturbed intertidal habitat accessible to the open Bay could potentially be used by harbor seals. Because of the low numbers of areas where large numbers of harbor seals congregate in the South Bay, the disturbance of a primary haul-out or pupping area as a result of SBSP Restoration Project construction would be a significant impact (2007 EIS/R).

In the long term, the project is expected to have a net benefit to harbor seals through enhancement of prey fish populations and the restoration of miles of tidal sloughs and channels that would serve as foraging areas and provide new haul-out sites. Although the effects of the SBSP Restoration Project on harbor seals are expected to be beneficial overall, the AMP includes a description of monitoring and adaptive management activities concerning this species (2007 EIS/R).

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh. Intertidal mudflats would function in the short term in portions of the ponds. As sediment accretion continues, most of the pond interiors would become vegetated, enhancing fish populations.

Harbor seal haul-outs are known at the mouth of Coyote Creek near Calaveras Point (about 2.5 miles from Pond A19) and near Mowry Slough, north of Coyote Creek (approximately 5 miles from the Island Ponds). Although haul-out spots could be temporarily created at the Island Ponds, this area is not expected to be used by harbor seals due to the distance upstream on Coyote Creek. However, the improved fisheries associated with the restoration of the Island Ponds would improve the foraging habitat for seals in the area. No construction would occur under the No Action Alternative, so there would be no construction impacts to seals. Therefore, the impacts of Alternative Island A to harbor seals would be less than significant under CEQA and beneficial under NEPA.

Alternative Island A Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Island B. Under Alternative Island B, the levees separating Ponds A19 and A20 would be removed and the northwestern and southwestern portions of the Pond A19 levees would be lowered. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. As in Alternative Island A, habitat would transition to tidal marsh but with more connectivity to Mud Slough on the north and between Ponds A19 and A20. The same benefits associated with fisheries improvement may also occur in more locations. As under Alternative Island A, harbor seals would not be expected to use the Island Ponds for a haul-out location due to the upstream position of this pond cluster.

With implementation of measures to avoid and minimize impacts (i.e., seasonal avoidance and pre-construction surveys), impacts on harbor seals as part of construction would be expected to be limited and short term (see Phase 2 Impact 3.5-10). Because implementation of the project would result in increased estuarine fish abundance near an existing haul-out, which would improve foraging habitat, the impact of Alternative Island B would be less than significant under CEQA and beneficial under NEPA.

Alternative Island B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Island C. Under Alternative Island C, the levees separating Ponds A19 and A20 would be removed and significant portions of the Ponds A19 and A20 levees would be lowered. Additional breaches would be constructed along Mud Slough in Ponds A19, A20, and A21, and pilot channels would be dug in Pond A19 to further enhance habitat connectivity and complexity during and after the transition to tidal marsh. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. The impacts and benefits described above for Alternative Island B would apply under Alternative C, except the transition to tidal marsh habitat would occur in more places throughout the Island Ponds.

With implementation of measures to avoid and minimize impacts (e.g., seasonal avoidance and pre-construction surveys), impacts on harbor seals during construction would be expected to be limited and short term (see Phase 2 Impact 3.5-10). Because implementation of the project would result in increased estuarine fish abundance near an existing haul-out, which would improve foraging habitat, the impacts of Alternative Island C would be less than significant under CEQA and beneficial under NEPA.

Alternative Island C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no action would be taken. The Mountain View Ponds would continue to function as managed ponds. There are no seal haul-outs near the Mountain View Ponds. Because no construction would occur and there would be no changes in pond management that would affect nearby resources, harbor seals would not be impacted by Alternative A.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Alternative Mountain View B would breach Ponds A1 and A2W, which are currently several feet deep, and convert them to tidal marsh and habitat transition zones. Islands for nesting birds would also be constructed. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add concrete to expand the footings around the bases of the transmission towers.

The breaching of the levees, construction of boardwalks, and the creation of habitat transition zones would require construction activities. Although this disturbance could negatively impact harbor seals, there are no nearby harbor seal haul-outs (the closest haul-out [Calaveras Point] is about 2 miles northeast of the Mountain View Ponds), so harbor seal haul-outs would not be expected to be impacted by construction.

The conversion of the Mountain View Ponds from ponds to tidal marsh would be potentially beneficial for harbor seals through increased estuarine fish abundance in the South Bay. Because of this improvement in foraging habitat and avoidance during construction, the impact of Alternative Mountain View B on harbor seals would be considered to be less than significant under CEQA and beneficial under NEPA.

Alternative Mountain View B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Mountain View C. Alternative Mountain View C would also breach Ponds A1 and A2W, which are currently several feet deep, and convert them to tidal marsh and habitat transition zones. The

same PG&E infrastructure improvements noted for Alternative Mountain View B would also be made in Alternative C. Also, Alternative C would breach Charleston Slough and lower the levee between Pond A1 and the slough. The actions would serve to improve the connectivity of these ponds with Charleston Slough and help facilitate the slough's transition to tidal marsh. The south and west levees of Charleston Slough would be raised and improved to meet City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance.

The breaching of the levees and the creation of habitat transition zones would require more construction activities than under Alternative Mountain View B. Although this disturbance could negatively impact harbor seals, there are no nearby harbor seal haul-outs (the Mowry Slough haul-out is several miles northeast of the Mountain View ponds), so harbor seal haul-outs would not be expected to be impacted by construction.

The conversion of the Mountain View Ponds from shallow ponds to tidal marsh would be potentially beneficial for harbor seals because of increased estuarine fish abundance in the South Bay. Because of this improvement in foraging habitat and avoidance during construction, the impact of Alternative Mountain View B on harbor seals would be considered to be less than significant under CEQA and beneficial under NEPA.

Alternative Mountain View C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. USFWS would continue to operate and maintain the ponds in accordance with the management practices that have been in place since the implementation of the Phase 1 actions. There are no seal haul-outs near the A8 Ponds. Because no construction would occur and there would be no changes in pond management that would affect nearby resources, harbor seals would not be impacted under Alternative A.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Alternative A8 B proposes to create habitat transition zones in the southern portions of the A8 Ponds. The construction of the habitat transition zones would require construction equipment, which could potentially impact harbor seals. However, the nearest haul-out area is Calaveras Point, several miles north of these ponds, and this area would not be disturbed during the construction of the habitat transition zones. Therefore, Alternative A8 B would have no impact on harbor seals.

Alternative A8 B Level of Significance: No Impact

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), no new action would be taken. The ponds would continue to function as seasonal ponds, and the levees would be maintained or repaired as needed. The ponds are isolated from tidal action and are not connected to the bay. Therefore, no impacts to harbor seals would occur under Alternative A.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would be breached along the Ravenswood Slough, and part of the levee near Greco Island would be lowered; Pond R4 would be turned into tidal marsh habitat and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into enhanced managed ponds. The breaching of the levees, construction of a habitat transition zone, and installation of water control structures would require construction equipment, which could potentially impact harbor seals (e.g., noise impacts). However, the nearest haul-out locations, Bair Island and Newark Slough, are 2 to 3 miles away, a distance too far to impact harbor seal haul-out areas. Therefore, no impacts would be expected.

Alternative Ravenswood B Level of Significance: No Impact

Alternative Ravenswood C. Under Alternative Ravenswood C Pond R4 would be breached along the Ravenswood Slough and along San Francisco Bay, including lowering part of the surrounding levee; Pond R4 would be turned into tidal marsh habitat; and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into tidal mudflats, regulated by water control structures. The breaching and lowering of the levees, construction of habitat transition zones, and installation of water control structures would require construction equipment, which could potentially impact harbor seals (e.g., noise impacts). However, the nearest haul-out locations, Bair Island and near Newark Slough, are 2 to 3 miles away, a distance too far to impact harbor seal haul-out areas. Therefore, no impacts would be expected.

Alternative Ravenswood C Level of Significance: No Impact

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would be breached along the Ravenswood Slough; Pond R4 would be turned into tidal marsh habitat and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into enhanced managed ponds, and the installation of water control structures and a connection to the Bayfront Canal and Atherton Channel Project would allow the ponds to be operated to temporarily detain peak stormwater flows and treat residual salinity in Ponds R5 and S5. Next, the Pond R3 levee would be breached and a water control structure would be added. Also, Alternative Ravenswood D would create habitat transition zones in two locations in Pond R4.

The breaching and lowering of the levees and the creation of the habitat transition zones and installation of water control structures would require construction equipment, which could potentially disturb harbor seals (e.g., noise impacts). However, the nearest haul-out locations, Bair Island and near Newark Slough, are 2 to 3 miles away, a distance too far to impact harbor seal haul-out areas. Therefore, no impacts would be expected.

Alternative Ravenswood D Level of Significance: No Impact

Phase 2 Impact 3.5-18: Potential recreation-oriented impacts to sensitive species and their habitats.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

Improved recreational access to baylands within the South Bay is an important objective of the SBSP Restoration Project. Increased recreational use and the maintenance of trails and other public access and recreational facilities have the potential to disturb wildlife, result in the trampling of vegetation, decrease nesting success, increase predation, increase the introduction of non-native species, and decrease habitat

quality. Ultimately, such impacts could result in decreases in the abundance of breeding, foraging, and roosting wildlife (2007 EIS/R).

Potential Phase 2 impacts include:

- Human disturbance of nesting birds can result in abandonment of nests and chicks, resulting in decreased reproductive success and increased predation, particularly of eggs and young. Disturbance of foraging and roosting may decrease the effectiveness or increase the stress of these activities. The trails and viewing platforms that are part of the Phase 2 alternatives all have some potential to increase these types of disturbance of the various bird species and guilds discussed in the rest of the impacts listed in this section.

- California Ridgway's rails along levee trails may be subject to higher predation risk because they may avoid high cover along levees during high tides (instead swimming within the flooded marsh or using areas of sparser cover) due to human presence on the levee. Disturbance of rails could potentially lead to abandonment of nests and chicks, resulting in decreased reproductive success (Overton 2007).

- Levee-top trails through marsh may impede the movement of Ridgeway's rail or salt marsh harvest mouse populations between current and future restored tidal marsh habitats because of human disturbance and lack of vegetative cover.

- Nesting western snowy plovers may also be adversely affected by increased human use of the SBSP Restoration Project area. Disturbance could lead to reduced egg viability or nest abandonment, particularly if disturbance causes plovers to remain off the nest for more than a few minutes. Recreation could have these same effects on other nesting birds, such as stilts, avocets, and terns.

- Increased recreational use of levee trails could potentially reduce habitat quality in managed ponds for nesting, roosting, and foraging waterbirds. Although some species and individuals habituate to human activity, others would maintain some distance between areas they select for nesting, foraging, or roosting and trails or viewing platforms. The intervening distance is essentially unused by these individuals, reducing the actual extent of habitat available.

- Hunting is allowed during certain seasons in some of the Refuge pond areas. Of the Phase 2 pond complexes, the A8 Ponds and the Ravenswood Ponds allow hunting. Hunting from a boat is allowed at Island Pond A19. There is no hunting at the Mountain View Ponds themselves, but the adjacent ponds to the east do allow hunting. Hunting is managed, permitted, and controlled by the Refuge to minimize impacts on wildlife, but the potential for disturbance even to species not being hunted exists.

- There is no expectation that the recreational activities associated with this project could result in impacts to other wildlife species, such as fish or small mammals, approaching the level of significance (2007 EIS/R).

Recent studies on the impacts of recreational trails on bird species suggest that waterbirds, shorebirds, and western snowy plover would all be impacted by the addition of new trails near foraging and nesting habitats (Trulio et al. 2012a; Trulio et al. 2012b; Trulio et al. 2013). Recommendations from the studies suggest that new trails should be sited at least 100 to 165 feet away from shorebird foraging habitat, and

new trails should be adjacent to wide rather than narrow borrow ditches where possible (Trulio et al. 2013). Trails should be located at least 500 feet away from western snowy plover nesting habitat (Trulio et al. 2012a), and should be at least 400 feet away from waterfowl foraging habitat (Trulio et al. 2012b). Also, a study of nests on islands created at Pond SF2 suggests that the islands created greater than 300 feet from trails and 600 feet from viewing platform were not significantly affected by recreational access, though recreational use of the Pond SF2 trail has been low (Ackerman et al. 2014).

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no additional recreation access would be planned. There are no walking trails in the Island Ponds. Boating in the adjacent sloughs is allowed, but boating is prohibited within the ponds. Therefore, the impact would be less than significant.

Alternative Island A Level of Significance: Less than Significant

Alternative Island B. Under Alternative Island B, no recreation access is planned. Boating in the adjacent sloughs is allowed, but boating is prohibited within the ponds. Although breaching of pond levees may increase the potential for illegal boating within restored ponds, the benefits of tidal restoration to tidal marsh species would outweigh any adverse effects from disturbance associated with increased boating. Breaching of levees may help reduce land-based trespass in this area as well. Therefore, the impact would be less than significant.

Alternative Island B Level of Significance: Less than Significant

Alternative Island C. Under Alternative Island C, no recreation access is planned. Boating in the adjacent sloughs is allowed, but boating is prohibited within the ponds. Although breaching of pond levees may increase the potential for illegal boating within restored ponds, the benefits of tidal restoration to tidal marsh species would outweigh any adverse effects from disturbance associated with increased boating. Breaching of levees may help reduce trespass in this area as well. Therefore, the impact would be less than significant.

Alternative Island C Level of Significance: Less than Significant

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no additional recreation access is planned. The Mountain View Ponds would continue to function as managed ponds. Existing trails would continue to be maintained.

Under the No Action Alternative, there would be no new impacts to sensitive species and their habitats from recreation-orientated activities.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Alternative Mountain View B proposes two trail improvements in the southern portion of Pond A1. The first improvement would be a spur trail leading to a viewing platform on a levee between Charleston Slough and Pond A1. The second improvement would be a viewing platform installed on an existing trail at the southern end of Pond A1.

Impacts from these trail improvements would be expected to be minor. The spur trail would extend less than 1,000 feet onto the improved levee between the intertidal Charleston Slough and the restoring tidal marsh in Pond A1. This area is already a heavily used recreation area, as Charleston Slough's intertidal mudflats draw many bird-watchers and many people use these trails for exercise. All trails and viewing platforms would be confined to the existing levees. Nesting islands that would be constructed under Alternative B would be located away from trails and viewing platforms to limit disturbance to nesting birds (more than 300 feet from trails and 600 feet from viewing platforms). This distance is greater than the distance used for Pond SF2, which was previously restored and does not appear to have been significantly affected by new recreational access (Ackerman et al. 2014). The viewing platform would be installed along an existing trail that also receives heavy visitation.

Increased recreational access resulting from Phase 2 activities may impact sensitive species and their habitats. However, such disturbance would likely be limited to relatively narrow corridors along the edges of the ponds where trails get added or improved. Further, these effects would be monitored and managed, and implementation of the AMP would ensure that impacts do not reach significant levels. Public access has considerable potential to result in long-term benefits to sensitive species in the South Bay by improving public education concerning the importance of the SBSP Restoration Project and habitat restoration and South Bay conservation in general. Such education and public enjoyment of the South Bay's biological resources may be important in maintaining public support for adequate funding for future phases of restoration and long-term monitoring and management of SBSP Restoration Project-area habitats. With monitoring and implementation of the AMP, the impact of recreation would be less than significant.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Alternative Mountain View C contains the same public access features as Alternative Mountain View B, with several additional improvements. The first improvement would be a reconstructed Bay Trail segment along the improved south and west levees of Charleston Slough with a spur trail and viewing platform on the remaining levee projecting into Charleston Slough. The second trail improvement would be a new trail constructed using the PG&E access road, along the eastern edge of Pond A2W. This trail would lead to a viewing platform located on the northern end of Pond A2W.

The reconstructed Bay Trail west of Charleston Slough would make use of an existing trail. Trail use could theoretically increase once improvements have been made, but because this trail is already being heavily used for recreation, disturbance to sensitive wildlife is not expected to significantly increase. The new trail and observation platform on the east levee of Pond A2W would allow for recreational use in an area not previously accessible for recreational use. This trail would likely decrease waterfowl foraging and roosting within 400 feet of the trail (Trulio et al. 2012b). As the habitat transitions from pond to mudflat to tidal marsh, the species impact would also shift. When providing mudflat foraging habitat for shorebirds, this new trail is expected to reduce foraging within 165 feet of the trail (Trulio et al. 2013). Due to the large area of Pond A2W, these impacted foraging bands would be relatively small compared to the total pond area. However, there is currently a trail on an adjacent levee across Stevens Creek/Whisman Slough. Also, the ponds adjacent to Pond A2W are open to hunting, making Ponds A1 and A2W especially important to roosting and foraging waterfowl.

Impacts may also include disturbance to wildlife seeking high-tide roosting habitat and disturbance of nesting habitat along the levees. To limit disturbance to nesting birds, constructed nesting islands would be at least 300 feet from trails and 600 feet from viewing platforms and dogs would not be allowed on the

trail or any other access features that would be placed inside of the Refuge. This distance is greater than the distance used for Pond SF2, which was previously restored and does not appear to have been significantly affected by new recreational access (Ackerman et al. 2014). There are currently nesting islands along the eastern edge of Pond A2W that contain nesting colonies of Forster's tern and American avocet. These islands will remain in place, and new islands would be built. Although new islands could be built farther from disturbances, the existing islands are very close to the levee and could well be abandoned if this trail is open to recreation.

Increased recreational access resulting from Phase 2 activities may impact sensitive species and their habitats. Due to the importance of maintaining undisturbed nesting and roosting sites within the project area, such disturbance would likely be limited to those relatively narrow corridors along the edges of the ponds where trails get added or improved. Further, these effects would be monitored and managed, and the AMP would be implemented. In particular, under Alternative Mountain View C, the locations that are most likely to experience disturbance by recreational use of public access features are along the eastern levee of Pond A2W, where the new public access trail would be added, and around Charleston Slough, particularly the southern end, where trails and viewing platforms would be added. Use of these newly added features is not expected to lead to a significant impact on sensitive wildlife species, but it cannot be ruled out, though it will be monitored and addressed if need be. If monitoring reveals disturbance levels that are greater than those anticipated by this Final EIS/R, the Refuge managers would use the AMP to develop and implement modifications to these access features, including gates on the bridges over A2W's levee breaches to allow that trail to be seasonally closed, modifying the Refuge's current policies on hunting, or make other adjustments as needed.

The benefits of public access in the form of public support and funding for restoration, as described above, would offset impacts associated with the new recreation features. With monitoring and implementation of the AMP, the impact of recreation would be less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no additional recreation access is planned. The A8 Ponds would continue to function as managed subtidal ponds with muted tidal action. Although trails are adjacent to the A8 Ponds, no trails exist within the A8 Ponds. Under the No Action Alternative, there would be no new impacts to sensitive species and their habitats from recreation-orientated activities.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Under Alternative A8 B, no additional recreation access is planned. The A8 Ponds would continue to function as managed subtidal ponds with muted tidal action. Although trails are adjacent to the A8 Ponds, no trails exist within the A8 Ponds. Under Alternative B, there would be no new impacts to sensitive species and their habitats from recreation-orientated activities.

Alternative A8 B Level of Significance: No Impact

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), no additional recreation access is planned. The Ravenswood Ponds would continue to function as

managed seasonal ponds. There are no existing trails in the Ravenswood Ponds. Existing trails adjacent to the Ravenswood Ponds are in Bedwell Bayfront Park, which is owned by the City of Menlo Park. These trails would continue to be used and maintained separately. Under the No Action Alternative, there would be no new impacts to sensitive species and their habitats from recreation-orientated activities.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, a viewing platform would be constructed on an existing trail near Ponds R5 and S5 to provide a public education benefit. This action would enhance existing recreational experiences at the relatively high-use Bedwell Bayfront Park in Menlo Park. Because habitat surrounding the area where the viewing platform would be installed is highly disturbed by recreational activities at Bedwell Bayfront Park, it is expected that the addition of the viewing platform would result in minimal impacts to sensitive species and their habitats.

Increased recreational access resulting from Phase 2 activities may impact sensitive species and their habitats. However, these effects would be monitored and managed, and implementation of the AMP would ensure that impacts do not reach significant levels. Public access has considerable potential to result in long-term benefits to sensitive species in the South Bay by improving public education concerning the importance of the SBSP Restoration Project and habitat restoration and South Bay conservation in general. Such education and public enjoyment of the South Bay's biological resources may be important in maintaining public support for adequate funding for future phases of restoration and long-term monitoring and management of SBSP Restoration Project area habitats. With monitoring and implementation of the AMP, the impact of recreation would be less than significant.

Alternative Ravenswood B Level of Significance: Less than Significant

Alternative Ravenswood C. Alternative Ravenswood C contains the same public access improvements mentioned for Alternative Ravenswood B with two additional trail improvements. The first improvement would be a new spur trail on an elevated boardwalk extending from an existing Bedwell Bayfront Park trail to a proposed viewing platform on the northern edge of Pond R4. The second improvement would be a new trail along the eastern levees of Ponds R5 and S5 that would be linked to the existing Bay Trail spine just outside of the Refuge boundary to the south of these ponds. This trail would form a loop around Ponds R5 and S5. A fence would also be installed along Pond R3 to limit disturbance by dogs and humans to western snowy plover.

Recreational access has the potential to result in disturbance of roosting, nesting, and foraging birds. However, such disturbance would likely be limited to relatively narrow corridors along the edges of the ponds where trails get added or improved. The loop trail offers access to inner levees adjacent to Pond R3. Pond R3 contains suitable snowy plover habitat that could be disturbed by these trails. It is expected the disturbance would be confined to the western edge of Pond R3, adjacent to the proposed trail. However, given that snowy plovers are expected to be nesting at higher densities in Pond R3 after Pond R4 becomes tidal, the proposed new trail access along this border of Pond R3 would have further potential impacts on nesting success. Depending on the level of disturbance it causes, this loop trail could cause a significant impact on various sensitive wildlife species.

In addition, the spur trail on the boardwalk at the northwest corner of Pond R4, extending outward toward the Bay, could indirectly limit (because of disturbance) the movement of sensitive species between the existing tidal marsh at Greco Island and the newly forming tidal marsh along Pond R4. That would limit the effectiveness of this habitat for sensitive species, including California Ridgway's rail and salt marsh

harvest mouse; it is unlikely this would rise to the level of a significant impact, but it is possible. At both of these sites, the impacts from recreational users may be further exacerbated if dog-walkers at Bedwell Bayfront Park do not obey the rules about keeping dogs out of the Refuge, even if they are on-leash.

Thus, the increased recreational access resulting from Phase 2 activities may impact sensitive species and their habitats at both of the proposed trail and boardwalk options featured in Alternative Ravenswood C. To further reduce this risk, using the AMP, bird flushes will be monitored in association with recreational use. If monitoring reveals disturbance levels that are greater than those anticipated by this Final EIS/R, the Refuge managers would use the AMP to develop and implement modifications to these access features, including seasonal closures of entry gates onto the boardwalk trail at Pond R4, modifying the R5/S5 loop trail so that it is only a spur trail and doesn't completely surround the ponds, and adding additional signage or adding other adjustments as needed.

Therefore, these effects would be monitored and managed, and the AMP would be implemented as described. The benefits of public access in the form of public support and funding for restoration, as described above, would offset the impacts associated with the new recreation features. With monitoring and implementation of the AMP, the impact of recreation would be less than significant.

Alternative Ravenswood C Level of Significance: Less than Significant

Alternative Ravenswood D. Under Alternative Ravenswood D, the same public access and recreational improvements as listed in Alternative Ravenswood C would be installed. The difference is that a trail, rather than a boardwalk, would be installed along the northwest levee of Pond R4 near Greco Island. No further additional recreation access would be planned.

Under Alternative Ravenswood D, impacts to sensitive species and their habitats from recreation-orientated activities would be very similar to those listed for Alternative Ravenswood C. The loop trail around Ponds R5 and S5 would be the same in this alternative as in Alternative Ravenswood C, and would have the same degrees and types of possible impacts. The same monitoring and response options – including seasonal closure, gates, and conversion to a spur trail –described above would remain available for implementation if monitoring conducted under the AMP determined that disturbance-related impacts were greater than anticipated.

Under Alternative Ravenswood D, however, the spur trail at the northwest corner of Pond R4 would be on a levee instead of on an elevated boardwalk. This would present a physical barrier to salt marsh harvest mouse dispersal and increase the potential effects of disturbance on sensitive wildlife species. This dynamic could limit the effectiveness of this habitat for sensitive species, including California Ridgway's rail and salt marsh harvest mouse, though this disturbance is not expected to rise to the level of a significant impact.

Thus, the increased recreational access resulting from Phase 2 activities may impact sensitive species and their habitats at both of the proposed trail options featured in Alternative Ravenswood D. To further reduce this risk, using the AMP, the Refuge staff will actively monitor wildlife, including but not limited to monitoring bird flushes in association with recreational use. If monitoring reveals disturbance levels or other impacts on wildlife that are greater than those anticipated by this Final EIS/R, the Refuge managers would use the AMP to develop and implement modifications to these access features. This modifications could include seasonal closures of entry gates onto the trail at Pond R4, converting that trail to an elevated boardwalk, modifying the R5//S5 loop trail so that it is only a spur trail and doesn't completely surround the ponds, and adding additional signage or adding other adjustments as needed.

The benefits of public access in the form of public support and funding for restoration, as described above, would offset the impacts associated with the new recreation features. With monitoring and implementation of the AMP, the impacts of recreation would be less than significant.

Alternative Ravenswood D Level of Significance: Less than Significant

Phase 2 Impact 3.5-19: Potential Impacts to special-status plants.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

No threatened or endangered plants are known or expected to occur in the SBSP Restoration Project area. No special-status plants have been documented within the boundaries of the Ravenswood pond complex (CNDDB 2014). Congdon's tarplant was recorded adjacent to Stevens Creek in 2002, in Alviso, and at the Sunnyvale Baylands Park not far south of Pond A8 (CNDDB 2006). These last two areas are near but not within the SBSP Restoration Project area (2007 EIS/R). Because no ESA-listed plants are known to occur within the impact areas for the SBSP Restoration Project, no adverse impacts to ESA-listed plants are expected.

Small spikerush (*Eleocharis parvula*; also known as dwarf spikerush) was identified on the levees surrounding the Island Ponds (herbarium specimens were submitted to UC JEPS herbarium by the SCVWD in 2012). Although this species is not federally or state listed as threatened or endangered, it has been identified as a watch list species (CRPR 4.3) (CNPS 2015). CNPS and its partner agencies recommend considering impacts to these species until more information regarding their abundance and taxonomy is known. Possible impacts to this species are discussed in the section on the Island Ponds, below.

In the long term, the SBSP Restoration Project is expected to improve conditions for most of the special-status plants listed above as well as others that occur primarily in upper tidal marsh habitat. Habitat transition zones would be created at the upper edge of some marshes by importing fill to produce broad, gently sloping areas adjacent to flood control levees or adjoining upland habitat. These unique marsh-associated habitats, including the habitat transition zones and natural salt panne areas within upper salt marshes, require thoughtful restoration design. These habitat transition zones represent an important habitat type largely absent from the South Bay and would provide the opportunity for the re-introduction of special-status plant species. Also, tidal habitat restoration could eventually include the development of mature tidal marsh features (e.g., shell ridges, microtopographic differences) that could support special-status plant species (2007 EIS/R).

In the event that special-status plant species are discovered during surveys, the following avoidance and minimization measures would be implemented to eliminate any significant impact of the project on these plant species: (1) special-status plant species would be avoided to the maximum extent feasible, and all special-status plant populations would be clearly marked and avoided during construction; (2) if avoidance of special-status plant species populations is not feasible, several different actions could take place. For plant-containing areas that would be temporarily affected, the plants and the surrounding soil would be collected, re-deposited in a nearby area, and then replaced following construction. For plant-containing areas that would be permanently impacted, the plants and the surrounding soil would be collected and relocated adjacent to impacted areas in suitable habitat. Whether special-status plants would colonize restored tidal and transitional habitats on their own or would have to be introduced to these areas

is unknown, but the overall project impacts on special-status plants have the potential to be beneficial (2007 EIS/R).

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Currently, no threatened or endangered plant species are known to occur in the area of the Island Ponds. However, a watch list species (CRPR 4.3), small spikerush, was identified on the surrounding levees. Because there would be no action under Alternative Island A, there would be no impact to this species.

Alternative Island A Level of Significance: No Impact

Alternative Island B. Under Alternative Island B, the levees separating Ponds A19 and A20 would be removed and the northwestern and southwestern portions of the Pond A19 levees would be lowered. Pond A19's levees would be breached, and the breaching, removal, and lowering of levees would create some temporary disturbance and small amounts of levee habitat loss. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Currently, no threatened or endangered plants species are known to occur in the Island Ponds. However, a CRPR 4.3 species, small spikerush, does occur in the area. It is on the levee shoreline of Pond A19 and on exposed mud flat in three separate patches nearby (Santa Clara Valley Water District 2014). A breach in these areas could adversely affect these plants. To reduce potential impacts to this species, before construction, the population of small spikerush would be mapped and avoided if possible (e.g., by relocating the breach or not lowering that portion of the levee). Some individual plants might be relocated if necessary and feasible. Because this species is not an ESA-listed species, no additional mitigation is proposed. Pre-construction surveys would be conducted before the start of construction to ensure that there are no additional species present. Also, implementation of the project would result in substantial increases in tidal marsh habitat, potentially creating new habitat for special-status marsh plants.

With implementation of measures to avoid and minimize impacts (e.g., pre-construction surveys, occurrence mapping), the impact of Alternative Island B to special-status plants would be less than significant.

Alternative Island B Level of Significance: Less than Significant

Alternative Island C. Under Alternative Island C, the levees separating Ponds A19 and A20 would be removed and significant portions of the Pond A19 and Pond A20 levees would be lowered. Additional breaches would be made in Ponds A19, A20, and A21. The breaching, removal, and lowering of levees would create some temporary disturbance and small amounts of levee habitat loss. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Impacts and benefits associated with restoration under Alternative C would be the same as those under Alternative Island B except in more locations; more area would thus be disturbed as part of construction. As above, to reduce impacts to small spikerush, before construction, the populations would be mapped and avoided if possible (e.g., by relocating the breach or not lowering that portion of the levee). Some individuals might be relocated if necessary and feasible.

Also, implementation of the project would result in substantial increases in tidal marsh habitat, potentially creating new habitat for some special-status plants. With implementation of measures to avoid and

minimize impacts (e.g., pre-construction surveys, occurrence mapping), the impact of Alternative Island C to special-status plants would be less than significant.

Alternative Island C Level of Significance: Less than Significant

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no action would be taken. The Mountain View Ponds would continue to function as managed ponds. No threatened or endangered plants species are known to occur in the vicinity of the Mountain View Ponds. Therefore, no impacts to existing special-status plants would be expected to occur from the No Action Alternative.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Alternative Mountain View B would involve breaching Ponds A1 and A2W, which are currently shallow ponds, and converting them to tidal marsh and habitat transition zones. Alternative B would also create habitat islands within Ponds A1 and A2W. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add concrete to expand the footings around the bases of the transmission towers. No threatened or endangered plants species are known to occur in the vicinity of the Mountain View Ponds. Therefore, no impact to special-status plants would be expected to occur under Alternative B.

Alternative Mountain View B Level of Significance: No Impact

Alternative Mountain View C. Alternative Mountain View C would also involve breaching Ponds A1 and A2W, which are currently shallow ponds, and converting them to tidal marsh and habitat transition zones. The same PG&E infrastructure improvements noted for Alternative Mountain View B would also be made in Alternative C. Also, Alternative C would breach Charleston Slough, lower the levee between Pond A1 and Charleston Slough, and raise and improve the south and west levees of Charleston Slough to meet the City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance. Alternative C would also create habitat islands within Ponds A1 and A2W. No threatened or endangered plant species are known to occur in the vicinity of the Mountain View Ponds. Therefore, no impacts to special-status plants would be expected to occur under Alternative C.

Alternative Mountain View C Level of Significance: No Impact

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no action would be taken. The A8 Ponds would continue to function as managed subtidal ponds with muted tidal action. No threatened or endangered plants species are known to occur in the area of the A8 Ponds. Therefore, no impact to existing rare plants would be expected to occur from the No Action Alternative.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Alternative A8 B proposes to create habitat transition zones in the southern portions of the A8 Ponds. The construction of the habitat transition zones would require construction-related disturbance. No threatened or endangered plants species are known to occur in the area of the A8 Ponds. Therefore, no impact to existing rare plants would expected to occur from Alternative A8 B.

Alternative A8 B Level of Significance: No Impact

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), no action would be taken. The Ravenswood Ponds would continue to function as managed seasonal ponds. No threatened or endangered plants species are known to occur in the vicinity of the Ravenswood Ponds. Under Alternative Ravenswood A, no action would take place. Therefore, no impact to special-status plants would be expected to occur under Alternative A.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would be breached along the Ravenswood Slough, and part of the levee near Greco Island would be lowered; Pond R4 would be turned into tidal marsh habitat and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into enhanced managed ponds. A water control structures would be added at Pond R3 to enhance its habitat quality. The breaching of the levees, installation of water control structures, and placement of material for habitat transition zones would result in construction-related disturbance. Currently, no threatened or endangered plants species are known to occur in the area of the Ravenswood Ponds. Therefore, no impact to special-status plants would be anticipated under Alternative B.

Alternative Ravenswood B Level of Significance: No Impact

Alternative Ravenswood C. Under Alternative Ravenswood C, Pond R4 would be breached along the Ravenswood Slough and San Francisco Bay, including lowering part of the surrounding levee; Pond R4 would be turned into tidal marsh habitat, and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into tidal mudflats regulated by water control structures. Water control structures would be added at Pond R3, and habitat transition zones would be created. The breaching of the levees, installation of water control structures, and placement of material for habitat transition zones would result in construction-related disturbance. Currently, no threatened or endangered plants species are known to occur in the area of the Ravenswood Ponds. Therefore, no impact would be anticipated under Alternative C.

Alternative Ravenswood C Level of Significance: No Impact

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would be breached along the Ravenswood Slough, Pond R4 would be turned into tidal marsh habitat, and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into enhanced managed ponds; the installation of water control structures and a connection to the Bayfront Canal Project would allow the ponds to be operated to temporarily detain peak stormwater flows and address residual salinity in Ponds R5 and S5. A water control structure would be added at Pond R3. Also, Alternative D would create habitat transition zones in two locations in Pond R4. All of these construction activities would result in construction-related disturbance. Currently, however, no threatened or endangered plants species are known to occur in the area of the Ravenswood Ponds. Therefore, no impact would be anticipated under Alternative D.

Alternative Ravenswood D Level of Significance: No Impact

Phase 2 Impact 3.5-20: Colonization of mudflats and marsh plain by non-native Spartina and its hybrids.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

There is concern that the restoration could provide new substrate for the spread of smooth cordgrass, a highly invasive plant species, and its hybrids formed with native Pacific cordgrass. Smooth cordgrass and its hybrids are considered one of the three most significant invasive-species threats to San Francisco Bay (Grossinger et al. 1998) and a cause of significant concern for restoration managers. Restoration sites on salt ponds offer unvegetated areas where seedlings can grow unhindered by competition and often in conditions sheltered from wave action. Given these ideal circumstances for establishment, smooth cordgrass and its hybrids are likely to rapidly colonize restored salt ponds (Ayres et al. 2004) and become a dominant plant species in the restored tidal marshes if it is not controlled (2007 EIS/R).

Intentional and unintentional breaching of levees and subsequent increases in tidal habitat could inadvertently help spread non-native *Spartina*, resulting in a potentially significant impact. However, the SBSP Restoration Project expects that invasive Spartina would largely be controlled by the Invasive Spartina Project before implementation of the SBSP Restoration Project and eradicated if it establishes after implementation. The Invasive Spartina Project has been successful in reducing the total extent of patches of established invasive *Spartina* from over 800 acres to fewer than 30 acres. The size of the infestation in each of the remaining sites has also been diminishing. By 2014, 41 sites had less than 1 square meter of coverage by the non-native and the hybrid, and 49 sites were between 1 square meter and 1 acre. Ongoing control and eradication efforts have been shown to be possible and effective as long as adequate funding and staffing for the program are provided; unmaintained sites have rebounded very quickly, in as little as 1 year. This emphasizes the critical importance of the Invasive Spartina Project and its ongoing funding and support for staffing and other operations.

Thus, impacts under all alternatives are expected to be less than significant, even while acknowledging that invasive plants cannot be completely and permanently eradicated in all locations. The SBSP Restoration Project is using the Invasive Spartina Project's 2010 Best Management Practices document (presented in Appendix K) to plan restoration and management efforts. The list of practices is as follows:

1. Do not plant non-native *Spartina* at any time
2. Verify genetics of native *Spartina* plantings
3. Do not plant native *Spartina* where it may become pollinated by hybrid *Spartina*
4. Monitor and remove
5. "Success" = "No non-native *Spartina*"
6. Do not open a new marsh (i.e., make the tidal connection) too near *Spartina alterniflora* or *S. alterniflora* hybrids
7. Clean equipment

8. Avoid potentially contaminated dredged material

The most relevant of these to the SBSP Restoration Project are numbers 4, 6, 7, and 8, because these would minimize the risk of spreading invasive *Spartina* and its hybrids into the restoration areas.

At a minimum, the 2007 EIS/R stated that the project would clean equipment and supplies to prevent the spread of seeds and plant material of non-native *Spartina* and other invasive plants during construction, restoration, and maintenance activities (2007 EIS/R).

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh. Because these ponds have been opened to tidal action, intertidal mudflats would function in the short term. In the long term, most of the mudflats would become vegetated as sediment accretion continues.

The potential uncontrolled nature of levee breaching or failure under the No Action Alternative could lead to locations and timing of tidal restoration that temporarily increase colonizable land in areas where control is difficult due to access. However, with time, *Spartina* colonization is expected to be controlled by the Invasive Spartina Project. Monitoring and management of changes in abundance of smooth cordgrass and its hybrids in the SBSP Restoration Project area are described in the AMP. With the AMP, which will be implemented under all alternatives, and in collaboration with the Invasive Spartina Project, *Spartina* would be monitored and controlled to reduce impacts to a less-than-significant level.

Alternative Island A Level of Significance: Less than Significant

Alternative Island B. Under Alternative Island B, the levees separating Ponds A19 and A20 would be removed and the northwestern and southwestern portions of the Pond A19 levees would be lowered. Pond A19's levees would be breached. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Breaching of the levees and subsequent creation of mudflats would increase the potential area for invasive *Spartina* to colonize, which would be a significant impact. However, the project would implement the AMP and continue to collaborate with the Invasive Spartina Project to monitor and control smooth cordgrass and its hybrids. With these practices in place, colonization of mudflats and marsh plain by non-native *Spartina* would be less than significant.

Alternative Island B Level of Significance: Less than Significant

Alternative Island C. Under Alternative Island C, the levees separating Ponds A19 and A20 would be removed and significant portions of the Pond A19 and Pond A20 levees would be lowered. Breaches would be constructed along Mud Slough in all three ponds. Also, the existing southern breaches on Pond A19 would be expanded and pilot channels would be constructed. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Compared with the other alternatives, Alternative C would bring the largest and most sudden changes from current habitat conditions, which would increase the potential area for invasive *Spartina* to colonize and could be a significant impact. However, the project would implement the AMP and continue to collaborate with the Invasive Spartina Project to monitor and control smooth cordgrass and its hybrids. With these practices in place, colonization of mudflats and marsh plain by non-native *Spartina* would be less than significant.

Alternative Island C Level of Significance: Less than Significant

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). With Alternative Mountain View A (the No Action Alternative), no action would be taken. The Mountain View Ponds would continue to function as managed ponds. The potential uncontrolled nature of levee breaching under the No Action Alternative could lead to locations and timing of tidal restoration that are counterproductive to the efforts of the Invasive Spartina Project. Also, the lack of monitoring under the No Action Alternative would increase the burden on existing eradication efforts in identifying potential areas of concern. Therefore, if invasive *Spartina* is not controlled by the Invasive Spartina Project, impacts resulting from Alternative A could be significant. However, the project has an AMP in place that describes the process by which changes in the abundance of smooth cordgrass and its hybrids in the SBSP Restoration Project area would be monitored and the adaptive management efforts may be implemented in response to the monitoring. Therefore, with the AMP in place, and in collaboration with the Invasive Spartina Project, the impact of Alternative A would be less than significant.

Alternative Mountain View A Level of Significance: Less than Significant

Alternative Mountain View B. Alternative Mountain View B would breach Ponds A1 and A2W, which are currently shallow ponds, and convert them to tidal marsh and habitat transition zone. Alternative B would also create habitat islands and habitat transition zones within Ponds A1 and A2W. The levee between Pond A1 and Charleston Slough would be improved as well. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add concrete to expand the footings around the bases of the transmission towers.

The breaching of the levees and the subsequent development of mudflats would increase the potential area for invasive *Spartina* to colonize, which would be a significant impact. However, the project would implement an AMP, described above, to monitor and control smooth cordgrass and its hybrids. With the AMP in place, and in collaboration with the Invasive Spartina Project, colonization of mudflats and marsh plain by non-native *Spartina* would be less than significant.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Alternative Mountain View C would also breach Ponds A1 and A2W, which are currently shallow ponds, and convert them to tidal marsh and habitat transition zone. The same PG&E infrastructure improvements noted for Alternative Mountain View B would be made for Alternative C. Also, Alternative Mountain View C would breach Charleston Slough, lower the levee between Pond A1 and Charleston Slough, and fortify the levees south and west of Charleston Slough to increase connectivity across all of the ponds and to facilitate the transition of Charleston Slough to tidal marsh habitat. Alternative C would also create habitat islands and habitat transition zones within Ponds A1 and A2W. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance.

The breaching of the levees and subsequent creation of mudflats would increase the potential area for invasive *Spartina* to colonize, which would be a significant impact. However, the project would implement an AMP, described above, to monitor and control smooth cordgrass and its hybrids. With the

AMP in place, and in collaboration with the Invasive Spartina Project, colonization of mudflats and marsh plain by non-native Spartina would be less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no action would be taken. The A8 Ponds would continue to function as managed subtidal ponds with muted tidal action. The project has an AMP in place that describes the process by which changes in the abundance of smooth cordgrass and its hybrids in the SBSP Restoration Project area would be monitored and the adaptive management efforts that may be implemented in response to the monitoring. Therefore, with the AMP in place, and in collaboration with the Invasive Spartina Project, there would be no impact under Alternative A.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Alternative A8 B proposes to create habitat transition zones in the southern portions of the A8 Ponds. Alternative B could create larger bands of additional habitat for invasive *Spartina* to colonize than currently exist. However, should invasive *Spartina* be found within the A8 Ponds, the project would implement an AMP, as described above, to monitor and control non-native *Spartina*. With the AMP in place, and in collaboration with the Invasive Spartina Project, colonization of mudflats and marsh plain by non-native Spartina would be less than significant.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), no action would be taken. The ponds would continue to function as seasonal ponds, and the levees would be maintained or repaired as needed to provide flood protection. Because these ponds are not open to the Bay and the levees would be maintained, limiting the potential for unintentional breaching, no impact would be associated with Alternative A.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would be breached along the Ravenswood Slough, and part of the levee near Greco Island would be lowered; Pond R4 would be restored to tidal marsh habitat and the AAC levee would be fortified. A habitat transition zone would be built in Pond R4. Also, Ponds R5 and S5 would be turned into enhanced managed ponds, and a water control structure would be installed at Pond R3.

The breaching of the levees and subsequent development of mudflats would increase the potential area for invasive *Spartina* to colonize, which would be a significant impact. Hybrid *Spartina* is located in adjacent marshes and waterways, including Greco Island, Bair Island, and Ravenswood Slough. Unless these marshes are free of the hybrids before breaching, the Ravenswood Ponds are likely to be immediately invaded on breach. However, the project has an AMP in place that describes the process by which smooth cordgrass and its hybrids would be eliminated from nearby areas before restoration. The AMP also describes how changes in abundance in the SBSP Restoration Project area would be monitored and the adaptive management efforts might be implemented in response to monitoring. Also, the AMP describes

how to prevent colonization by smooth cordgrass and its hybrids from reaching a level of significance. With the AMP in place, and in collaboration with the Invasive Spartina Project, colonization of mudflats and marsh plain by non-native *Spartina* would be less than significant.

Alternative Ravenswood B Level of Significance: Less than Significant

Alternative Ravenswood C. Under Alternative Ravenswood C, Pond R4 would be breached along the Ravenswood Slough and breached along San Francisco Bay, including lowering part of the surrounding levee; Pond R4 would be turned into tidal marsh habitat and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into tidal mudflats regulated by water control structures. Water control structures would also be put on Pond R3 and a habitat transition zone would be created in Pond R4.

As described for Alternative Ravenswood B, breaching of the levees and subsequent development of mudflats under Alternative Ravenswood C would increase the potential area for invasive *Spartina* to colonize, which would be a significant impact. However, the project would implement an AMP, as described above, to monitor and control invasive cordgrass. With the AMP in place, and in collaboration with the Invasive Spartina Project, colonization of mudflats and marsh plain by non-native *Spartina* would be less than significant.

Alternative Ravenswood C Level of Significance: Less than Significant

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would be breached along the Ravenswood Slough, Pond R4 would be turned into tidal marsh habitat, and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into enhanced managed ponds, and the installation of water control structures and a connection to the Bayfront Canal and Atherton Channel Project would allow the ponds to be operated to temporarily detain peak stormwater flows. Water control structures would be installed at Pond R3. Also, Alternative D would create habitat transition zones in two locations in Pond R4.

As described for Alternative Ravenswood B, the breaching of the levees and subsequent development of mudflats would increase the potential area for invasive *Spartina* to colonize, which would be a significant impact. However, the project would implement an AMP, as described above, to monitor and control invasive cordgrass. With the AMP in place, and in collaboration with the Invasive Spartina Project, colonization of mudflats and marsh plain by non-native *Spartina* would be less than significant.

Alternative Ravenswood D Level of Significance: Less than Significant

Phase 2 Impact 3.5-21: Colonization by non-native Lepidium.

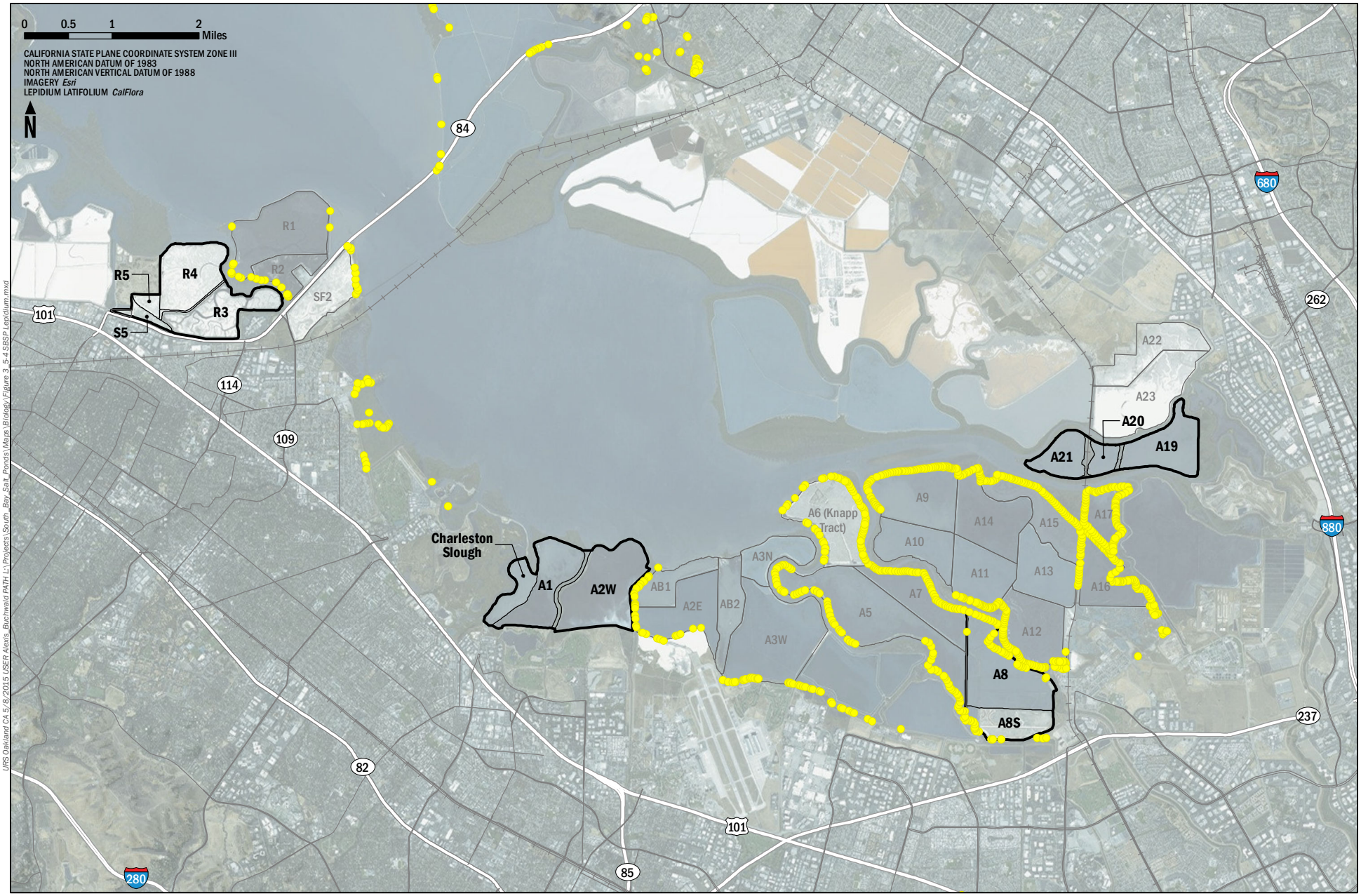
Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

Because *Lepidium* colonization occurs primarily in infrequently flooded, brackish marshes, it competes for resources with native brackish-marsh species such as bulrushes (2007 EIS/R). Figure 3.5-4 illustrates the known distribution of *Lepidium latifolium* in the South Bay. *Lepidium* may have effects on the species composition within marsh areas. Without tidal restoration in the far South Bay (i.e., the Alviso pond complex), continued sedimentation may result in increased colonization by the non-native perennial pepperweed (*Lepidium latifolium*) as the tidal prism continues to decrease and brackish marsh expands.

Conversely, the breaching of levees and subsequent increases in tidal prism could reduce the amount of brackish marsh habitat available for colonization by *Lepidium*, and importance of eradication and control programs by the Refuge and project partners. This would be a benefit. Because *Lepidium* only grows in a narrow brackish band, the restored tidal marshes will almost entirely self-limit the areas where *Lepidium* could grow. This would be a second form of benefit.

However, the large areas of created habitat transition zone would also provide new areas for potential *Lepidium* colonization (2007 EIS/R). On these habitat transition zones, ongoing eradication and control will be critical, as will active revegetation with native plants immediately after construction to resist initial *Lepidium establishment*. There is a risk of extensive *Lepidium* establishment on these habitat features if not properly controlled. All of the habitat transition zones being considered for Phase 2 action alternatives are readily accessible to staff from shore, so it would be feasible to perform the necessary eradication and control.

The Best Management Practice of cleaning equipment and supplies to prevent the spread of seeds and plant material of non-native *Lepidium* and other invasive plants would be implemented during construction and restoration activities and during maintenance activities such as driving on levees and mowing (2007 EIS/R).



URS Oakland CA 5/8/2015 USER Alexis Buchwald PATH L:\Projects\South Bay Salt Ponds\Maps\Biology\Figure 3 5-4 SBSP Lepidium.mxd

LEGEND

- Lepidium Latifolium Occurence
- Phase 2 Project Area

URS

South Bay Salt Pond Restoration Project

Figure 3.5-4

Lepidium Latifolium Distribution

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh. Because these ponds have been opened to tidal action, intertidal mudflats would develop in the short term. In the long term, most of the mudflats would become vegetated as sediment accretion continues.

Currently, large stands of *Lepidium* are present along adjacent Mud Slough and Coyote Creek. During the transition to tidal marsh, *Lepidium* could become established, particularly along the margins of new channels that develop within the ponds. The AMP, discussed in the 2007 EIS/R, addresses monitoring and control of *Lepidium* colonization. The implementation of the AMP would reduce this impact to less than significant.

Alternative Island A Level of Significance: Less than Significant

Alternative Island B. Under Alternative Island B, the levees separating Ponds A19 and A20 would be removed and the northwestern and southwestern portions of the Pond A19 levees would be lowered. Pond A19's levees would be breached on Mud Slough. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Under Alternative B, habitat would still transition to tidal marsh but with increased habitat connectivity relative to the baseline and to Alternative Island A.

The breaching of the levees could potentially open new areas for colonization. As new channels form, *Lepidium* could colonize the channel margins. This colonization could be partially offset by the increased tidal prism, which could scour banks and reduce the potential for colonization. However, should *Lepidium* colonization take place in the new tidal areas, the AMP, discussed in the 2007 EIS/R, would be implemented to address the colonization. The implementation of the AMP would reduce this impact to a less-than-significant level.

Alternative Island B Level of Significance: Less than Significant

Alternative Island C. Under Alternative Island C, the levees separating Ponds A19 and A20 would be removed and significant portions of the Pond A19 and Pond A20 levees would be lowered. Additional breaches on Mud Slough would be constructed in all three ponds. Also, the existing southern breaches on Pond A19 would be expanded and pilot channels would be constructed. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Under Alternative C, habitat would still transition to tidal marsh, but with increased habitat connectivity relative to the baseline and to Alternatives Island A and Island B.

The breaching of the levees could potentially open new areas for colonization. As new channels form, *Lepidium* could colonize the channel margins. This colonization could be partially offset by the increased tidal prism, which could scour banks and reduce the potential for colonization. However, should *Lepidium* colonization take place in the new tidal areas, the AMP, discussed in the 2007 EIS/R, would be implemented to address the colonization. The implementation of the AMP would reduce this impact to a less-than-significant level.

Alternative Island C Level of Significance: Less than Significant

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no action would be taken. The Mountain View Ponds would continue to function as managed ponds. Currently, *Lepidium* is visible on aerial images of tidal marsh areas adjacent to the Mountain View Ponds. Under the No Action Alternative, no new construction or changes in management would occur; therefore, there would be no impact on existing populations of *Lepidium*.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Alternative Mountain View B would breach Ponds A1 and A2W, which are currently ponds several feet deep, and convert them to tidal marsh with islands and habitat transition zones. Alternative B would improve the levee between Pond A1 and Charleston Slough.

The breaching of the levees could potentially open new areas for colonization. As new channels form, *Lepidium* could colonize the channel margins. This colonization could be partially offset by the increased tidal prism, which could scour banks and reduce the potential for colonization. Later, as this reaches equilibrium, there would be places for *Lepidium* to establish. Alternative B would also create upland habitat for *Lepidium* on the habitat islands, in the habitat transition zones, and on the improved levee sections. However, should *Lepidium* colonization take place in the new tidal or habitat transition zone areas, the AMP discussed in the 2007 EIS/R would be implemented to address the colonization. The implementation of the AMP would reduce this impact to a less-than-significant level.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Alternative Mountain View C would also breach Ponds A1 and A2W, which are currently shallow ponds, and convert them to tidal marsh and habitat transition zones. In addition, Alternative C would breach Charleston Slough, lower the levee between Pond A1 and Charleston Slough, and fortify the levees south and west of Charleston Slough to meet the City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance. Alternative C would also create habitat islands within Ponds A1 and A2W.

The breaching of the levees could potentially open new areas for colonization. As new channels form, *Lepidium* could colonize the channel margins. This colonization could be partially offset by the increased tidal prism, which could scour banks and reduce the potential for colonization. Alternative Mountain View C would also create upland habitat for *Lepidium* on the habitat islands, in the habitat transition zones, and on the improved levee sections. However, should *Lepidium* colonization take place in the new tidal or upland areas, the AMP, discussed in the 2007 EIS/R, would be implemented to address the colonization. The implementation of the AMP would reduce this impact to a less-than-significant level.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no action would be taken. The A8 Ponds would continue to function as managed subtidal ponds with muted tidal action. Currently, large stands of *Lepidium* are present within or in proximity to the A8 Ponds (such as in the Alviso Slough upland and transition areas). With the No Action Alternative, no construction or change in

management would occur; therefore, there would be no impact to *Lepidium* populations as a result of Alternative A.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Alternative A8 B proposes to create habitat transition zones in the southern portions of the A8 Ponds. The habitat transition zones would be potentially colonizable by *Lepidium* stands, which would be a potentially significant impact. This potential impact would be reduced through the AMP, which would reduce this impact to a less-than-significant level.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), no new action would be taken. The ponds would continue to function as seasonal ponds, and the levees would be maintained or repaired as needed to provide flood protection. These ponds are not open to the Bay, and under Alternative A no new action would be taken, and no impact to *Lepidium* populations would be expected.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would be breached along Ravenswood Slough, part of the levee near Greco Island would be lowered, Pond R4 would be turned into tidal marsh habitat, and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into enhanced managed ponds. A water control structure would be installed on Pond R3. A habitat transition zone would be added in Pond R4 along Bedwell Bayfront Park.

The breaching of the levees at Pond R4 could potentially open new areas for colonization. As new channels form, *Lepidium* could colonize the channel margins. This colonization could be partially offset by the increased tidal prism, which could scour banks and reduce the potential for colonization. Alternative Ravenswood B would also create upland habitat for *Lepidium* in the established habitat transition zone and along the improved levee of the AAC. The introduction of tidal water carrying *Lepidium* seeds into Ponds R5/S5 could also increase the potential for colonization on the island levee retained in Pond R5/S5. However, should *Lepidium* colonization take place in the new tidal or upland areas, the AMP, discussed in the 2007 EIS/R, would be implemented to address the colonization. The implementation of the AMP would reduce this impact to a less-than-significant level.

Alternative Ravenswood B Level of Significance: Less than Significant

Alternative Ravenswood C. Under Alternative Ravenswood C, Pond R4 would be breached along the Ravenswood Slough and along San Francisco Bay near Greco Island, including lowering part of the surrounding levee; Pond R4 would be turned into tidal marsh habitat and the AAC levee would be fortified. Water control structures would be installed on Pond R3. Also, Ponds R5 and S5 would be turned into tidal mudflats regulated by water control structures. Habitat transition zones would be created along the AAC levee and adjacent to Bedwell Bayfront Park.

The breaching of the levees at Pond R4 could potentially open new areas for colonization. As new channels form, *Lepidium* could colonize the channel margins. This colonization could be partially offset by the increased tidal prism, which could scour banks and reduce the potential for colonization.

Alternative C would also create upland habitat for *Lepidium* in the habitat transition zones and along the improved levee of the AAC. There is also potential for *Lepidium* to colonize the mudflat area in Pond R5/S5. However, should *Lepidium* colonization take place in the new tidal or upland areas, the AMP, discussed in the 2007 EIS/R, would be implemented to address the colonization. The implementation of the AMP would reduce this impact to a less-than-significant level.

Alternative Ravenswood C Level of Significance: Less than Significant

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would be breached along the Ravenswood Slough, Pond R4 would be turned into tidal marsh habitat, and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into enhanced managed ponds; the installation of water control structures and a connection to the Bayfront Canal and Atherton Channel Project would allow the ponds to be operated to temporarily detain peak stormwater flows. Water control structures would be installed on Pond R3. Also, Alternative D would create habitat transition zones in two locations in Pond R4.

The breaching of the levees at Pond R4 could potentially open new areas for colonization. As new channels form, *Lepidium* could colonize the channel margins. This colonization could be partially offset by the increased tidal prism, which could scour banks and reduce the potential for colonization. Alternative D would also create upland habitat for *Lepidium* in the habitat transition zones. However, should *Lepidium* colonization take place in the new tidal or upland areas, the AMP discussed in the 2007 EIS/R would be implemented to address the colonization. The implementation of the AMP would reduce this impact to a less-than-significant level.

Alternative Ravenswood D Level of Significance: Less than Significant

Phase 2 Impact 3.5-22: Increase in exposure of wildlife to avian botulism and other diseases.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

Of the wildlife diseases that could potentially affect species in the South Bay, those affecting birds are of greatest concern because of the ease with which they may be transmitted (due to birds' mobility) and the large numbers of individuals that can potentially be exposed to diseases in flocks or colonies. Avian botulism, the avian disease with the greatest potential to affect large numbers of birds, is caused by a toxin produced by the bacterium *Clostridium botulinum*. This pathogen requires a protein source, warm temperatures, and anoxic or low-oxygen conditions to reproduce and is generally harbored by soil in the environment (USGS 1999). Warm, shallow water, fluctuating water levels, high ambient temperatures, the presence of vertebrate and invertebrate carcasses, high nutrient levels, and rotting vegetation can contribute to the presence of *C. botulinum* (Washburn 2013). Botulism is a neurological disease that results in paralysis, often leading affected birds to show symptoms that include an inability to fly or to hold their heads above water (2007 EIS/R).

Monitoring for botulism has occurred in the South Bay since at least 1982. Since then, avian botulism has been linked to six large waterbird die-offs and some smaller outbreaks. The largest recent outbreak was in 1998 when over 1,400 birds were affected in San Jose and Sunnyvale (SFBBO 2012). Permanently flooded marshes often have higher concentrations of botulism compared to seasonally flooded marshes. The presence of dead animals, pesticides, and other nutrient inputs that lead to algae blooms and warm,

brackish water with low levels of dissolved oxygen increases the potential for botulism. Water pollution control plants have been identified as likely contributors to botulism outbreaks (SFBBO 2012). The 2007 EIS/R identified the following proposed mechanisms that facilitate outbreaks of avian botulism in the South Bay:

- The sludge-bed theory, which suggests that botulism outbreaks occur as a result of the warm and often anaerobic conditions created in the sludge ponds and lagoons associated with water treatment plant facilities;
- The microenvironment theory, which suggests that shallow ponds of water, formed from mudflats temporarily isolated from water exchange during low tide, facilitate outbreaks because they are associated with invertebrate die-offs, which are often consumed in large quantities by foraging birds; or
- The bird carcass theory, which suggests that botulism outbreaks are caused by the spread of bacteria through infected carcasses as maggots and invertebrates ingest the bacteria and are then ingested by foraging birds.

The SBSP Restoration Project could potentially exacerbate existing occurrences of diseases, particularly avian botulism, if the project were to increase the incidence of conditions such as warm water temperatures and anoxic or low-oxygen conditions. Such conditions may be present in shallow managed ponds with poor water circulation, necessitating careful management of water circulation; marshes that are poorly drained may also harbor such conditions. The AMP includes a description of monitoring and adaptive management activities concerning water quality. The project could also potentially increase the occurrence of disease outbreaks by concentrating larger numbers of birds into smaller areas (e.g., fewer ponds) (2007 EIS/R).

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh. Future gradual levee erosion and degradation would increase circulation and decrease conditions that are suitable for avian botulism.

The developing tidal marshes are not expected to harbor conditions that are conducive to avian botulism due to the tidal exchange that will keep warm pools from establishing. Under the No Action Alternative, there would be no increase in the exposure of wildlife to avian botulism and other diseases.

Alternative Island A Level of Significance: No Impact

Alternative Island B. Under Alternative Island B, the levees separating Ponds A19 and A20 would be removed and the northwestern and southwestern portions of the Pond A19 levees would be lowered. Pond A19's levees would be breached on Mud Slough. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Under Alternative B, habitat would still transition to tidal marsh but with additional habitat connectivity and circulation, which could improve the baseline condition.

The tidal marsh habitat created under Alternative Island B is not expected to provide conditions suitable for avian botulism. Under Alternative B, there would be no increase in exposure of wildlife to avian botulism and other diseases.

Alternative Island B Level of Significance: No Impact

Alternative Island C. Under Alternative Island C, the levees separating Ponds A19 and A20 would be removed and significant portions of the Pond A19 and Pond A20 levees would be lowered. Additional breaches on Mud Slough would be constructed in all three ponds. Also, the existing southern breaches on Pond A19 would be expanded and pilot channels would be constructed. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Under Alternative C, habitat would still transition to tidal marsh, but with even more habitat connectivity and circulation than under Alternative Island B, which could improve the baseline condition.

The tidal marsh habitat created under Alternative Island C is not expected to provide conditions suitable for avian botulism. Under Alternative C, there would be no increase in exposure of wildlife to avian botulism and other diseases.

Alternative Island C Level of Significance: No Impact

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. The Mountain View Ponds would continue to function as managed ponds.

The No Action Alternative would maintain the managed low-salinity ponds in their current state. Pond A2W is managed for water quality, which involves circulating water as needed to control dissolved oxygen per the existing AMP. Under the No Action Alternative, there would be no increase in exposure of wildlife to avian botulism and other diseases.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Alternative Mountain View B would breach Ponds A1 and A2W, which are currently shallow ponds, and convert them to tidal marsh. Alternative B would also create habitat islands and habitat transition zones within Ponds A1 and A2W. The same PG&E infrastructure improvements discussed elsewhere would also be made in Alternative B.

Selective breaching along historic slough meanders would encourage adequate water circulation, thus reducing conditions that are conducive to avian botulism. The restored tidal habitats are not expected to foster wildlife diseases. As a result, Alternative B would have no new impacts on outbreaks of avian botulism.

Alternative Mountain View B Level of Significance: No Impact

Alternative Mountain View C. Alternative Mountain View C would also breach Ponds A1 and A2W, which are currently shallow ponds, and convert them to tidal marsh. Alternative B would also create habitat islands and habitat transition zones within Ponds A1 and A2W.The same PG&E infrastructure improvements discussed elsewhere would also be made in Alternative C. In addition, Alternative C would breach Charleston Slough, lower the levee between Pond A1 and Charleston Slough, and fortify the levee

south and west of Charleston Slough to meet the City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance.

Alternative Mountain View C would also create habitat islands within Ponds A1 and A2W. These actions would increase overall connectivity and circulation between the two ponds and Charleston Slough. Selective breaching along historic slough meanders would encourage adequate water circulation, thus reducing conditions that are conducive to avian botulism. The restored tidal habitats are not expected to foster wildlife diseases. As a result, Alternative C would have no new impacts on outbreaks of avian botulism.

Alternative Mountain View C Level of Significance: No Impact

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. USFWS would continue to operate and maintain the muted tidal ponds in accordance with ongoing management practices.

The muted tidal habitats at the A8 Ponds are not expected to provide conditions conducive to an avian botulism outbreak. If the water-control structures in the system are closed for long periods, to provide flood storage capacity, they would be closed only during the winter wet season. High-temperature, low-oxygen conditions that favor avian botulism would not be present during this season, and it is therefore unlikely that the system would provide conditions favorable for an outbreak. Under the No Action Alternative, there would be no increase in the exposure of wildlife to avian botulism and other diseases.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Alternative A8 B proposes to create habitat transition zones in the southern portions of the A8 Ponds. Under Alternative A8 B, impacts related to wildlife exposure to avian botulism and other diseases would be similar to the impacts described for the No Action Alternative. Current pond management practices would be the same as those described for the No Action Alternative. Under Alternative B, there would be no increase in the exposure of wildlife to avian botulism and other diseases.

Alternative A8 B Level of Significance: No Impact

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), the ponds would be maintained in their current condition. The ponds would continue to function as seasonal ponds, and levees would be maintained or repaired as needed. The ponds are isolated from tidal action and Bay connectivity.

The existing seasonal ponds at the Ravenswood Ponds are not expected to provide conditions conducive to an avian botulism outbreak. The ponds are currently dry in the warm summer months, filling only after winter rains. Under the No Action Alternative, there would be no increase in exposure of wildlife to avian botulism and other diseases.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Ravenswood Pond R4 would be breached along the Ravenswood Slough, and part of the levee near Greco Island would be lowered; Pond R4 would be turned into tidal marsh habitat and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into enhanced managed ponds. A water control structure would be installed on Pond R3. A habitat transition zone would be established in Pond R4 adjacent to Bedwell Bayfront Park.

The tidal marshes that develop in Pond R4 are expected to provide high-quality marsh habitat with adequate circulation of water to avoid low-oxygen conditions. This condition would be achieved by breaching the levee on the historic slough meander and cutting a pilot channel into the historic slough to encourage water circulation. Water circulation in the subtidal habitat in Ponds R5 and S5 would be managed by two water control structures that would link Ponds R5 and S5 to Flood Slough and to Pond R4. Conditions in Pond R4 are not expected to be conducive to avian botulism, and water in Ponds R5 and S5 would be monitored and controlled; therefore, the impact of Alternative Ravenswood B would be less than significant.

Alternative Ravenswood B Level of Significance: Less than Significant

Alternative Ravenswood C. Under Alternative Ravenswood C, Pond R4 would be breached along the Ravenswood Slough and breached and lowered along San Francisco Bay near Greco Island, Pond R4 would be turned into tidal marsh habitat, and the AAC levee would be fortified. Water control structures would be installed on Pond R3 that would allow increased circulation, as needed. Also, Ponds R5 and S5 would be turned into enhanced managed ponds designed and operated to simulate intertidal mudflats and regulated by water control structures. Habitat transition zones would be created along the AAC levee and adjacent to Bedwell Bayfront Park.

The tidal marshes that develop in Pond R4 are expected to provide high-quality marsh habitat with adequate circulation of water to avoid low-oxygen conditions. This condition would be achieved by breaching the levee on the historic slough meander and cutting a pilot channel into the historic slough to encourage water circulation. The additional breaches and water control gates would facilitate daily water circulation in Ponds R5 and S5—and increased circulation when needed in Pond R3—to avoid the low-oxygen conditions associated with avian botulism outbreaks. Conditions under Alternative Ravenswood C are not expected to be conducive to avian botulism, and water in Ponds R5 and S5 would be monitored and controlled; therefore, there would be little to no increase in exposure of wildlife to avian botulism and other diseases. The impact of Alternative Ravenswood C would be less than significant.

Alternative Ravenswood C Level of Significance: Less than Significant

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would be breached along the Ravenswood Slough, Pond R4 would be turned into tidal marsh habitat, and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into enhanced managed ponds. The installation of water control structures and a connection to the Bayfront Canal and Atherton Channel Project would allow the ponds to be operated to temporarily detain peak stormwater flows and address residual salinity in Ponds R5 and S5. Water control structures would be installed on Pond R3 that would allow increased circulation, as needed. Also, Alternative Ravenswood D would create habitat transition zones in two locations in Pond R4.

Impacts would be similar to those of Alternative Ravenswood B, with the main exception being the stormwater connection into Ponds R5 and S5. Peak stormwater runoff from large storms would be allowed to be temporarily diverted into Ponds R5 and S5. Water control structures would be used to

manage water circulation in Ponds R5 and S5. Conditions in Pond R4 are not expected to be conducive to avian botulism, and water in Ponds R5 and S5 would be monitored and controlled. Therefore, the impact of Alternative Ravenswood D would be less than significant.

Alternative Ravenswood D Level of Significance: Less than Significant

Phase 2 Impact 3.5-23: Potential impacts to bay shrimp populations.

Potential program-level impacts are addressed in Chapter 3.6 of the program-level evaluation found in the 2007 EIS/R. Here, the project-level impacts of the implementation of Phase 2 are assessed.

The epifaunal invertebrate community in the South Bay is dominated by several species of shrimps and crabs. Two native caridean shrimps, the California bay shrimp and the blacktail bay shrimp (*C nigricauda*), are common in tidal sloughs and in the Bay itself. The California bay shrimp supports the only commercial fishery remaining in the South Bay aside from the limited harvest of brine shrimp that occurs in salt ponds. The 2007 EIS/R cited unpublished data valuing the brine shrimp harvest of approximately 75,000 pounds at between $154,000 and $312,000 per year at that time. No additional data on this fishery was identified during the preparation of this document. A discussion of California bay shrimp life cycle details can be found in the 2007 EIS/R.

At a program level, the SBSP Restoration Project is expected to have a net benefit on bay shrimp by increasing (to Bay levels) the salinities in some freshwater sloughs and channels in the South Bay and increasing the amount of estuarine habitat. Such habitat is likely to be especially important to bay shrimp as nurseries for juveniles. However, some managed ponds (e.g., those managed specifically for small shorebirds) may have higher salinity and lower DO levels than some existing ponds. Releases of water from these ponds when conditions are not optimal could result in localized areas of low DO and high salinity that may impair the health of, or cause mortality of, bay shrimp. Overall, the project has the potential to enhance the shrimp populations, which in turn could also provide economic benefits by revitalizing the shrimping industry. Although the effects of the SBSP Restoration Project on bay shrimp are expected to be beneficial overall, the AMP includes a description of monitoring and adaptive management activities concerning water quality and releases to the Bay (2007 EIS/R).

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh.

Bay shrimp may use tidal sloughs within the marsh as nurseries. Under the No Action Alternative, bay shrimp are expected to benefit from the increase in tidal habitat that would occur due to the natural transition to tidal marsh habitat at the Island Ponds. Therefore, the impact of Alternative Island A would be less than significant under CEQA and beneficial under NEPA.

Alternative Island A Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Island B. Under Alternative Island B, the levees separating Ponds A19 and A20 would be removed and the northwestern and southwestern portions of the Pond A19 levees would be lowered. Pond A19's levees would be breached on Mud Slough. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Under Alternative B, habitat would continue

to transition to tidal marsh, but with more habitat connectivity than under the baseline condition or Alternative A.

Bay shrimp may use tidal sloughs within the restored marsh as nurseries. Under Alternative Island B, bay shrimp would be expected to benefit from the increase in tidal habitat. Therefore, the impact of Alternative B would be less than significant under CEQA and beneficial under NEPA.

Alternative Island B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Island C. Under Alternative Island C, the levees separating Ponds A19 and A20 would be removed and significant portions of the Pond A19 and Pond A20 levees would be lowered. Additional breaches on Mud Slough would be constructed in all three ponds. Also, the existing southern breaches on Pond A19 would be expanded and pilot channels would be constructed. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. Under Alternative C, habitat would continue to transition to tidal marsh, but with more habitat connectivity than under the baseline condition or Alternatives Island A or Island B.

Bay shrimp may use tidal sloughs within the restored marsh as nurseries. Under Alternative Island C, bay shrimp are expected to benefit from the increase in tidal habitat. Therefore, the impact of Alternative C would be less than significant under CEQA and beneficial under NEPA.

Alternative Island C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. The Mountain View Ponds would continue to function as managed ponds, and levees would be maintained for inland flood protection.

Low water quality in discharges could potentially adversely affect bay shrimp. Under the No Action Alternative, there would be no change in the discharges compared to the baseline condition. Therefore, there would be no new impacts on bay shrimp as a result of Alternative A.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Alternative Mountain View B would breach Ponds A1 and A2W and convert them to tidal marsh and add habitat transition zone. Alternative B would also create habitat islands within Ponds A1 and A2W. PG&E infrastructure improvements would add a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raise and improve the existing boardwalk within Pond A2W, and add concrete to expand the footings around the bases of the transmission towers. Selective breaching along sloughs leading to Stevens Creek and Permanente Creek would improve foraging habitat for juvenile shrimp migrating up to the brackish water of these tidal estuaries. Multiple breaches in Ponds A1 and A2W would provide water circulation in the newly restored marshes, thus avoiding low-oxygen conditions. Tidal marsh habitat adjacent to sloughs would provide suitable low-salinity brackish estuarine habitat for juvenile shrimp migrating to summer foraging grounds.

The Action Alternatives for the Mountain View Ponds are expected to benefit to bay shrimp by increasing the amount of tidal marsh habitat. Such habitat is likely to be especially important as nurseries for juveniles. Therefore, the impact of Alternative B would be less than significant under CEQA and beneficial under NEPA.

Alternative Mountain View B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Mountain View C. Alternative Mountain View C would also breach Ponds A1 and A2W and convert them to tidal marsh and add habitat transition zone. Also, Alternative C would breach Charleston Slough, lower the levee between Pond A1 and Charleston Slough, and fortify the levees south and west of Charleston Slough to meet the City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance. The same PG&E infrastructure improvements noted for Alternative Mountain View B would also be made for Alternative C. Alternative C would also create habitat islands within Ponds A1 and A2W. These actions would facilitate the transition to tidal marsh in Charleston Slough.

Shallow waters in Charleston Slough may currently provide some habitat for shrimp. Although some shallow ponded mudflat habitat would be lost under Alternative Mountain View C, the conversion to tidal marsh and the development of tidal sloughs and smaller channels would be expected to have a net benefit on shrimp nursery habitat. The benefits of Alternative C are similar to those described for Alternative Mountain View B, except that the benefit would be greater because more tidal marsh habitat would be available with the inclusion of Charleston Slough. Therefore, the impact of Alternative C would be less than significant under CEQA and beneficial under NEPA.

Alternative Mountain View C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. USFWS would continue to operate and maintain the muted tidal ponds in accordance with ongoing management practices that have been in place since the implementation of the Phase 1 actions. No changes to the habitat of the A8 Ponds would take place under Alternative A and the ponds would continue to be managed in the same manor. Therefore; there would be no new impacts to bay shrimp.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Under Alternative A8 B, habitat transition zones would be created in the southern portions of the A8 Ponds. Current management practices would not change. Overall habitat function and pond water management would be the same as described in the No Action Alternative. There may be short-term impacts to a small number of bay shrimp if they were present in the ponds during the construction of the habitat transition zones; however, this impact would be less than significant.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), the Ravenswood Ponds would be maintained in their current condition. The ponds would continue to function as seasonal ponds, and levees would be maintained. The ponds are isolated from tidal action and Bay connectivity. The existing seasonal ponds provide minimal habitat function for bay shrimp. Under the No Action Alternative, there would be no change in impacts to bay shrimp populations.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Ravenswood Pond R4 would be breached along the Ravenswood Slough, and part of the levee near Greco Island would be lowered; Pond R4 would be turned into tidal marsh habitat and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into enhanced managed ponds. A water control structure would be installed on Pond R3. A habitat transition zone would be established in pond R4 adjacent to Bedwell Bayfront Park

The tidal marshes that would develop in Pond R4 are expected to be beneficial for bay shrimp by providing increased areas of estuarine foraging habitat. The subtidal ponds in Ponds R5 and S5 would be managed to maintain water quality levels. Low DO levels would be avoided and water would be circulated through these ponds. The Ravenswood Action Alternatives would be expected to have a net beneficial effect on bay shrimp due to tidal marsh restoration. Implementation of measures to avoid low DO conditions, including monitoring and adaptive management, would be expected to minimize the potential for the water quality problems associated with discharges from managed ponds. Therefore, the impact of Alternative Ravenswood B would be less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood C. Under Alternative Ravenswood C, Pond R4 would be breached along the Ravenswood Slough and breached and lowered along San Francisco Bay near Greco Island, Pond R4 would be turned into tidal marsh habitat, and the AAC levee would be fortified. Water control structures would be installed on Pond R3. Also, Ponds R5 and S5 would be enhanced managed ponds designed and operated to simulate intertidal mudflats and regulated by water control structures. Habitat transition zones would be created along the AAC levee and adjacent to Bedwell Bayfront Park.

The tidal marshes that would develop in Pond R4 would be expected to have beneficial effects on bay shrimp by providing foraging habitat. Ponds R5 and S5 would be managed to mudflat habitat. The Ravenswood Action Alternatives are expected to have a net beneficial effect on bay shrimp due to tidal marsh restoration. Therefore, the impact of Alternative Ravenswood B would be less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would be breached along the Ravenswood Slough, Pond R4 would be turned into tidal marsh habitat, and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into enhanced managed ponds. The installation of water control structures and a connection to the Bayfront Canal and Atherton Channel Project would allow the ponds to be operated to temporarily detain peak stormwater flows and address residual salinity in Ponds R5 and S5. Water control structures would be installed on Pond R3. Also, Alternative Ravenswood D would create habitat transition zones in two locations in Pond R4.

The tidal marshes that would develop in Pond R4 are expected to have beneficial effects on bay shrimp by providing foraging habitat. The subtidal ponds in Ponds R5 and S5 would be managed to maintain water quality levels. Low DO levels would be avoided by circulating water through these ponds using the water control structures connecting Ponds R5 and S5 to Flood Slough and Pond R4.

The Ravenswood Action Alternatives would be expected to have a net beneficial effect on bay shrimp due to tidal marsh restoration. Implementation of measures to avoid low DO conditions, including monitoring and adaptive management, would be expected to minimize the potential for water quality problems

associated with discharges from managed ponds. Therefore, the impact of Alternative Ravenswood D would be less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood D Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Phase 2 Impact 3.5-24: Potential impacts to jurisdictional wetlands or waters.

Jurisdictional wetlands and non-wetland waters of the United States (WUS) and of the State of California occur at all project ponds (URS 2014). The areas meeting the regulatory definition of "Waters of the U.S." (jurisdictional waters, including wetlands) are subject to the jurisdiction of the USACE under provisions of Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. In San Francisco Bay, these areas are also regulated by the BCDC. Also, they are subject to Section 401 of the Clean Water Act, administered in the State of California by the RWQCB, which also has jurisdiction over waters of the State. The project ponds are in the San Francisco RWQCB region.

Regionally, more than 90 percent of historic tidal wetlands in the Bay Area have been lost to diking, draining, and filling (Goals Project 1999). The jurisdictional wetland and water habitats included in the South Bay are open waters and subtidal habitats to the upper reaches of tidal action, the tidal and nontidal wetlands, and former salt evaporation ponds adjacent to the Bay. These habitats provide important wildlife habitat (as discussed in sections above), but also provide other services such as flood protection, water quality improvements, and carbon sequestration.

Most of the Phase 2 project alternatives involve levee breaching to open ponds to take tidal flows. The overarching mission of the project is the restoration and enhancement of tidal marsh wetlands in the South San Francisco Bay while providing for flood management and wildlife-oriented public access and recreation. To achieve these goals, the Phase 2 alternatives would initially create impacts to wetlands and WUS resulting from breaches to the levees and the surrounding fringing marshes. Additional fill-related impacts would come from building islands and habitat transition zones, installing water control structures, and adding or making improvements to the PG&E maintenance infrastructure. However, the impacted acreage would be significantly smaller than the area of the restored wetlands.

The majority of waters conversion would be from non-wetland waters (WUS) to wetlands, which the USACE considers special aquatic sites; special aquatic sites have increased value due to their increased ecological functions and values. The wetlands, in comparison to WUS, will provide higher-quality habitat for sensitive plant and animal species and refugia for many bird species. As described in Chapter 2, habitat transition zones (relatively gently sloping areas) between the ecosystems of the ponds and the uplands at the top of the pond levees. The transition zones are immediately beneficial habitat to wildlife as high tide refugia, and also provide resilience to future sea-level rise by allowing new marsh to gradually move up-slope as tidal elevations increase.

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh. Compared to the baseline condition, there would be a decrease in water habitat and an increase in vegetated marsh habitat over time. The loss of waters habitat would be replaced by high-value wetland habitat. This impact would be considered less than significant.

Alternative Island A Level of Significance: Less than Significant

Alternative Island B. Under Alternative Island B, two additional breaches would occur in Pond A19, levees would be lowered in two areas, and levees would be removed along the western side of Pond A19 and the eastern side of Pond A20. Alternative B would impact jurisdictional wetlands both temporarily (due to disturbance during construction) and permanently (loss of wetland habitat along breached levees). Further, all breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. This action would constitute fill in jurisdictional waters, but that fill would be converting non-wetland waters to wetland waters, so there would be no net loss of water from this action. Further, the breaching efforts would lead to the enhanced connectivity during and after the conversion of mudflats to tidal marsh areas. Also, the removal and breaching of levees (i.e., converting upland levees to waters) would create more wetlands and waters than would be impacted. The loss of waters habitat would be replaced by high-value wetland habitat. This impact would be considered less than significant.

Alternative Island B Level of Significance: Less than Significant

Alternative Island C. Under Alternative Island C, the levees separating Ponds A19 and A20 would be removed and significant portions of the Pond A19 and Pond A20 levees would be lowered. Additional breaches on Mud Slough would be constructed in all three ponds. Also, the existing southern breaches on Pond A19 would be expanded and pilot channels would be constructed. Further, all breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. This action would constitute fill in jurisdictional waters, but it would be converting non-wetland waters to wetland waters, so there would be no net loss of waters from that action. Under Alternative C, habitat would continue to transition to tidal marsh, but with more habitat connectivity than under Alternative Island B.

These construction efforts would likely impact jurisdictional wetlands and waters as described for Alternative Island B, but impacts related to fill and excavating channels through wetlands would be greater because there are more of these types of constructed elements. As above, levee removal and breaching would create more wetlands and waters than would be impacted. The loss of waters habitat would be replaced by high-value wetland habitat. This impact would be considered less than significant.

Alternative Island C Level of Significance: Less than Significant

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. The Mountain View Ponds would continue to function as managed ponds, and levees would be maintained for inland flood protection. There would be no new impacts associated with Alternative A.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Alternative Mountain View B would breach Ponds A1 and A2W, and convert them to tidal marsh and add habitat transition zone. Alternative B would also create habitat transition zones and habitat islands within Ponds A1 and A2W. PG&E infrastructure improvements would include adding a new section of boardwalk in an existing marsh just north of Pond A1's bayside levee, raising and improving the existing boardwalk within Pond A2W, and adding more concrete footings around the bases of the transmission towers. All of these would be fill in jurisdictional waters.

The breaching of the levees and the creation of upland areas would impact wetlands, both temporarily (disturbance during construction) and permanently (loss of wetland habitat along breached levees). Wetlands and waters would be impacted during construction as fill is added for the creation of the habitat transition zones and island habitat and as levees are breached. Overall, the construction activities would result in the creation of significantly more wetlands than would be impacted. The loss of waters habitat would be replaced by high-value wetland habitat. This impact would be considered less than significant.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Alternative Mountain View C would also breach Ponds A1 and A2W and convert them to tidal marsh and add habitat transition zone. In addition, Alternative C would breach Charleston Slough, lower the levee between Pond A1 and Charleston Slough, and fortify the levee south and west of Charleston Slough to meet the City of Mountain View requirements. A water intake for Shoreline Park's sailing lake would be added to the levee between Pond A1 and Charleston Slough; the intake would be at the breach. The associated pumps and other utilities would be modified as needed for access and maintenance. Alternative C would also create habitat islands within Ponds A1 and A2W. These actions would facilitate the transition of Charleston Slough to tidal marsh. The same PG&E infrastructure improvements noted for Alternative Mountain View B would also be made in Alternative C. All of these actions, except those that are on the crest of the levee (e.g., trail improvements and some intake structure improvements) would be fill in jurisdictional waters.

The breaching of the levees and the creation of upland areas would impact wetlands, both temporarily and permanently, as described for Alternative Mountain View B. The impacts of Alternative Mountain View C would be greater than under Alternative B due to more and larger construction elements (e.g., additional breaches, the larger levee footprint south and west of Charleston Slough.). Overall, the construction activities would result in the creation of significantly more wetlands than would be impacted. The loss of waters habitat would be replaced by high-value wetland habitat. This impact would be considered less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. Therefore, no impacts to jurisdictional waters would occur.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Alternative A8 B proposes to create upland transition zones in the southern portions of the A8 Ponds. The construction of the upland transition zones would fill areas that are jurisdictional non-wetland waters of the U.S. This action would be considered an impact related to fill in jurisdictional waters. Overall, jurisdictional waters in Pond A8 would be decreased; however, the losses would be of non-wetland WUS that are already modified by Phase 1 activities. Further, the habitat transition zones

would provide a more natural transition between the remaining waters and the adjacent uplands, providing enhanced habitat functions and values. Therefore, the impact of filling small amounts of non-wetland waters in Pond A8S would be considered less than significant.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), no new action would be taken. Therefore, no impacts to jurisdictional wetlands or waters would occur.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would be breached along the Ravenswood Slough, and part of the levee near Greco Island would be lowered; Pond R4 would be turned into tidal marsh habitat; and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into enhanced managed ponds. A water control structure would also be installed on Pond R3. The breaching and lowering of the levees would impact wetlands and non-wetland waters. Further, all breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. This action would constitute fill in jurisdictional waters. All of these actions would be fill in jurisdictional waters. However, the conversion of form salt production ponds to tidal marsh would result in a substantial increase in wetland habitat. This impact would be considered less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood B Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood C. Under Alternative Ravenswood C, Pond R4 would be breached along the Ravenswood Slough and breached and lowered along San Francisco Bay near Greco Island; Pond R4 would be turned into tidal marsh habitat; and the AAC levee would be fortified. Also, habitat transition zones would be created along the western and southern edges of Pond R4. In addition, Ponds R5 and S5 would be modified and managed to simulate intertidal mudflats and would be regulated by water control structures. Water control structures would also be installed on Pond R3.

The breaching and lowering of the levees and the creation of habitat transition zones would impact jurisdictional wetlands and other waters. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. This action would constitute fill in jurisdictional waters. Although the areas impacted would mostly be jurisdictional non-wetland waters, some wetlands would also be filled. However, the overall conversion of Pond R4 to tidal marsh and Ponds R5 and S5 to tidal mudflats would substantially increase wetland and water habitat. Therefore, this impact would be considered less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood C Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would be breached along the Ravenswood Slough, Pond R4 would be turned into tidal marsh habitat, and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into enhanced managed ponds; the installation of water control structures and a connection to the Bayfront Canal Project would allow the ponds to be operated to temporarily detain peak stormwater flows. Water control structures would also be installed on Pond R3. Also, Alternative D would create habitat transition zones in two locations in Pond R4.

The breaching and lowering of the levees and the creation of habitat transition zones would impact jurisdictional wetland and other waters. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations. This action would constitute fill in jurisdictional waters. Although the areas impacted would mostly be jurisdictional non-wetland waters, some wetlands would also be filled. However, the overall conversion of Pond R4 to tidal marsh and Ponds R5 and S5 to managed pond habitat would substantially increase wetland and water habitat. Therefore, this impact would be considered less than significant under CEQA and beneficial under NEPA.

Alternative Ravenswood D Level of Significance: Less than Significant (CEQA); Beneficial (NEPA)

Phase 2 Impact 3.5-25: Potential construction-related loss of, or disturbance to nesting raptors (including burrowing owls).

Raptors, including burrowing owls (*Athene cunicularia*), are known to occur in and near the project ponds. The project ponds and the surrounding bay habitat provide foraging, roosting, and nesting habitat. Suitable nesting habitat for many raptors can include trees, telephone and electrical towers and lines, cliffs, and structures such as buildings or bridges. Burrowing owls are ground nesters and may use burrows (often created by ground squirrels or other rodents) in levees and open upland habitat for nesting. Northern harriers also nest on the ground in higher areas within marsh habitats, grasslands, or fields.

Burrowing owls are also present in ruderal habitats and grasslands (all now non-native) in scattered areas surrounding the South Bay salt ponds and marshes. Ruderal habitats, which are particularly extensive on former landfills (e.g., Bayfront Park and in Sunnyvale, Shoreline Park, and adjacent to A8), and grasslands, agricultural lands, and pastures in the Mountain View, Alviso, Fremont, and Newark areas provide foraging habitat for large numbers of diurnal raptors, such as red-tailed hawks, northern harriers, white-tailed kites (*Elanus caeruleus*), loggerhead shrikes (*Lanius ludovicianus*), peregrine falcons, and American kestrels (*Falco sparverius*). Many of these raptors are found foraging in wetlands, such as salt marshes and managed ponds as well.

Once nests are built in these locations, raptors can be very sensitive to disturbance, such as from construction equipment. Breaching of levees could reduce habitat availability along levees. No impacts to tall nesting structures, such as electric line poles, or trees, are anticipated as part of the Phase 2 projects. Some raptors may benefit from increased prey in the number of other nesting birds or small rodents that could be present on islands, habitat transition zones, or tidal marshes.

Raptors are protected under the federal Migratory Bird Treaty Act and some are protected under the Endangered Species Act of 1973. Raptors, including burrowing owls, are also protected under state law (see Fish and Game Code Sections 3503, 3503.5, 3505, and 3513 and Title 14 California Code of Regulations Sections 251.1, 652, and 783–786.6). Burrowing owls are known to inhabit burrows within SBSP Restoration Project levees adjacent to A2W; other raptors are known to nest in power poles proximate to the area of the SBSP Restoration Project that could be disturbed by construction activity.

Alviso-Island Ponds

Alternative Island A (No Action). Under Alternative Island A (the No Action Alternative), no new action would be taken. Levees breached in 2006 would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh. Therefore, no impact to nesting raptors would occur.

Alternative Island A Level of Significance: No Impact

Alternative Island B. Under Alternative Island B, the levees separating Ponds A19 and A20 would be removed and the northwestern and southwestern portions of the Pond A19 levees would be lowered. Pond A19's levees would be breached along Mud Slough. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations.

Construction of the levee breaches and the lowering and removal of levees could potentially impact nesting raptors through noise and visual disturbance. To minimize this impact, work would be done outside of the nesting season to the extent possible. If work were to occur during the nesting season, pre-construction surveys would be conducted to identify any nesting raptors within 500 feet of the project construction areas (or an agency-approved distance); burrowing owl surveys would follow the CDFW protocol, as provided in *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). Should any nesting raptors be identified, nest locations would be recorded, and an agency approved buffer would be established for working in the area. If construction cannot be timed to avoid nesting raptors and they are identified during pre-construction surveys, a biological monitor would be present to monitor disturbance to any nesting birds. With the implementation of these measures, the impact of Alternative B to nesting raptors would be less than significant.

Alternative Island B Level of Significance: Less than Significant

Alternative Island C. Under Alternative Island C, the levees separating Ponds A19 and A20 would be removed and significant portions of the Pond A19 and Pond A20 levees would be lowered. All of the ponds would be breached along Mud Slough. All breached or excavated material would be sidecast into deeper portions of the ponds to raise bottom elevations.

Potential impacts to nesting raptors would be the same as under Alternative Island B, except the duration of construction could be longer under Alternative C because it has more constructed elements. The avoidance and minimization measures described for Alternative B would be applied to reduce impacts to nesting raptors. With the implementation of these measures, the impact of Alternative C to nesting raptors would be less than significant.

Alternative Island C Level of Significance: Less than Significant

Alviso-Mountain View Ponds

Alternative Mountain View A (No Action). Under Alternative Mountain View A (the No Action Alternative), no new action would be taken. Therefore, no impacts to nesting raptors would occur.

Alternative Mountain View A Level of Significance: No Impact

Alternative Mountain View B. Alternative Mountain View B would breach Ponds A1 and A2W and convert them to tidal marsh and habitat transition zone. Alternative B would also create habitat islands and add habitat transition zones within Ponds A1 and A2W. A new recreation trail and viewing platform would be created in the southwestern corner of Pond A1.

PG&E maintains electrical towers that run through the project area. These towers provide potential nesting or roosting habitat for raptors. The PG&E infrastructure improvements under Alternative Mountain View B would include adding a new section of boardwalk in an existing marsh just north of

Pond A1's bayside levee, raising and improving the existing boardwalk within Pond A2W, and adding more concrete footings around the bases of the transmission towers.

Construction of the levee breaches and islands could potentially impact nesting raptors through noise and visual disturbance. Construction work on the PG&E infrastructure could similarly disturb raptors. The proposed recreation trail at the southwest corner of Pond A1 is not expected to significantly impact nesting raptors because it is near an area already being used for recreation and not near suitable nesting habitat. The existing burrowing owl habitat in nearby Shoreline Park would not be physically affected, but there could be noise-related disturbances to these owls when fill material is brought into the project staging areas.

To minimize this impact on nesting raptors, work would be done outside of the nesting season to the extent possible. If work were to occur during the nesting season, pre-construction surveys would be conducted to identify any nesting raptors within 500 feet of the project construction areas (or an agency-approved distance); burrowing owl surveys would follow the CDFW protocol, as provided in *Staff Report on Burrowing Owl* (CDFG 2012). In addition, the City of Mountain View keeps updated records of burrows and nests each year and can provide them to the SBSP Restoration Project as part of a refined planning and routing plan as construction approaches. Should any nesting owls or other raptors be identified within the construction area or along the haul routes, the nest locations would be recorded, and an agency-approved buffer zone would be established for working in the area. The haul routes to import the necessary fill material will be selected to avoid the locations of that year's raptor nests and associated buffers to the extent feasible. If construction cannot be timed to avoid nesting raptors and they are identified during pre-construction surveys, a biological monitor would be present to monitor disturbance to any nesting birds. With the implementation of these measures, the impact of Alternative Mountain View B to nesting raptors would be less than significant.

Alternative Mountain View B Level of Significance: Less than Significant

Alternative Mountain View C. Alternative Mountain View C would also breach Ponds A1 and A2W, which are currently shallow ponds, and convert them to tidal marsh and add habitat transition zone. Also, Alternative C would breach Charleston Slough, lower the levee between Pond A1 and Charleston Slough, and fortify the levees south and west of Charleston Slough. In addition, Alternative C would create habitat islands within Ponds A1 and A2W. New recreation trails would be created in the southwestern corner of Pond A1 and around the eastern side of Pond A2W. The same PG&E infrastructure improvements noted for Alternative Mountain View B would also be made in Alternative C.

The impacts from construction would be the similar to those proposed under Alternative Mountain View B, except they would be greater due to the additional constructed elements. The south and west levees around Charleston Slough would be raised and improved, creating more potential disturbance to raptors. Construction work on the PG&E infrastructure could disturb raptors. Also, the recreation trail along the eastern edge of Pond A2W could disturb and impact raptors nesting in the PG&E towers. The adjacent levee across Stevens Creek also has a popular public access trail, so there could be larger effects. However, this impact is considered less than significant due to the physical barriers to public entry to the PG&E boardwalks and towers and the presence of other suitable nesting habitat in the area. The known burrowing owl habitat in nearby Shoreline Park would not be physically affected, but there could be noise-related disturbances to these owls when fill material is brought into the project staging areas.

The avoidance and minimization measures described for Alternative Mountain View B would be applied to reduce impacts to nesting raptors. With the implementation of these measures, the impacts to nesting raptors would be less than significant.

Alternative Mountain View C Level of Significance: Less than Significant

Alviso-A8 Ponds

Alternative A8 A (No Action). Under Alternative A8 A (the No Action Alternative), no new action would be taken. Therefore, no impacts to nesting raptors would occur.

Alternative A8 A Level of Significance: No Impact

Alternative A8 B. Alternative A8 B proposes to create habitat transition zones in the southern portions of the A8 Ponds. Depending on the texture of the soil material used, the habitat transition zone could potentially provide nesting habitat for burrowing owls, which would be a potentially beneficial impact. However, the construction of the habitat transition zone would include disturbance associated with construction equipment, and the noise from construction could potentially impact nesting raptors, which would be a significant impact.

To minimize this impact, work would be done outside of the nesting season to the extent possible. If work were to occur during the nesting season, pre-construction surveys would be conducted to identify any nesting raptors within 500 feet of the project construction areas (or an agency-approved distance); burrowing owl surveys would follow the CDFW protocol, as provided in *Staff Report on Burrowing Owl* (CDFG 2012). Should any nesting raptors be identified, nest locations would be recorded, and an agency-approved buffer would be established for working in the area. If construction cannot be timed to avoid nesting raptors and they are identified during pre-construction surveys, a biological monitor would be present to monitor disturbance to any nesting birds. With the implementation of these measures, the impacts of Alternative A8 B to nesting raptors would be less than significant.

Alternative A8 B Level of Significance: Less than Significant

Ravenswood Ponds

Alternative Ravenswood A (No Action). Under Alternative Ravenswood A (the No Action Alternative), no new action would be taken. Therefore, no impacts to nesting raptors would occur.

Alternative Ravenswood A Level of Significance: No Impact

Alternative Ravenswood B. Under Alternative Ravenswood B, Pond R4 would be breached along the Ravenswood Slough, and part of the levee near Greco Island would be lowered; Pond R4 would be turned into tidal marsh habitat; and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into enhanced managed ponds. A water control structure would also be installed on Pond R3. The breaching of the levees would require construction equipment, and the noise from construction could potentially impact nesting raptors, which would be a significant impact.

To minimize the construction impact, work would be done outside of the nesting season to the extent possible. If work were to occur during the nesting season, pre-construction surveys would be conducted to identify any nesting raptors within 500 feet of the project construction areas (or an agency-approved distance); burrowing owl surveys would follow the CDFW protocol, as provided in *Staff Report on*

Burrowing Owl (CDFG 2012). The potential burrowing owl habitat in adjacent Bedwell Bayfront Park would not be physically affected by project construction, but there could be noise-related disturbances to these owls. Should any nesting raptors be identified, nest locations would be recorded, and an agency-approved buffer would be established for working in the area. If construction cannot be timed to avoid nesting raptors and they are identified during pre-construction surveys, a biological monitor would be present to monitor disturbance to any nesting birds. With the implementation of these measures, the impact of Alternative Ravenswood B to nesting raptors would be less than significant.

Alternative Ravenswood B Level of Significance: Less than Significant

Alternative Ravenswood C. Under Alternative Ravenswood C, Pond R4 would be breached along the Ravenswood Slough, and breached and lowered along San Francisco Bay near Greco Island. Near Greco Island, a boardwalk and viewing platform would be constructed, and a new trail would be created between Ponds R4 and R5. Pond R4 would be turned into tidal marsh habitat, and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into tidal mudflats regulated by water control structures. Water control structures would also be installed on Pond R3.

The breaching of the levees would require construction equipment; noise from construction could potentially impact nesting raptors, which would be a significant impact. The potential burrowing owl habitat in adjacent Bedwell Bayfront Park would not be physically affected by the project construction, but there could be noise-related disturbances to these owls. Also, the new trails could impact raptors; however, these impacts would not be expected to be significant due to existing public access, lack of nesting habitat, and availability of other nesting habitat nearby.

To minimize impacts from construction, the avoidance and minimization measures described for Alternative Ravenswood B would be implemented. With the implementation of these measures, the impact of Alternative Ravenswood C to nesting raptors would be less than significant.

Alternative Ravenswood C Level of Significance: Less than Significant

Alternative Ravenswood D. Under Alternative Ravenswood D, Pond R4 would be breached along the Ravenswood Slough, Pond R4 would be turned into tidal marsh habitat, and the AAC levee would be fortified. Also, Ponds R5 and S5 would be turned into enhanced managed ponds; the installation of water control structures and a connection to the Bayfront Canal Project would allow the ponds to be operated to temporarily detain peak stormwater flows. Water control structures would also be installed on Pond R3. A new trail and boardwalk would be constructed near Greco Island. Also, Alternative D would create habitat transition zones in two locations in Pond R4.

Impacts associated with Alternative Ravenswood D would be similar to those under Alternative Ravenswood B except more habitat transition zones and water control structures would be created, increasing the duration of construction and the potential for disturbance. To minimize impacts from construction, the avoidance and minimization measures described for Alternative B would be implemented. With the implementation of these measures, the impacts of Alternative Ravenswood D to nesting raptors would be less than significant.

Alternative Ravenswood D Level of Significance: Less than Significant

Impact Summary

Phase 2 impacts and levels of significance are summarized in Table 3.5-4. The levels of significance are those remaining after implementation of program-level mitigation measures, project-level design features, the AMP, and other Refuge management documents and practices. The Biological Resources analysis required no project-level mitigation measures to reduce the impacts to a level that was less than significant.

Table 3.5-4 Phase 2 Summary of Impacts – Biological Resources

IMPACT	ALTERNATIVE											
	ISLAND			MOUNTAIN VIEW			A8		RAVENSWOOD			
	A	B	C	A	B	C	A	B	A	B	C	D
SBSP Impact 3.5-1: Potential reduction in numbers of small shorebirds using San Francisco Bay, resulting in substantial declines in flyway-level populations.	LTS	LTS	LTS	NI	LTS	LTS	NI	LTS /B	NI	LTS	LTS /B	LTS
SBSP Impact 3.5-2: Loss of intertidal mudflats and reduction of habitat for mudflat-associated wildlife species.	LTS	LTS	LTS	NI	LTS	LTS	NI	LTS	NI	LTS	LTS /B	LTS
SBSP Impact 3.5-3: Potential habitat conversion impacts to western snowy plovers.	NI	NI	NI	NI	LTS	LTS	NI	NI	NI	LTS	LTS	LTS
SBSP Impact 3.5-4: Potential reduction in the numbers of breeding, pond-associated waterbirds (avocets, stilts, and terns) using the South Bay due to reduction in habitat, concentration effects, displacement by nesting California gulls, and other Project-related effects.	LTS	LTS	LTS	NI	LTS	LTS	NI	LTS	NI	LTS /B	LTS /B	LTS /B
SBSP Impact 3.5-5: Potential reduction in the numbers of non-breeding, salt-pond-associated birds (e.g., phalaropes, eared grebes, and Bonaparte's gulls) as a result of habitat loss.	NI	NI	NI	NI	LTS	LTS	NI	NI	NI	LTS	LTS	LTS
SBSP Impact 3.5-6: Potential reduction in foraging habitat for diving ducks, resulting in a substantial decline in flyway-level populations.	LTS	LTS	LTS	NI	LTS	LTS	LTS	LTS	NI	LTS /B	LTS	LTS /B
SBSP Impact 3.5-7: Potential reduction in foraging habitat for ruddy ducks, resulting in a substantial decline in flyway-level populations.	LTS	LTS	LTS	NI	LTS	LTS	NI	LTS	NI	LTS /B	LTS	LTS /B
SBSP Impact 3.5-8: Potential habitat conversion impacts on California least terns.	NI	NI	NI	NI	LTS	LTS	LTS	LTS	NI	LTS/B	LTS/B	LTS/B
SBSP Impact 3.5-9: Potential loss of pickleweed-dominated tidal salt marsh habitat for the salt marsh harvest mouse and salt marsh wandering shrew and further isolation of these species' populations due to breaching activities and scour.	LTS /B	LTS /B	LTS /B	NI	LTS /B	LTS /B	NI	LTS /B	NI	LTS /B	LTS /B	LTS /B

Table 3.5-4 Phase 2 Summary of Impacts – Biological Resources

IMPACT	ALTERNATIVE											
	ISLAND			MOUNTAIN VIEW			A8		RAVENSWOOD			
	A	B	C	A	B	C	A	B	A	B	C	D
SBSP Impact 3.5-10: Potential construction-related loss of or disturbance to special-status, marsh-associated wildlife.	NI	LTS	LTS	NI	LTS	LTS	NI	LTS	NI	LTS	LTS	LTS
SBSP Impact 3.5-11: Potential construction-related loss of or disturbance to nesting pond-associated birds.	NI	LTS	LTS	NI	LTS	LTS	NI	LTS	NI	LTS	LTS	LTS
SBSP Impact 3.5-12: Potential disturbance to or loss of sensitive wildlife species due to ongoing monitoring, maintenance, and management activities.	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS
SBSP Impact 3.5-13: Potential effects of habitat conversion and pond management on steelhead.	LTS /B	LTS /B	LTS /B	NI	LTS /B	LTS	NI	LTS	NI	NI	NI	NI
SBSP Impact 3.5-14: Potential impacts to estuarine fish.	LTS /B	LTS /B	LTS /B	NI	LTS /B	LTS	NI	NI	NI	LTS /B	LTS	LTS /B
SBSP Impact 3.5-15: Potential impacts to piscivorous birds.	LTS /B	LTS /B	LTS /B	NI	LTS	LTS	NI	LTS	NI	LTS /B	LTS /B	LTS /B
SBSP Impact 3.5-16: Potential impacts to dabbling ducks.	LTS /B	LTS /B	LTS /B	NI	LTS	LTS	NI	LTS	NI	LTS /B	LTS /B	LTS /B
SBSP Impact 3.5-17: Potential impacts to harbor seals.	LTS /B	LTS /B	LTS /B	NI	LTS /B	LTS /B	NI	NI	NI	NI	NI	NI
SBSP Impact 3.5-18: Potential recreation-oriented impacts to sensitive species and their habitats.	LTS	LTS	LTS	NI	LTS	LTS	NI	NI	NI	LTS	LTS	LTS
SBSP Impact 3.5-19: Potential impacts to special-status plants.	NI	LTS	LTS	NI	NI	NI	NI	NI	NI	NI	NI	NI
SBSP Impact 3.5-20: Colonization of mudflats and marsh plain by non-native *Spartina* and its hybrids.	LTS	LTS	LTS	LTS	LTS	LTS	NI	LTS	NI	LTS	LTS	LTS
SBSP Impact 3.5-21: Colonization by non-native *Lepidium*.	LTS	LTS	LTS	NI	LTS	LTS	NI	LTS	NI	LTS	LTS	LTS

Table 3.5-4 Phase 2 Summary of Impacts – Biological Resources

IMPACT	ALTERNATIVE											
	ISLAND			MOUNTAIN VIEW			A8		RAVENSWOOD			
	A	B	C	A	B	C	A	B	A	B	C	D
SBSP Impact 3.5-22: Increase in exposure of wildlife to avian botulism and other diseases.	NI	NI	NI	NI	NI	NI	NI	NI	NI	LTS	LTS	LTS
SBSP Impact 3.5-23: Potential impacts to bay shrimp populations.	LTS /B	LTS /B	LTS /B	NI	LTS /B	LTS /B	NI	LTS	NI	LTS /B	LTS /B	LTS /B
SBSP Impact 3.5-24: Potential impacts to jurisdictional wetlands or waters.	LTS	LTS	LTS	NI	LTS	LTS	NI	LTS	NI	LTS /B	LTS /B	LTS /B
SBSP Impact 3.5-25: Potential construction-related loss of, or disturbance to, nesting raptors (including burrowing owls).	NI	LTS	LTS	NI	LTS	LTS	NI	LTS	NI	LTS	LTS	LTS

Note: Alternative A at each pond cluster is the No Action (No Project Alternative under CEQA).

B = Beneficial (NEPA only)

LTS = Less than Significant

NI = No Impact

The levels of significance for the impacts listed above assume that the Adaptive Management Plan and all program-level mitigation measures are integral components of the project and that management responses would be implemented based on ongoing monitoring and applied studies.

This page intentionally left blank