F. BIOLOGICAL RESOURCES

This section describes the existing biological setting for the Measure DD Implementation Project components, including biological resources found at and in the vicinity of the component sites. This section also identifies potential impacts to biological resources that may result from project implementation, and suggests mitigation measures to reduce potentially significant impacts.

1. Setting

This section discusses the biological setting of the Measure DD Implementation Project, including: (1) the methods used for identifying potentially occurring special-status species within the component areas; (2) existing conditions at those component sites for which such information is available (i.e., Lake Merritt and Lake Merritt Channel group and Waterfront Trail group); and (3) applicable regulations pertaining to biological resources.

a. Methods. To determine which special-status plant and animal species could occur on or in vicinity of the Measure DD components, LSA searched the California Natural Diversity Database (CNDDB)[1] and California Native Plant Society's (CNPS) online database[2] for records of special-status species in the Oakland West and Oakland East 7.5-minute U.S. Geological Survey (USGS) quadrangles. For the purpose of this EIR, special-status species are defined as follows:

- Species that are listed, formally proposed, or designated as candidates for listing as threatened or endangered under the federal Endangered Species Act (FESA)
- Species that are listed, or designated as candidates for listing, as rare, threatened, or endangered under the California Endangered Species Act (CESA)
- Plant species on Lists 1B (rare or endangered in California and elsewhere) and 2 (rare or endangered in California but more common elsewhere) in the CNPS *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2006)
- Animal species designated as Species of Special Concern or Fully Protected by the California Department of Fish and Game (CDFG)
- Species that meet the definition of rare, threatened, or endangered under Section 15380 of the CEQA Guidelines

Additional sources of site-specific information include the following:

- *Lake Merritt Channel Wetlands and Widening Project Draft EIR*, CirclePoint, April 2006
- *Biological Assessment of 12th Street Reconstruction Project*, Monk & Associates, February 13, 2006
- *66th Avenue Gateway Project Biological Assessment*, Biotic Resources Group, December 8, 2005
- *Memo Re: Cryer Park Design Review*, Garcia and Associates, February 10, 2005

[1] California Natural Diversity Database (CNDDB). 2006. Special-status species occurrences from the Oakland West and Oakland East 7.5-minute USGS quadrangle. Wildlife and Habitat Data Analysis Branch, California Department of Fish and Game, Sacramento.

[2] California Native Plant Society (CNPS). 2006. Inventory of rare and endangered plants of California (online edition, v7-06b). California Native Plant Society, Sacramento. http://www.cnps.org/inventory

Field reconnaissance information for this EIR was collected during site visits to Lake Merritt and accessible portions of the Waterfront Trail by LSA biologist Matt Ricketts on January 19, 2007. The primary purpose of the site visits was to confirm existing conditions as reported in the above site-specific documents, as well as to record basic information on wildlife species present.

Plant taxonomy and nomenclature used in this EIR follows Hickman.[3] Nomenclature for common amphibians and reptiles conforms to Crother,[4] while nomenclature for mammals conforms to Baker et al.[5] Nomenclature for special-status species conforms to the CNDDB.[6] With the exception of special-status subspecies (e.g., California brown pelican), scientific names of bird species are not provided in the text since common names are standardized in the American Ornithologists' Union (AOU) *Check-list of North American Birds*.[7]

b. Existing Conditions. Existing site conditions at the Lake Merritt and Lake Merritt Channel and Waterfront Trail groups are described below. Since the remaining project groups will be evaluated at a program level and cover a large geographic area with variable site conditions (i.e., City-wide Creeks), these site descriptions are more general in scope.

(1) Lake Merritt and Lake Merritt Channel (Group 1). The discussion below pertains to project components in the general vicinity of Lake Merritt and Lake Merritt Channel (see Chapter III for the Project Description). As such, existing biological resources are described collectively for the larger Lake Merritt ecosystem rather than separately for each proposed project component (e.g., 12th Street Improvements, Lakeside Drive and El Embarcadero).

Vegetation and Habitats. Given its location near downtown Oakland, terrestrial vegetation in the vicinity of Lake Merritt consists entirely of ornamental trees and shrubs planted as landscaping in parks and public use areas. Common species include the following: coast redwood (*Sequoia sempervirens*), London planetree (*Platanus acerifolia*), Australian tea tree (*Leptospermum laevigatum*), southern magnolia (*Magnolia grandiflora*), deodar cedar (*Cedrus deodara*), Monterey pine (*Pinus radiata*), and eucalyptus (*Eucalyptus* sp.). Mature coast live oaks (*Quercus agrifolia*), a native species, form a substantial portion of the tree canopy at Lakeside Park, where several project components are proposed (e.g., Bellevue Avenue redesign). Lawns of managed turf also comprise a large portion of the uplands surrounding Lake Merritt. Several dense patches of blackberry (*Rubus*

[3] Hickman, J. C., editor. 1993. *The Jepson Manual: Higher Plants of California*. Third printing with corrections, 1996. University of California Press, Berkeley and Los Angeles. 1400 pp.

[4] Crother, B. I., J. Boundy, J. A. Campbell, K. De Queiroz, D. R. Frost, R. Highton, J. B. Iverson, P. A. Meylan, T. W. Reeder, M. E. Seidel, J. W. Sites, Jr., T. W. Taggart, S. G. Tilley, and D. B. Wake. 2000. Scientific and standard English names of amphibians and reptiles of North America north of Mexico, with comments regarding confidence in our understanding. Herpetological Circular 29:1–82.

[5] Baker, R. J., L. C. Bradley, R .D. Bradley, J. W. Dragoo, M. D. Engstrom, R. S. Hoffmann, C. A. Jones, F. Reid, D. W. Rice, and C. Jones. 2003. Revised checklist of North American mammals north of Mexico, 2003. Museum of Texas Tech University Occasional Papers 229.

[6] Ibid.

[7] American Ornithologists' Union (AOU). 1998. Check-list of North American birds. 7th edition. American Ornithologists' Union, Washington, D.C.

sp.) and pampas grass (*Cortaderia selloana*) are present along the shoreline of the Lake Merritt Channel south of 12th Street.

Although the majority of the Lake Merritt shoreline is comprised of man-made concrete retaining walls, riprap, or cobbled banks, a few small patches of cordgrass (*Spartina* sp.) occur in shallow areas with a mud substrate, particularly along the Lake Merritt Channel between 10th and 7th Streets. Small amounts of transitional marsh species such as saltgrass (*Distichlis spicata*) and marsh gumplant (*Grindelia stricta*) often grow between such patches and the adjacent managed turf of surrounding parklands.

Wildlife. The open water habitat of Lake Merritt and the Lake Merritt Channel supports a wide variety of waterbirds (i.e., ducks, shorebirds, and waders) throughout the year, with the largest concentrations occurring in the winter. Diving ducks such as greater and lesser scaup, bufflehead, ruddy duck, canvasback, and common goldeneye comprise the majority of the wintering ducks flocks, although dabbling ducks such as mallard, green-winged teal, and American wigeon are also regularly present. Lake Merritt is also one of the more reliable areas in the Bay Area for observing wintering Barrow's goldeneye, which is considered uncommon in California and a California Species of Special Concern.[8] Other species that spend the majority of their time roosting or foraging in the open water include the following: eared grebe, horned grebe, pied-billed grebe, California brown pelican (*Pelecanus occidentalis californicus*), double-crested cormorant, American coot, ring-billed gull, California gull, western gull, and Forster's tern. Wading birds such as great blue heron, great egret, snowy egret, and black-crowned night heron are regularly seen hunting along the shoreline or roosting atop lamp posts or trees adjacent to the lake's edge. Although not part of the project area, the islands near the Rotary Nature Center at the northern end of the lake support nesting colonies of these four heron species, as well as double-crested cormorant.[9] Shorebird use of the lake is much less prevalent than in the tidal mudflats of the nearby Oakland Estuary, but the following species occur in small numbers around the lake margins and along the Lake Merritt Channel shoreline: killdeer, greater yellowlegs, spotted sandpiper, and least sandpiper. Canada geese are year-round residents at Lake Merritt, where they are commonly seen foraging in the surrounding parklands as well as on the water. The resident breeding population is supplemented by migratory and wintering birds during the fall and winter.

The numerous ornamental trees, shrubs, and lawns in the vicinity of Lake Merritt provide habitat for a variety of terrestrial landbirds adapted to urban landscapes. Some of the more common year-round resident species include rock pigeon, mourning dove, Anna's hummingbird, black phoebe, American crow, American robin, California towhee, Brewer's blackbird, and house finch. Other species only present during the winter include ruby-crowned kinglet, cedar waxwing, yellow-rumped warbler, Townsend's warbler, and white-crowned sparrow. Taller trees around the lake and along the Lake Merritt Channel provide perch sites and potential nest sites for common raptors such as red-tailed hawk, red-shouldered hawk, American kestrel, great horned owl, and barn owl. Such trees could also support Cooper's hawks, which are known to nest in Lakeside Park (see discussion under "Special-status Species" below).

[8] Cogswell, H. L. 1977. *Water Birds of California*. University of California Press, Berkeley. 399 pp.

[9] Kelly, J. P., K. Etienne, C. Strong, M. McCaustland, and M. L. Parkes. 2006. Annotated atlas and implications for the conservation of heron and egret nesting colonies in the San Francisco Bay area. Audubon Canyon Ranch Technical Report 90-3-17. Audubon Canyon Ranch, Marshall, California.

Although none were seen during the LSA site visit, several amphibian and reptiles species may also occur in the uplands surrounding Lake Merritt, many portions of which remain moist year-round due to irrigation of the lawns. Species potentially present include California slender salamander (*Batrachoseps attenuatus*), arboreal salamander (*Aneides lugubris*), Pacific treefrog (*Pseudacris regilla*), western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinatus*), and gopher snake (*Pituophis melanoleucus*).

Urban-adapted mammal species that likely forage in the vicinity of the lake include eastern fox squirrel (*Sciurus niger*), deer mouse (*Peromyscus maniculatus*), house mouse (*Mus musculus*), Virginia opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), and northern raccoon (*Procyon lotor*).

Special-status Species. Based on the habitat types present at Lake Merritt, a preliminary review of the available literature, and a search of the CNDDB, LSA identified 56 special-status species (24 plants, 32 animals) that are known to occur, or have the potential to occur, in the general vicinity of the Lake. Table IV.F-1 summarizes the status and potential for occurrence of these species within the project area.

Plants. None of the 24 special-status plant species identified in the records search are expected to occur on any of the Measure DD component sites around Lake Merritt, due to a lack of suitable habitat and the extent of historical disturbance in the vicinity. Many of the species records in the CNDDB date from the late 1800's or early 1900's. Furthermore, the native habitats upon which these species depend (e.g., coastal dunes, alkali soils, serpentine outcrops) are completely absent from the Lake Merritt area due to its highly urbanized location. Thus, these species are assumed to be extirpated in the project vicinity.

Animals. Of the 32 special-status animal species listed in Table IV.F-1 as potentially occurring in the Lake Merritt area, 26 species are considered either unlikely to occur due to a lack of suitable habitat or extirpated from the vicinity. For example, although tidewater goby (*Eucyclogobius newberryi*) is historically known from Lake Merritt (last detected in 1979 as per CNDDB), the USFWS considers this species extirpated from the Lake and Moyle considers it extirpated from San Francisco Bay.[10,11] None of the federally listed anadromous (i.e., those that migrate from the ocean to freshwater streams and rivers to spawn) fish species are expected to occur in Lake Merritt or the Lake Merritt Channel due to the lack of suitable habitat components (e.g., gravel beds, riparian shading, well-oxygenated water) required by these species. Furthermore, there is a barrier to fish passage between the Bay waters of the Oakland Estuary and Lake Merritt due to the presence of the 7th Street pump station.

The remaining six special-status bird species have all been observed at or near Lake Merritt and/or the Lake Merritt Channel. These species are discussed in further detail below.

[10] Monk & Associates, Inc. 2006. Biological Assessment, Effects of Proposed 12th Street Reconstruction, Oakland, California. Prepared for City of Oakland Public Works Agency. February 13.

[11] Moyle, P. B. 2002. *Inland Fishes of California.* University of California Press, Berkeley and Los Angeles. 502 pp.

Table IV.F-1: Special-status Species Potentially Occurring in the Vicinity of Measure DD Implementation Project Sites, Oakland, California

Species	Status	Habitat	Potential for Occurrence
PLANTS			
Amsinckia lunaris Bent-flowered fiddleneck	1B	Woodland and grassland	None: no suitable habitat[a]
Arctostaphylos pallida Pallid manzanita	FT, SE, 1B	Shale or thin chert substrates in deciduous and coniferous forests and woodlands, chaparral, or coastal scrub	Low: seven of 11 known occurrences on or adjacent to Sausal Creek watershed, but unlikely at creek restoration sites due to lack of suitable substrate
Atriplex joaquiniana San Joaquin spearscale	1B	Seasonal alkali wetlands or alkali sink scrub	None: no suitable habitat; probably extirpated
Astragalus tener var. *tener* Alkali milk-vetch	1B	Alkali playas, vernal pools, and grasslands	None: no suitable habitat; probably extirpated
Chorizanthe cuspidata var. *cuspidata* San Francisco Bay spineflower	1B	Sandy soils in coastal scrub, dunes, and prairie	None: no suitable habitat; probably extirpated
Chorizanthe robusta var. *robusta* Robust spineflower	FE, 1B	Woodland, coastal dunes and scrub	None: no suitable habitat; thought to be extirpated (CNDDB)
Clarkia franciscana Presidio clarkia	FE, SE, 1B	Serpentine outcrops in grassland or scrub	Low: known to occur in the Oakland hills; serpentine occurs at some creek restoration areas.
Cordylanthus maritimus ssp. *palustris* Point Reyes bird's-beak	1B	Coastal salt marsh	None: thought to be extirpated (CNDDB)
Dirca occidentalis Western leatherwood	1B	Brushy slopes and mesic sites, mostly in mixed evergreen forest or oak woodland	Moderate: known to occur in Sausal Creek watershed
Erodium macrophyllum Round-leaved filaree	2	Clay soils in woodland and grassland	None: no suitable habitat[a]
Fritillaria liliacea Fragrant fritillary	1B	Coastal scrub, grassland, coastal prairie; mostly in serpentine soils	None: no suitable habitat
Gilia capitata ssp. *chamissonis* Dune gilia	1B	Coastal dunes, coastal scrub	None: no suitable habitat
Helianthella castanea Diablo helianthella	1B	Rocky soils in chaparral/oak woodland interface	None: no suitable habitat
Hoita strobilina Loma Prieta hoita	1B	Serpentine soils in chaparral and woodland	None: no suitable habitat[a]
Holocarpha macradenia Santa Cruz tarplant	FT, SE, 1B	Coastal prairie, grassland	None: Extirpated from counties surrounding San Francisco Bay (CDFG 2005)
Horkelia cunuata ssp. *sericea* Kellogg's horkelia	1B	Coniferous forest, coastal scrub, chaparral	None: no suitable habitat; probably extirpated
Meconella oregana Oregon meconella	1B	Coastal prairie, coastal scrub	None: no suitable habitat
Monardella villosa ssp. *globosa* Robust monardella	1B	Forest, woodland, and grassland openings	None: no suitable habitat[a]
Plagiobothrys chorisianus var. *chorisianus* Choris's popcorn-flower	1B	Chaparral, coastal scrub, coastal prairie	None: thought to be extirpated from East Bay (CNDDB)
Plagiobothrys diffusus San Francisco popcorn-flower	SE, 1B	Grassland and coastal prairie	None: no suitable habitat
Potamogeton filiformis Slender-leaved pondweed	2	Shallow, clear water of lakes and drainage channels	None: aquatic sites in project area likely too disturbed

Table IV.F-1 *Continued*

Species	Status	Habitat	Potential for Occurrence
Sanicula maritime Adobe sanicle	SR, 1B	Meadows, seeps, grassland, chaparral, coastal prairie	None: Only known occurrence in East Bay is assumed extirpated (CNDDB)
Streptanthus albidus ssp. *peramoenus* Most beautiful jewel-flower	1B	Serpentine outcrops in chaparral, grassland, and woodland	Low: known to occur in the Oakland hills; serpentine occurs at some creek restoration areas.
Trifolium depauperatum var. *hydrophilum* Saline clover	1B	Marshes, swamps, vernal pools, and grasslands	None: only occurrence from 1883 collection
INVERTEBRATES			
Bay checkerspot butterfly *Euphydryas editha bayensis*	FT	Native grasslands on serpentine outcrops; dependent on host plant *Plantago erectus*	None: former colonies in Oakland and San Leandro Hills extirpated due to habitat modification
FISH			
Chinook salmon (Sacramento River winter-run ESU[12]) *Oncorhynchus tshawytscha*	FE	Anadromous: spawns in Sacramento River system; occurs in small numbers in Central Bay	Low: possible occasional visitor to Bay waters adjacent to Waterfront Trail
Chinook salmon (Central Valley spring-run ESU)	FT	Anadromous: spawns in Sacramento River system; occurs in small numbers in Central Bay	Low: possible occasional visitor to Bay waters adjacent to Waterfront Trail
Steelhead (Central California Coast ESU) *Oncorynchus mykiss*	FT	Anadromous: spawns in coastal streams in fall and winter; occurs in small numbers in Central Bay	Low: possible occasional visitor to Bay waters adjacent to Waterfront Trail
Coho salmon (Central California ESU) *Oncorhynchus kisutch*	FE	Anadromous: spawns in coastal streams in fall and winter	Low: possible occasional visitor to Bay waters adjacent to Waterfront Trail
Tidewater goby *Eucyclogobius newberryi*	FE, CSC	Brackish shallow lagoons and lower stream reaches with still, but not stagnant, water	None: considered extirpated from San Francisco Bay (Moyle 2002)
AMPHIBIANS			
California tiger salamander *Ambystoma californiense*	FT, CSC	Grasslands and foothills that contain small mammal burrows (for dry-season habitat) and seasonal ponds and pools (for breeding during the rainy season)	None: no suitable habitat
California red-legged frog *Rana aurora draytonii*	FT, CSC	Ponds, streams, drainages and associated uplands	Low: marginal habitat in Oakland watershed, but no recent records west of crest of Berkeley Hills (CNDDB)
Foothill yellow-legged frog *Rana boylii*	CSC	Partly shaded, shallow streams and riffles with a rocky substrate	Low: marginal habitat in Oakland watershed, but no recent records west of crest of Berkeley Hills (CNDDB)
REPTILES			
Pacific (=western) pond turtle *Actinemys marmorata*	CSC	Ponds, streams, drainages and associated uplands	Present: known from Sausal Creek watershed

[12] ESU = Evolutionarily Significant Unit. National Marine Fisheries Service (NMFS) considers an ESU a "species" under the Endangered Species Act.

Table IV.F-1 *Continued*

Species	Status	Habitat	Potential for Occurrence
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT, ST	Chaparral and sage scrub with rock outcrops and an abundance of prey species such as western fence lizard (*Sceloporus occidentalis*)	Low: suitable habitat present in upper Oakland watershed, but unlikely to occur at creek restoration sites
BIRDS			
California brown pelican *Pelecanus occidentalis californicus*	FE, SE, CFP	Coastal shorelines and bays; rarely found on fresh water	Present: known to forage and roost at Lake Merritt and adjacent to Waterfront Trail during fall-winter
Double-crested cormorant (rookery) *Phalacrocorax auritus*	CSC	Nests on coastal cliffs and offshore islands, usually on ground with sloping surface; or in tall trees near water	Present: known rookery on islands near Rotary Nature Center, Lake Merritt
Barrow's goldeneye (nesting) *Bucephala islandica*	CSC	Lagoons, brackish lakes, and bays of central-northern California	Present: regularly observed at Lake Merritt and LMC in late fall/early winter
White-tailed kite (nesting) *Elanus leucurus*	CFP	Open grasslands, meadows, or marshes; requires dense-topped trees or shrubs for nesting and perching	None: no suitable habitat
Northern harrier (nesting) *Circus cyaneus*	CSC	Nests in wet meadows and marshes, forages over open grasslands and agricultural fields	None: no suitable habitat
Sharp-shinned hawk (nesting) *Accipiter striatus*	CSC	Coniferous forests and Coast Range oak woodlands. Usually nests in dense conifers or tops of live oaks.	Moderate: known to occur in upper Oakland watershed; suitable nest trees likely present at some creek restoration sites
Cooper's hawk (nesting) *Accipiter cooperi*	CSC	Woodlands, riparian habitats, and urban areas with abundant tree cover	Moderate: suitable nest trees present at most project sites
Golden eagle *Aquila chrysaetos*	CSC, CFP	Rolling foothills and mountain areas; nests in cliff-walled canyons or large trees in open areas	Low: may occasionally forage over upper Oakland watershed and Waterfront Trail; recent nest site at Round Top not located in project area
American peregrine falcon *Falco peregrinus anatum*	SE, CFP	A variety of open habitats including coastlines, mountains, marshes, bay shorelines, and urban areas; nests on cliffs, bridges, and tall buildings	Present: observed regularly near Lake Merritt in recent winters
California black rail *Laterallus jamaicensis coturniculus*	ST, CFP	Salt marshes bordering larger bays, also found in brackish and freshwater marshes	Low: suitable habitat adjacent to 66th Ave Gateway (Damon Marsh); may occasionally use uplands during extremely high winter tides, if present
California clapper rail *Rallus longirostris obsoletus*	FE, SE, CFP	Tidal salt marshes with sloughs and substantial cordgrass (*Spartina* sp.) cover	Low: suitable habitat adjacent to 66th Ave Gateway (Damon Marsh); may occasionally use uplands during extremely high winter tides, if present
California least tern *Sterna antillarum browni*	FE, SE, CFP	Sandy beaches, alkali flats, hard-pan surfaces (salt ponds)	Low: suitable foraging habitat over Bay waters in project vicinity, but no suitable nesting habitat

Table IV.F-1 *Continued*

Species	Status	Habitat	Potential for Occurrence
Salt marsh common yellowthroat *Geothlypis trichas sinuosa*	CSC	Salt, brackish, and freshwater marshes and riparian woodlands; nests on or near ground in low vegetation	Low: only small patches of marginal habitat present; unlikely to nest in project area
Alameda song sparrow *Melospiza melodia pusillula*	CSC	Tidal salt marshes dominated by pickleweed; nests primarily in pickleweed (*Salicornia* sp.) and marsh gumplant (*Grindelia stricta*)	Present: observed at Lake Merritt Channel (LMC) and adjacent to 66th Ave Gateway; marginal nesting habitat along LMC
MAMMALS			
Alameda Island mole *Scapanus latimanus parvus*	CSC	Annual and perennial grasslands on Alameda Island	Unlikely: Project area outside species' range
Pallid bat *Antrozous pallidus*	CSC	Most common in open, arid habitats, but occurs in a wide variety of habitats	Moderate: suitable foraging habitat in Oakland watershed, but no known roosts; steel bridges along Waterfront Trail unlikely to support roosting bats
Townsend's big-eared bat *Corynorhinus townsedii*	CSC	Mesic habitats, habitat edges	Moderate: suitable foraging habitat in Oakland watershed, but no known roosts; steel bridges along Waterfront Trail unlikely to support roosting bats
Western mastiff bat *Eumops perotis*	CSC	Open, arid habitats	Low: limited habitat in Oakland watershed
Silver-haired bat *Lasionycteris noctivagans*	CSC	Coastal and montane forests; roosts in hollow trees or beneath exfoliating bark	Low: suitable habitat in Oakland watershed, but species' rarity likely precludes occurrence
Salt marsh harvest mouse *Reithrodontomys raviventris*	FE, SE, CFP	Tidal salt marshes of San Francisco Bay and its tributaries; requires tall, dense pickleweed for cover	Low: suitable habitat adjacent to 66th Ave Gateway (Damon Marsh), may occasionally use grasslands on project site as escape cover during high winter tides, if present
American badger *Taxidea taxus*	CSC	Grasslands and other open habitats with friable soils	Unlikely: no suitable habitat; no records later than 1930

Status Codes
FE = federally listed as endangered
FT = federally listed as threatened
SE = state-listed as endangered
ST = state-listed as threatened
SR = state-listed as rare
CSC = California Species of Special Concern
CFP = California Fully Protected Species
1B = California Native Plant Society (CNPS) List 1B: species considered rare or endangered in California and elsewhere
2 = CNPS List 2: species considered rare or endangered in California, but more common elsewhere
[a] Although marginal or suitable habitat may be present in the Oakland watershed, these species are not expected to occur at creek restoration sites, where habitat is expected to consist of riparian woodland and/or landscaped/developed.

California Brown Pelican. This species is federally and state-listed as endangered, and is also a California Fully Protected Species. As all California brown pelicans breed on the Channel Islands off the coast of southern California, all individuals observed in San Francisco Bay (including Lake Merritt) are non-breeding or immature birds.[13] Brown pelicans occur at Lake Merritt as uncommon but regularly occurring fall and winter (September through March) visitors.

Double-crested Cormorant. Double-crested cormorant is a California Species of Special Concern at its rookery sites. As mentioned above, a known nesting colony is present on the islands at the northern end of Lake Merritt. This species is known to forage year-round at Lake Merritt and is one of the more common waterbird species there, particularly at its northern end.

Barrow's Goldeneye. Barrow's goldeneye is a California Species of Special Concern, with protection of its nesting habitat of primary concern. This species is considered extirpated from most of California as a breeding species, and rare as a wintering species in the San Francisco Bay area.[14] As mentioned above, however, this species is regularly seen, albeit in small numbers, at Lake Merritt and the Lake Merritt Channel during the late fall and winter. At least three individuals were observed in the Lake Merritt Channel during the January 19, 2007 LSA reconnaissance survey.

Cooper's Hawk. Cooper's hawk is a California Species of Special Concern, with protection of its nest sites of primary concern. This species has adapted well to the urban environment and is known to nest in several central California cities, including Oakland. High nest-site availability (i.e., tall ornamental trees) and an abundant prey base (e.g., rock pigeons, mourning doves, American robins) are the primary habitat components that attract this species to urban areas. This species is known to nest in Lakeside Park, where a breeding pair has produced two young each year from 2004–2006.[15] The CNDDB also contains a 2003 nesting record of this species in the same location, which likely represents the same pair. [16] This nest is located in the vicinity of Bellevue Avenue and Children's Fairyland. The taller trees on and adjacent to other project component sites around Lake Merritt also represent potential nesting habitat for this species.

American Peregrine Falcon. This species is state-listed as endangered and also a California Fully Protected Species. Formerly federally listed as endangered, peregrines (*Falco peregrinus anatum*) have been delisted as a result of recent conservation and recovery efforts. Much of this species' recovery can be attributed to its success at nesting in large cities, where pairs are known to nest on bridges and tall buildings. Large populations of rock pigeons that typically occur in cities supply urban-nesting peregrines with an abundant prey source. Although no nests have been confirmed in the vicinity of Lake Merritt, this species has been sighted sporadically over the last few years perching on and hunting from the top of several tall buildings adjacent to the lake.[17] Except for two birds that were observed on September 30, 2006, all of these sightings have been of single birds.[18]

[13] CDFG and California Interagency Wildlife Task Group (CIWTG). 2005. California Wildlife Habitat Relationships database, version 8.1. Sacramento, California. http://www.dfg.ca.gov/whdab/html/cawildlife.html

[14] Avocet Research Associates. 2005. Aquatic Park, Berkeley, California: Waterbird Population and Disturbance Study, 2004. Prepared for the City of Berkeley, California. May 12. 41 pp.

[15] Travis Hails, Oakland resident and birder. Email correspondence with Matt Ricketts, January 25 and 26, 2007.

[16] Op. Cit.

[17] Op. Cit.

[18] Op. Cit.

Alameda Song Sparrow. Alameda song sparrow (*Melospiza melodia pusillula*) is a California Species of Special Concern, and one of three subspecies of song sparrow endemic to the tidal marshes surrounding San Francisco and San Pablo Bays. The Alameda subspecies occurs in tidal marshes from southeast Richmond in central San Francisco Bay south to Alviso in the South Bay. Alameda song sparrows occur primarily in tidal salt marshes, but may also nest or forage in other shoreline habitats such as seasonal wetlands, intertidal mudflats, and adjacent uplands.[19] A few individuals have been observed in the dense vegetation that borders portions of the Lake Merritt Channel (LSA obs.), which represents marginal nesting habitat for this species.

(2) Waterfront Trail (Group 2). The Oakland Waterfront Trail is part of the San Francisco Bay Trail, a planned 400-mile network of bicycle and hiking trails that will form a continuous ring around the Bay. The Waterfront Trail group consists of discontinuous sites along the proposed trail alignment. Because habitat conditions are similar among project component sites (LSA obs.), the existing biological resources will be described collectively for the Waterfront Trail group, which is typical of the north shoreline of the Oakland Inner Harbor.

Vegetation and Habitats. The Waterfront Trail sites are located primarily on bay fill land and most of the area is developed with very little native plant cover. Habitat types identified include shoreline habitats, non-native grassland/ruderal, landscaped or developed areas, coyote brush scrub, barren areas, and tidal marsh.

The shoreline habitats on the north side of the Oakland Inner Harbor are mostly comprised of human-made banks such as rock and concrete rip-rap, concrete retaining walls, and piers. The physical structure of rip-rap varies from recently constructed grouted rip-rap (e.g., around Estuary Park) to a loose conglomeration of concrete blocks, bricks, and other hard debris. Crevices within the rip-rap support small clumps of cordgrass (*Spartina* sp.), pickleweed (*Salicornia virginica*), and marsh gumplant. Larger cordgrass stands (i.e., at least 3 feet wide and 10 feet long) are scattered along the length of the shoreline, often growing within the tidal zone at the base of rip-rap. Other shoreline areas consist of rocks, gravel, soil, small blocks of concrete, and other debris that have eroded out of the adjacent upland fill areas. In some of these eroded fill areas, shoreline erosion has created a gradually sloping profile, allowing the establishment of small stands of cordgrass and other marsh vegetation.

Non-native grassland is characterized by a dense cover of introduced annual grasses such as Italian ryegrass (*Lolium multiflorum*), ripgut brome (*Bromus diandrus*), rabbit-foot grass (*Polypogon monspeliensis*), and Bermuda grass (*Cynodon dactylon*). Ruderal (weedy) vegetation often consists partially of non-native grasses, but also includes a large component of non-native herbaceous plants such as poison hemlock (*Conium maculatum*), bristly ox-tongue (*Picris echioides*), pampas grass (*Cortedaria jubata*), and wild radish (*Raphanus sativa*). These habitat types occur primarily at the Cryer site and 66th Avenue Gateway. The Cryer site also contains a few coyote brush (*Baccharis pilularis*) shrubs.

[19] Cogswell, H. L. 2000. Song sparrow. Pp. 374–385 *in* P. R. Olofson, editor. Baylands Ecosystem Species and Community Profiles: Life histories and environmental requirements of key plants, fish, and wildlife. San Francisco Bay Area Wetlands Ecosystem Goals Project, San Francisco Regional Water Quality Control Board, Oakland, California.

Numerous buildings, warehouses, and residential structures are present within and adjacent to the Waterfront Trail area. Some buildings appear abandoned while others are currently used for storage and industrial uses. Landscaped areas consist of ornamental trees and shrubs planted around buildings and along roads (e.g., Monterey pines along Alameda Avenue), as well as existing parklands at Estuary Park and Union Point Park. The two parks also contain extensive areas of managed turf (i.e., lawns). Several large blue gum eucalyptus (*Eucalyptus globulus*), which were likely planted as landscaping, are present at the 66th Avenue Gateway site. A small patch of dense scrub dominated by coyote brush and poison hemlock is present at the 66th Avenue Gateway site. Other species present include iceplant (*Carpobrotus* sp.), French broom (*Genista monspessulanus*), sweet fennel (*Foeniculum vulgare*), olive (*Olea* sp.), Cape ivy (*Delairea odorata*), yellow sweet clover (*Melilotus indica*), yellow star-thistle (*Centaurea solstitialis*), California poppy (*Eschscholzia californica*), and quail bush (*Atriplex lentiformis*).

The Brooklyn Basin site consists of a mostly barren lot comprised of gravel, eroded asphalt, and (in some areas) sparse ruderal vegetation (poison hemlock and bristly ox-tongue). Similar conditions are present at the Cryer site, although ruderal vegetation is more prevalent.

A small portion of Damon Marsh, a tidal marsh adjacent to San Leandro Bay, extrudes into the northern portion of the 66th Avenue Gateway site. California cordgrass (*Spartina foliosa*) is the dominant plant species, with seaside arrow grass (*Triglochin maritime*), curly dock (*Rumex crispus*), jaumea (*Jaumea carnosa*), sea lavender (*Limonium californicum*), salt grass, and pickleweed covering smaller areas. In addition, an isolated wetland dominated by pickleweed is present at the northern end of the site, east of the Bay Trail levee. Other species present in this marsh fragment include fat hen (*Atriplex triangularis*), lady's thumb (*Polygonum persicaria*), willow weed (*Epilobium ciliatum*), salt grass, and curly dock.

Wildlife. Bird species expected to occur on and adjacent to the Waterfront Trail sites are similar to those described above for Lake Merritt, especially waterbirds. The sites' closer proximity to the open waters of the Oakland Inner Harbor results in higher numbers of shorebirds, gulls, terns, cormorants, and brown pelicans. These waters support many of the same ducks and grebe species that occur in Lake Merritt, but in somewhat lower numbers since they are more exposed to boat traffic and human activities on the adjacent shoreline. The rip-rap and eroded fill portions of the shoreline provide some habitat value to foraging wading birds (i.e., herons and egrets) and common shorebirds such as willet, spotted sandpiper, and killdeer. The shoreline adjacent to the 66th Avenue Gateway site supports a much more diverse shorebird community than the remaining portions of the shoreline, due to the large tidal mudflats, a critical foraging habitat for shorebirds. The nearby tidal marsh also supports many bird species specifically adapted to this habitat. Species observed in this area that were not encountered elsewhere along the shoreline include Virginia rail, canvasback, cinnamon teal, black-necked stilt, American avocet, western sandpiper, dunlin, dowitcher, black-bellied plover, marsh wren, salt marsh common yellowthroat (*Geothlypis trichas sinuosa*), and Alameda song sparrow.

Landbird species expected to use the upland portions of the Waterfront Trail sites are similar to those expected around Lake Merritt, although the limited tree and shrub cover at many of the Waterfront Trail sites results in lower habitat value. Species observed during the January 19, 2007 reconnaissance survey include rock pigeon, Anna's hummingbird, black phoebe, American crow, American robin, yellow-rumped warbler, and Townsend's warbler. Other common urban-adapted

species expected to occur include California towhee, northern mockingbird, white-crowned sparrow, and house finch.

Waterfront Trail sites that contain at least some vegetative cover (e.g., 66th Avenue Gateway) are expected to support the same common, urban-adapted amphibians, reptiles, and mammals as those mentioned above for Lake Merritt. Such species are less likely to occur on barren or fully landscaped sites that lack natural or ruderal vegetation.

Special-status Species. Of the 56 special-status plant and animal species listed in Table IV.F-1, 15 animal species are considered to have some potential to occur on or adjacent to the Waterfront Trail area: chinook salmon (*Oncorhynchus tshawytscha*) (Sacramento Valley winter-run and Central Valley spring-run evolutionarily significant units [ESUs]), steelhead (*Oncorhynchus mykiss*) (central California coast ESU), coho salmon (*Oncorhynchus kisutch*) (central California ESU), California black rail (*Laterallus jamaicensis coturniculus*), California clapper rail (*Rallus longirostris obsoletus*), California least tern (*Sterna antillarum browni*), salt marsh common yellowthroat, California brown pelican, double-crested cormorant, Barrow's goldeneye, Cooper's hawk, American peregrine falcon, Alameda song sparrow, and salt marsh harvest mouse (*Reithrodontomys raviventris*). No special-status plant species are expected to occur for the same reasons provided above for Lake Merritt (i.e., history of disturbance, lack of suitable habitat).

Of the 15 above-mentioned special-status animals, only six (California brown pelican, double-crested cormorant, Cooper's hawk, American peregrine falcon, salt marsh common yellowthroat, Alameda song sparrow) have either been observed or are considered to have moderate potential to occur on or adjacent to the Waterfront Trail area. Brown pelicans (fall-winter) and double-crested cormorants (year-round) are regularly observed foraging and roosting in the Oakland Inner Harbor, although no cormorant rookery sites are present. A single peregrine falcon was seen perched atop the Fruitvale Bridge on January 21, 2007, as well as in January 2006.[20] Although there are no confirmed peregrine nest sites in the vicinity of the proposed Waterfront Trail, this species may occasionally forage along the shoreline during the winter. Cooper's hawks have not been confirmed as nesting in the area, but suitable nest trees are present at Estuary Park, along Alameda Avenue, and at the 66th Avenue Gateway site. Salt marsh common yellowthroat and Alameda song sparrow were observed and likely breed in Damon Marsh adjacent to the 66th Avenue Gateway site (LSA obs.). These two species may occasionally venture onto the site when foraging, although they are unlikely to nest there. The remainder of the Waterfront Trail area lacks tidal marsh areas of sufficient size to support either of these two species.

Other Sensitive Biological Resources. Although not identified as special-status species in the CNDDB, all native San Francisco Bay fish species are protected under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Amendments to this Act in 1996 require federal agencies to consult with the National Marine Fisheries Service regarding any action or proposed action that may adversely affect Essential Fish Habitat (EFH) for federally managed fish species. The Magnuson-Stevens Act defines EFH as "those areas and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The proposed Waterfront Trail is located adjacent to EFH for 83 fish species covered under the Pacific Groundfish Fishery Management Plan. This EFH includes all the waters of San Francisco Bay, below mean higher high

[20] Rauzon, M. 2007. Electronic message posted to Friends of Sausal Creek (FOSC) email listserv, January 21. http://lists.sausalcreek.org/pipermail/fosc-sausalcreek.org/2007/001057.html.

water (MHHW). Thus, any Waterfront Trail features that would be located in or over San Francisco Bay and will require a permit from the U.S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act, may be required to implement mitigation measures for impacts on EFH.

Pacific herring (*Clupea pallasi*) in San Francisco Bay are of special interest to the CDFG, because the Bay supports some of the largest spawning aggregations in California. The open waters adjacent to the Waterfront Trail, including areas under piers, could provide spawning habitat for Pacific herring. The spawning season extends from November through March, with peak activity in January.[21]

Marine mammals are also unidentified by the CNDDB as special-status species and are protected under the federal Marine Mammal Protection Act. Two species of marine mammals, harbor seal (*Phoca vitulina*) and California sea lion (*Zalophus californianus*), may occur infrequently in the Oakland Inner Harbor adjacent to the Waterfront Trail project area. It is unlikely that these species haul out regularly along the shoreline, due to the steep banks, unsuitable substrate (e.g., rip-rap, concrete banks, and piers), and high level of disturbance. If regularly used haul-out sites are identified, however, the Corps may require mitigation measures in connection with a Corps permit issued for the Waterfront Trail.

(3) Recreational Facilities (Group 3). The two components within this group are the renovation of the historic Studio One Art Center located in North Oakland and the construction of an East Oakland Sports Complex. Existing biological resources of these two areas are briefly described below.

Vegetation and Wildlife Habitat Value. Vegetation at the Studio One site is limited to a small managed turf lawn and a few ornamental trees. Similarly, vegetation at the East Oakland Recreational Center site (Ira Jinkins Community Center) consists entirely of managed turf (baseball field) and several ornamental trees planted as landscaping. Tree species present include eucalyptus, coast redwood, Monterey pine, and coast live oak.

Wildlife species expected to use these sites are similar to those urban-adapted species mentioned above for Lake Merritt, although habitat at the Studio One site is so limited that only the most common species (e.g., rock pigeon, house finch) are expected to occur there regularly. The trees at the East Oakland site (e.g., pines) have low to moderate potential to support nesting birds, including red-shouldered hawk and Cooper's hawk in the taller conifers.

Special-status Species. The only special-status species considered to have any potential to occur at either of the two sites is Cooper's hawk, for which marginal nesting habitat is present at the East Oakland site. No other special-status plant or animal species are expected to occur at the two sites due to their location within heavily urbanized portions of Oakland and consequent lack of native habitats.

(4) City-wide Creeks (Group 4). Various creeks and associated watersheds are included in the scope of Measure DD-funded creek restoration activities, but only selected locations along

[21] Tasto, R. N. 2000. Pacific herring. Pp. 81–85 *in* P. R. Olofson, editor. Baylands Ecosystem Species and Community Profiles: Life histories and environmental requirements of key plants, fish, and wildlife. San Francisco Bay Area Wetlands Ecosystem Goals Project, San Francisco Regional Water Quality Control Board, Oakland, California.

Oakland creeks would be affected by Measure DD restoration activities. The description below is based on extensive biological information on Sausal Creek, collected by the Friends of Sausal Creek (FOSC), a volunteer-based organization that has been working with the City to restore the Sausal Creek watershed over the last 10 years.[22] The vegetation and habitats within the Sausal Creek watershed are likely representative of those that occur throughout the remaining portions of the Oakland watershed.

Vegetation and Habitats. Vegetation communities or habitat types potentially present include landscaped/developed, riparian woodland, oak woodland, mixed evergreen forest, redwood forest, grassland, chaparral, and coastal scrub.

Existing development within the Oakland watershed ranges from low-density residential development in the hills to a dense mix of commercial and residential uses in the lower reaches. Low-density development is characterized by buildings that are often located within or adjacent to sizeable patches of natural habitats such as mixed evergreen forest, grassland, or chaparral. Although ornamental plantings are often present along roads and within landscaped gardens, native species comprise a large portion of the vegetative cover. Landscaped/developed habitats in the lower reaches consist almost entirely of non-native ornamental trees and shrubs such as those mentioned above for Lake Merritt, with eucalyptus and Monterey pine probably being two of the more widely planted species. In many cases, ornamental species invade adjacent native habitats such as riparian woodland, often forming dense colonies and out-competing native species.

Riparian woodland refers to the assemblage of trees, shrubs, and herbaceous plants usually found growing along streams. Common trees and shrubs in this community include bigleaf maple (*Acer macrophyllum*), white alder (*Alnus rhombifolia*), box-elder (*Acer negundo*), arroyo willow (*Salix lasiolepis*), poison oak (*Toxicodendron diversilobum*), and black twinberry (*Lonicera involucrata* var. *ledebourii*). Common herbaceous species growing in riparian woodlands include willow-herb (*Epilobium ciliatum* ssp. *sericea*), western lady fern (*Athyrium filix-femina* var. *cyclosorum*), horsetail (*Equisetum* sp.), and sedge (*Carex* sp.).

Oak woodlands in this area primarily consist of well-spaced coast live oaks with few shrubs and a wide variety of herbaceous plants. Other tree species may include valley oak (*Quercus lobata*) and California bay (*Umbellularia californica*), but they are not as prevalent as coast live oak. Although there is little shrub cover, scattered patches of snowberry (*Symphoricarpos albus*) and poison oak may be present. Common herbaceous species include goldback fern (*Pentagramma triangularis* ssp. *triangularis*), mistletoe (*Phoradendron villosum*), California buttercup (*Ranunculus californicus*), and miner's lettuce (*Claytonia parviflora* ssp. *parviflora*). This community may occur on uplands adjacent to creek restoration sites.

Mixed evergreen forest refers to a variety of forest types characterized by closed-canopy stands of several kinds of broadleaved evergreen hardwoods or of hardwoods and conifers.[23] Because of

[22] Friends of Sausal Creek (FOSC). 2006. Sausal creek watershed plant communities. Prepared by Karen Paulsell. Friends of Sausal Creek, Oakland, California. January 16. http://www.sausalcreek.org/sausal/nature_pdf/-FOSC_habitat_plant_list.pdf

[23] Shuford, W. D., and I. C. Timossi. 1989. *Plant Communities of Marin County*. California Native Plant Society, Sacramento. 32 pp.

variation in slope, moisture, and elevational gradients across sites, this community varies in species composition and may grade into other communities such as oak woodland or grassland. At moister, shadier sites, California bay may form dense stands with limited to no understory, although species such as licorice fern (*Polypodium calirhiza*), western sword fern (*Polystichum munitum*), and California huckleberry (*Vaccinium ovatum*) may grow in small numbers. Other areas are co-dominated by Pacific madrone (*Arbutus menziesii*), coast live oak, and California bay. California buckeye (*Aesculus californica*) may also be an important component. Additional herbaceous species that may occur in the understory of these forests include Douglas iris (*Iris douglasiana*), thimbleberry (*Rubus parviflorus*), yerba buena (*Satureja douglasii*), and Solomon's seal (*Smilacena* sp.).

Redwood forests dominated by coast redwood are limited to steep, moist canyons in the upper reaches of Oakland watersheds. Many of the understory species that grow in oak woodlands and mixed evergreen forest can also be found in redwood forests, although species unique to this community such as salal (*Gaultheria shallon*) and redwood sorrel (*Oxalis oregano*) are also present. Grasslands are open, treeless expanses of grasses and associated herbaceous species. Many California grasslands formerly comprised of native bunchgrass species have been invaded by non-native annual grasses introduced by domestic livestock in the 1700's.[24] Common non-native grasses in the Oakland hills include wild oat (*Avena fatua*), ripgut brome, and Italian ryegrass. Native bunchgrasses documented in the Sausal Creek watershed include big squirreltail (*Elymus multisetus*), melic (*Melica* sp.), and purple needlegrass (*Nasella pulchra*). Common herbaceous species that grow in both native and non-native grasslands include blue dicks (*Dichelostemma capitatum* ssp. *capitatum*), California plantain (*Plantago erecta*), blue-eyed grass (*Sisyrinchium bellum*), and California poppy.

Chaparral is a vegetation type in which most of the obvious components are tough-leaved evergreen shrubs that are adapted to dry habitat conditions.[25] Dominant shrubs include chamise (*Adenostoma fasciculatum*), various manzanitas (*Arctostaphylos* sp.), mountain mahogany (*Cercocarpus betuloides* var. *betuloides*), and California coffeeberry (*Rhamnus californica*).

Coastal scrub is characterized by the presence of low shrubs intermixed with grassy meadows, and occurs within the project area on sunny hillsides.[26] Common shrub species include bush monkeyflower (*Mimulus aurantiacus*), California sagebrush (*Artemisia californica*), coyote brush, and California coffeeberry. Common herbaceous species include mugwort (*Artemisia douglasiana*), cow parsnip (*Heracleum lanatum*), bedstraw (*Galium* sp.), and bee plant (*Scrophularia californica* ssp. *californica*).

Wildlife. The diversity of habitats in the Oakland watershed results in a corresponding diversity of native wildlife species. Urban-adapted species may be present in varying amounts, depending on the proximity of urban development, but many additional species characteristic of less disturbed, more natural habitats are likely to occur. Appendix H contains tables compiled by the FOSC of birds, reptiles, amphibians, and mammals that occur or may occur in the upper Sausal Creek watershed. These species lists include most of the terrestrial wildlife species that could potentially occur in the Oakland watershed.

[24] Beidleman, L. H., and E. N. Kozloff. 2003. *Plants of the San Francisco Bay Region*. University of California Press, Berkeley and Los Angeles. 504 pp.

[25] Ibid.

[26] Op. Cit.

Rainbow trout (non-anadromous form of steelhead) are known from the Sausal Creek and Lion Creek watersheds.[27] Trout in the upper Sausal Creek watershed appear to be wild, although individuals with hatchery characteristics have been found in the population, as well. Hatchery-raised rainbow trout are present in Lake Temescal.[28] Suitable habitat upstream of Highway 13 in the Lion Creek watershed supports a small, isolated, and apparently self-sustaining population of what may be wild rainbow trout, originally derived from steelhead.[29]

Special-status Species. Of the 56 special-status species listed in Table IV.F-1, four plant and 11 animal species are either known to occur or have some potential to occur within the Oakland watershed: pallid manzanita (*Arctostaphylos pallida*), western leatherwood (*Dirca occidentalis*), Presidio clarkia (*Clarkia franciscana*), most beautiful jewel-flower (*Streptanthus albidus* ssp. *peramoenus*), California red-legged frog (*Rana aurora draytonii*), foothill yellow-legged frog (*Rana boylii*), Pacific pond turtle (*Actinemys marmorata*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), sharp-shinned hawk, golden eagle, pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), western mastiff bat (*Eumops perotis*), silver-haired bat (*Lasionycteris noctivagans*), and Cooper's hawk.

Pallid manzanita is known to occur at the Huckleberry Botanic Preserve and in the vicinity of Manzanita Drive in the upper Sausal Creek watershed.[30] However, given its reliance on rocky ridges and outcrops in chaparral, it is highly unlikely to occur at any of the proposed creek restoration sites, which are presumably located in riparian woodland or mixed evergreen forest habitats. Western leatherwood has greater potential to occur, given that suitable habitat may be present at some of the restoration sites.

Of the 11 special-status animal species identified above, only Pacific pond turtle, sharp-shinned hawk, and Cooper's hawk are considered to have moderate potential to occur at the creek restoration sites. Although some sites may contain marginal habitat for California red-legged frog and foothill yellow-legged frog, neither of these species have been recorded west of the crest of the Berkeley and Oakland Hills. In addition, neither species was found during surveys of Sausal Creek and Arroyo Viejo conducted in 2001.[31] Alameda whipsnake is not expected to occur at any restoration sites due to its dependence on chaparral and sage scrub habitats, which are far removed from the drainage bottoms where restoration activities will occur. Pallid and Townsend's big-eared bats likely occur in the Oakland watershed, and may occasionally forage over some of the restoration sites. However, there are no known roost sites in the Oakland Hills.[32] Pacific pond turtles have been observed in the upper Sausal Creek watershed, and may occur at restoration sites where suitable habitat is present. Some of the creek restoration sites may also contain suitable nest sites for sharp-shinned and Cooper's hawks.

[27] Leidy, R. A., G. S. Becker, and B. N. Harvey. 2005. Historical distribution and current status of steelhead/rainbow trout (*Oncorhynchus mykiss*) in streams of the San Francisco Estuary, California. Center for Ecosystem Management and Restoration, Oakland, California.

[28] Personal communication with Lesley Estes, City of Oakland

[29] Ibid.

[30] Op. Cit.

[31] Personal communication with Lesley Estes, City of Oakland, April 17, 2007.

[32] Op. Cit.

c. Regulatory Context. Applicable laws and regulations pertaining to biological resources are summarized below.

(1) Federal Endangered Species Act. The Federal Endangered Species Act (FESA) protects listed species from "take," broadly defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Any such activity can be defined as "take" even if it is unintentional or accidental. Listed plant species are typically afforded less protection than listed animals. The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over federally listed threatened and endangered plant and animal species, while the National Marine Fisheries Service (NMFS) (formerly NOAA Fisheries) has jurisdiction over all federally listed anadromous fish (i.e., salmonids).

An endangered species is one that is considered in danger of becoming extinct throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future. Federal agencies involved in permitting projects that may result in take of federally listed species (e.g., Corps) are required under Section 7 of the FESA to consult with the USFWS prior to issuing such permits. Any activity that could result in the take of a federally listed species, and is not authorized as part of a Section 7 consultation, requires a FESA Section 10 take permit from the USFWS.

(2) Clean Water Act. The U.S. Army Corps of Engineers (Corps) is responsible under Section 404 of the federal Clean Water Act to regulate the discharge of fill material into waters of the United States. Waters of the U.S. and their lateral limits are defined in 33 CFR Part 328.3(a) and include streams that are tributaries to navigable waters and their adjacent wetlands. The lateral limits of jurisdiction for a non-tidal stream are measured at the line of the Ordinary High Water Mark (OHWM) (33 CFR Part 328.3[e]) or the limit of adjacent wetlands (33 CFR Part 328.3[b]). Any permanent extension of the limits of an existing water of the U.S., whether natural or man-made, results in a similar extension of Corps jurisdiction (33 CFR Part 328.5).

Waters of the U.S. fall into two broad categories: wetlands and other waters. Other waters include waterbodies and watercourses such as rivers, streams, lakes, springs, ponds, coastal waters, and estuaries. Wetlands include marshes, wet meadows, seeps, floodplains, basins, and other areas experiencing extended seasonal soil saturation. Seasonally or intermittently inundated features, such as seasonal ponds, ephemeral streams, and tidal marshes, are categorized as wetlands if they have hydric soils and support wetland plant communities. Seasonally inundated waterbodies or watercourses that do not exhibit wetland characteristics are classified as other waters of the U.S. Other waters that cannot trace a continuous hydrologic connection to a navigable water of the U.S. are not tributary to waters of the U.S. and are termed "isolated waters." Wetlands that are not adjacent to other waters are termed "isolated wetlands." ("Adjacent" means bordering, contiguous or neighboring, and includes wetlands separated from other waters by man-made dikes or barriers, natural river berms, beach dunes, and the like.) Isolated wetlands and waters are jurisdictional if their use, degradation, or destruction could affect interstate or foreign commerce (33 CFR Section 328.3[a]). The Corps may or may not take jurisdiction over isolated wetlands, depending on the specific circumstances.

In general, a Section 404 permit must be obtained from the Corps before filling or grading wetlands or other waters of the U.S. Certain projects may qualify for authorization under a Nationwide Permit

(NWP). The purpose of the NWP program is to streamline the evaluation and approval process throughout the nation for certain types of activities that have only minimal impacts to the aquatic environment. Many NWPs require the applicant to submit a pre-construction notification (PCN) to the appropriate Corps office and to obtain a project-specific authorization. The Corps is required to consult with the USFWS under Section 7 of the FESA if the permitted activity may result in the take of federally listed species.

All Corps permits require state water quality certification under Section 401 of the Clean Water Act. This regulatory program is administered by the San Francisco Bay Regional Water Quality Control Board (Water Board). Projects that propose to fill wetlands or other waters of the U.S. must apply for water quality certification from the Water Board. The Water Board has adopted a policy requiring mitigation for any loss of wetlands, streams, or other waters of the U.S.

(3) Porter-Cologne Water Quality Control Act. Under this Act (California Water Code Sections 13000-14920), the Water Board is authorized to regulate the discharge of waste that could affect the quality of the waters of the State. Therefore, even if a project does not require a federal permit, it may still require review and approval by the Water Board (e.g., for impacts to isolated wetlands and other waters). When reviewing applications, the Water Board focuses on ensuring that projects do not affect the "beneficial uses" associated with waters of the State. In most cases, the Water Board seeks to protect these beneficial uses by requiring the integration of water quality control measures into projects that will require discharge into waters of the State. For most construction projects, the Water Board requires the use of construction and post-construction Best Management Practices (BMPs).

(4) McAteer-Petris Act. The McAteer-Petris Act and Suisun Marsh Preservation Act were adopted to protect San Francisco Bay and Suisun Marsh as natural resources for the benefit of the public and to encourage development compatible with this protection. The San Francisco Bay Conservation and Development Commission (BCDC) was established to enforce this Act. The two primary goals of the BCDC are: (1) to prevent the unnecessary filling of San Francisco Bay; and (2) to increase public access to and along the Bay shoreline. BCDC approval is required for all projects within 100 feet of the Bay shoreline, as well as projects that propose any filling or dredging within Bay waters.

(5) California Endangered Species Act. The California Department of Fish and Game (CDFG) has jurisdiction over state-listed endangered, threatened, and rare plant and animal species under the California Endangered Species Act (CESA). In addition, species designated as "candidates" for listing under CESA are protected by its provisions. The CDFG also maintains a list of Species of Special Concern, defined as species that appear to be vulnerable to extinction because of declining populations, limited ranges, and/or continuing threats. Species of Special Concern are not afforded legal protection under CESA.

(6) California Fish and Game Code. The CDFG is also responsible for enforcing the California Fish and Game Code, which contains several provisions potentially relevant to construction projects. For example, Section 1602 of the Fish and Game Code governs the issuance of Lake and Streambed Alteration Agreements by the CDFG. Lake and Streambed Alteration Agreements are required whenever proposed project activities would substantially divert or obstruct

the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated as such by the CDFG.

The Fish and Game Code also lists animal species designated as Fully Protected or Protected, which may not be taken or possessed without a permit from the Fish and Game Commission and/or the CDFG. These take permits do not allow "incidental take" and are more restrictive than the take allowed under Section 2081 of CESA. Fully Protected species are listed in Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the Fish and Game Code, while Protected amphibians and reptiles are listed in Chapter 5, Sections 41 and 42.

Section 3503 of the Fish and Game Code prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Subsection 3503.5 specifically prohibits the take, possession, or destruction of any birds in the orders Falconiformes (hawks and eagles) or Strigiformes (owls) and their nests. Those provisions, along with the federal Migratory Bird Treaty Act (MBTA) (described below), essentially serve to protect nesting native birds. Non-native species, including European starling, house sparrow, and rock pigeon, are not afforded any protection under the MBTA or Fish and Game Code (except that hunting regulations apply to some non-native species).

(7) Migratory Bird Treaty Act. The MBTA prohibits the taking, hunting, killing, selling, purchasing, etc. of migratory birds, parts of migratory birds, and their eggs and nests. As used in the MBTA, the term "take" is defined as "to pursue, hunt, shoot, capture, collect, kill, or attempt to pursue, hunt, shoot, capture, collect, or kill, unless the context otherwise requires." Most bird species native to the U.S. are covered by this Act.

(8) California Environmental Quality Act. The California Environmental Quality Act (CEQA) applies to "projects" proposed to be undertaken or requiring approval by State or local government agencies. Projects are defined as having the potential to have physical impact on the environment. Under Section 15380 of CEQA, a species not included on any formal list "shall nevertheless be considered rare or endangered if the species can be shown by a local agency to meet the criteria" for listing. With sufficient documentation, a species could be shown to meet the definition of rare or endangered under CEQA and be considered a "de facto" rare or endangered species.

(9) Magnuson-Stevens Fishery Conservation and Management Act. Although not identified as special-status species in the CNDDB, all native San Francisco Bay fish species are protected under the Magnuson-Stevens Act. Amendments to this Act in 1996 require federal agencies to consult with the NMFS regarding any action or proposed action that may adversely affect Essential Fish Habitat (EFH) for federally managed fish species. The Magnuson-Stevens Act defines EFH as "those areas and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

(10) Marine Mammal Protection Act. All marine mammals (i.e., whales, dolphins, porpoises, seals, sea lions, and walruses) are protected by the Marine Mammal Protection Act (MMPA) of 1972. The MMPA prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. The MMPA is enforced by the NMFS.

(11) City of Oakland General Plan. The City has authority over land and development within city limits. The City exercises its authority through policies and planning documents such as the General Plan and City Ordinances such as the City Municipal Code. The Open Space Conservation and Recreation (OSCAR) and Land Use and Transportation Element (LUTE) of the General Plan have numerous policies related to the protection of biological resources. The primary OSCAR policies relevant to biological resources include the following:

- Policy CO-5.3: Employ a broad range of strategies, compatible with the Alameda Countywide Clean Water Program, to: (a) reduce water pollution associated with stormwater runoff; (b) reduce water pollution associated with hazardous spills, runoff from hazardous material areas, improper disposal of household hazardous wastes, illicit dumping, and marina live-aboards; and (c) improve water quality in Lake Merritt to enhance the Lake's aesthetic, recreational, and ecological functions.
- Policy CO 6.1: Protect Oakland's remaining natural creek segments by retaining creek vegetation, maintaining creek setbacks, and controlling bank erosion. Design future flood control projects to preserve the natural character of creeks and incorporate provisions for public access, including trails, where feasible. Strongly discourage projects which bury creeks or divert them into concrete channels.
- Policy CO-6.4: Manage Oakland's lakes to take advantage of their recreational and aesthetic potential while conserving their ecological functions and resource value. Discourage new recreational users which impair the ability of the lakes to support fish and wildlife. Support improvements which enhance water circulation, water quality, and habitat value, provided they are cost-effective and are compatible with established recreational activities.
- Policy CO-6.5: Protect the surface waters of the San Francisco Estuary system, including San Francisco Bay, San Leandro Bay, and the Oakland Estuary. Discourage shoreline activities which negatively impact marine life in the water and marshland areas.
- Policy CO-7.1: Protect native plant communities, especially oak woodlands, redwood forests, native perennial grasslands, and riparian woodlands, from the potential adverse impacts of development. Manage development in a way which prevents or mitigates adverse impacts to these communities.
- Policy CO-7.2: Encourage efforts to restore native plant communities in areas where they have been compromised by development or invasive species, provided that such efforts do not increase an area's susceptibility to wildfire.
- Policy CO-7.4: Discourage the removal of large trees on already developed sites unless removal is required for biological, public safety, or public works reasons.
- Policy CO-8.1: Work with federal, state, and regional agencies on an ongoing basis to determine mitigation measures for development which could potentially impact wetlands. Strongly discourage development with unmitigatable adverse impacts.
- Policy CO-8.2: Limit recreational uses within wetland "parks" to activities that are consistent with the fragile environmental characteristics of the areas. These uses may include wildlife refuges, ecological study areas, and where appropriate, interpretive boardwalks and nature centers.
- Policy CO-9.1: Protect rare, endangered, and threatened species by conserving and enhancing their habitat and requiring mitigation of potential adverse impacts when development occurs within habitat areas.
- Policy CO-11.1: Protect wildlife from the hazards of urbanization, including loss of habitat and predation by domestic animals.
- Policy CO-11.2: Protect and enhance migratory corridors for wildlife. Where such corridors are privately owned, require new development to retain native habitat or take other measures which help sustain local wildlife populations and migratory patterns.
- Policy OS-7.4: Expand and enhance the City's waterfront park areas. Signage and access provisions to existing waterfront parks should be improved. Opportunities for new shoreline parks as depicted in Figure 7 (of the OSCAR) should be pursued as redevelopment along the waterfront occurs. A variety of park environments should be created, including active recreation areas, fishing piers and boating facilities, natural areas, and small "pocket" parks with landscaping and benches, all linked by linear parks or pedestrian paths emphasizing shoreline views and access.

- Policy OS-12.1: Incorporate a broad and varied range of tree species which is reflected on a City-maintained list of approved trees. Street tree selection should respond to the general environmental conditions at the planting site, including climate and micro-climate, soil types, topography, existing tree planting, maintenance of adequate distance between street trees and other features, the character of existing development, and the size and context of the tree planting area.
- Policy REC-2.3: Protect sensitive natural areas within parks, including creeks and woodlands, and integrate them into park design. Require new recreational facilities to respect existing park character, be compatible with the natural environment, and achieve a high standard of design quality.

The following policies from the LUTE of the General Plan are applicable to the proposed project:

- Policy W3.2: The function, design and appearance, and supplementary characteristics of all uses, activities, and facilities should enhance, and should not detract from or damage the quality of, the overall natural and built environment along the waterfront.
- Policy W3.3: Native plant communities, wildlife habitats, and sensitive habitats should be protected and enhanced.

The Oakland Estuary Plan contains the following policy relevant to biological resources:

- Policy OAK-1.1: Encourage the preservation and enhancement of wetland areas. The waterfront should be improved in a manner that maintains and enhances the ecological value of the area in general and the Lake Merritt Channel in particular. In some locations, tidelands function as tidal wetlands, providing marsh habitat for fish, migratory waterfowl, and other animals. Improvements should be encouraged that restore wetland and marsh habitat. Wetlands should be protected by such treatments as setting back trails from the shoreline, installing suitable buffer planting to prevent disruption nesting and resting areas, seasonal routing of pedestrians to avoid sensitive habitats, etc. As improvements and projects are considered, the City and Port should work with interested groups and organizations to ensure appropriate treatments along the shoreline, particularly along the channel on the eastern bank between I-880 and Embarcadero.

(12) City of Oakland Municipal Code. Title 12, Chapter 12.36 of the Oakland Municipal Code (OMC) requires that a permit be obtained prior to removing protected trees from either City or private property. Protected trees are defined as follows:

- Any coast live oak (*Quercus agrifolia*) larger than 4 inches diameter-at-breast height (dbh)
- Any tree that is larger than 9 inches dbh, except eucalyptus trees, or Monterey pines on City property and in development-related situations where more than five per acre are proposed to be removed.

(13) City of Oakland's Standard and Uniformly Applied Conditions of Approval. The City of Oakland's Standard and Uniformly Applied Conditions of Approval (Standard Conditions of Approval) that would apply to the proposed project are listed below. Implementation of these conditions would ensure minimization of a project's potential impacts to biological resources.

Condition 31: Tree Removal Permit on Creekside Properties. *Prior to issuance of a final inspection of the building permit.* Prior to removal of any tree located on the project site which is identified as a creekside property, the project applicant must secure the applicable creek protection permit, and abide by the conditions of that permit.

Condition 32: Tree Removal During Breeding Season. *Prior to issuance of a tree removal permit.* To the extent feasible, removal of the trees and other vegetation suitable for nesting of raptors shall not occur during the breeding season of March 15 through August 15. If tree removal must occur during the breeding season, all sites shall be surveyed by a qualified biologist to verify the presence or absence of nesting raptors or other birds. Pre-removal surveys shall be conducted within 15 days prior to the start of work from March 15 through May 31, and within 30 days prior to the start of work from June 1 through August 15. If the survey indicates the potential presence of nesting raptors or other birds, the biologist shall determine an appropriately sized buffer around the nest in which no work will be allowed until the young have successfully fledged. The size of the nest buffer will be determined by the biologist in consultation with the CDFG, and will be based to a large extent on the nesting species and its sensitivity to disturbance. In general, buffer sizes of 200 feet for raptors and 50 feet for other birds should suffice to prevent

disturbance to birds nesting in the urban environment, but these buffers may be increased or decreased, as appropriate, depending on the bird species and the level of disturbance anticipated near the nest.

Condition 33: Tree Removal Permit. *Prior to issuance of a demolition, grading, or building permit.* Prior to removal of any protected trees, per the Protected Tree Ordinance, located on the project site or in the public right-of-way adjacent to the project, the project applicant must secure a tree removal permit, and abide by the conditions of that permit.

Condition 34: Tree Replacement Plantings. *Prior to issuance of a final inspection of the building permit.* Replacement plantings shall be required for erosion control, groundwater replenishment, visual screening and wildlife habitat in accordance with the following criteria:

a) No tree replacement shall be required for the removal of nonnative species, for the removal of trees which is required for the benefit of remaining trees, or where insufficient planting area exists for a mature tree of the species being considered.

b) Replacement tree species shall consist of *Sequoia sempervirens* (Coast Redwood), *Quercus agrifolia* (Coast Live Oak), *Arbutus menziesii* (Madrone), *Aesculus californica* (California Buckeye) or *Umbellularia californica* (California Bay Laurel) or other tree species acceptable to the Tree Services Division.

c) Replacement trees shall be at least of 24-inch box size, unless a smaller size is recommended by the arborist, except that three 15-gallon-size trees may be substituted for each 24-inch box size tree where appropriate.

d) Minimum planting areas must be available on site as follows:

- For *Sequoia sempervirens*, three hundred fifteen square feet per tree;
- For all other species listed in #b above, seven hundred (700) square feet per tree.

e) In the event that replacement trees are required but cannot be planted due to site constraints, an in lieu fee as determined by the master fee schedule of the city may be substituted for required replacement plantings, with all such revenues applied toward tree planting in city parks, streets and medians.

f) Plantings shall be installed prior to the issuance of a final inspection of building permit, subject to seasonal constraints, and shall be maintained by the project applicant until established. The Tree Reviewer may require a landscape plan showing the replacement planting and the method of irrigation. Any replacement planting which fails to become established within one year of planting shall be replanted at the project applicant's expense.

Condition 35: Tree Protection During Construction. *Prior to issuance of a demolition, grading, or building permit.* Adequate protection shall be provided during the construction period for any trees which are to remain standing, including the following, plus any recommendations of an arborist:

a) Before the start of any clearing, excavation, construction or other work on the site, every protected tree deemed to be potentially endangered by said site work shall be securely fenced off at a distance from the base of the tree to be determined by the City Tree Reviewer. Such fences shall remain in place for duration of all such work. All trees to be removed shall be clearly marked. A scheme shall be established for the removal and disposal of logs, brush, earth and other debris which will avoid injury to any protected tree.

b) Where proposed development or other site work is to encroach upon the protected perimeter of any protected tree, special measures shall be incorporated to allow the roots to breathe and obtain water and nutrients. Any excavation, cutting, filing, or compaction of the existing ground surface within the protected perimeter shall be minimized. No change in existing ground level shall occur within a distance to be determined by the City Tree Reviewer from the base of any protected tree at any time. No burning or use of equipment with an open flame shall occur near or within the protected perimeter of any protected tree.

c) No storage or dumping of oil, gas, chemicals, or other substances that may be harmful to trees shall occur within the distance to be determined by the Tree Reviewer from the base of any protected trees, or any other location on the site from which such substances might enter the protected perimeter. No heavy construction equipment or construction materials shall be operated or stored within a distance from the base of any protected trees to be determined by the tree reviewer. Wires, ropes, or other devices shall not be attached to any protected tree, except as needed for support of the tree. No sign, other than a tag showing the botanical classification, shall be attached to any protected tree.

d) Periodically during construction, the leaves of protected trees shall be thoroughly sprayed with water to prevent buildup of dust and other pollution that would inhibit leaf transpiration.

e) If any damage to a protected tree should occur during or as a result of work on the site, the project applicant shall immediately notify the Public Works Agency of such damage. If, in the professional opinion of the Tree Reviewer, such tree cannot be preserved in a healthy state, the Tree Reviewer shall require replacement of any tree removed with another tree or trees on the same site deemed adequate by the Tree Reviewer to compensate for the loss of the tree that is removed.

f) All debris created as a result of any tree removal work shall be removed by the project applicant from the property within two weeks of debris creation, and such debris shall be properly disposed of by the project applicant in accordance with all applicable laws, ordinances, and regulations.

Condition 69: Creek Protection Plan. *Prior to and ongoing throughout demolition, grading, and/or construction activities.*

a) The approved creek protection plan shall be included in the project drawings submitted for a building permit (or other construction-related permit). The project applicant shall implement the creek protection plan to minimize potential impacts to the creek during and after construction of the project. The plan shall fully describe in plan and written form all erosion, sediment, stormwater, and construction management measures to be implemented on-site.

b) If the plan includes a stormwater system, all stormwater outfalls shall include energy dissipation that slows the velocity of the water at the point of outflow to maximize infiltration and minimize erosion. The project shall not result in a substantial increase in stormwater runoff volume or velocity to the creek or storm drains.

Condition 70: Regulatory Permits and Authorizations. *Prior to issuance of a demolition, grading, and/or building permit within vicinity of the creek.* Prior to construction within the vicinity of the creek, the project applicant shall obtain all necessary regulatory permits and authorizations from the U.S Army Corps of Engineers (Corps), Regional Water Quality Control Board (RWQCB), California Department of Fish and Game, and the City of Oakland, and shall comply with all conditions issued by applicable agencies. Required permit approvals and certifications shall include, but not be limited to the following:

a) U.S. Army Corps of Engineers (Corps): Section 404. Permit approval from the Corps shall be obtained for the placement of dredge or fill material in Waters of the U.S., if any, within the interior of the project site, pursuant to Section 404 of the federal Clean Water Act.

b) Regional Water Quality Control Board (RWQCB): Section 401 Water Quality Certification. Certification that the project will not violate state water quality standards is required before the Corps can issue a 404 permit, above.

c) California Department of Fish and Game (CDFG): Section 1602 Lake and Streambed Alteration Agreement. Work that will alter the bed or bank of a stream requires authorization from CDFG.

Condition 71: Creek Monitoring. *Prior to issuance of a demolition, grading, and/or building permit within vicinity of the creek.* A qualified geotechnical engineer and/or environmental consultant shall be retained and paid for by the project applicant to make site visits during all grading activities; and as a follow-up, submit to the Building Services Division a letter certifying that the erosion and sedimentation control measures set forth in the Creek Protection Permit submittal material have been instituted during the grading activities.

Condition 72: Creek Landscaping Plan. *Prior to issuance of a demolition, grading, and/or building permit within vicinity of the creek.* The project applicant shall develop a final detailed landscaping and irrigation plan for review and approval by the Planning and Zoning Division prepared by a licensed landscape architect or other qualified person. Such a plan shall include a planting schedule, detailing plant types and locations, and a system for temporary irrigation of plantings.

a) Plant and maintain only drought-tolerant plants on the site where appropriate as well as native and riparian plants in and adjacent to riparian corridors. Along the riparian corridor, native plants shall not be disturbed to the maximum extent feasible. Any areas disturbed along the riparian corridor shall be replanted with mature native riparian vegetation and be maintained to ensure survival.

b) All landscaping indicated on the approved landscape plan shall be installed prior to the issuance of a Final inspection of the building permit, unless bonded pursuant to the provisions of Section 17.124.50 of the Oakland Planning Code.

c) All landscaping areas shown on the approved plans shall be maintained in neat and safe conditions, and all plants shall be maintained in good growing condition and, whenever necessary replaced with new plant materials to ensure continued compliance with all applicable landscaping requirements. All paving or impervious surfaces shall occur only on approved areas.

Condition 73: Creek Dewatering and Aquatic Life. *Prior to the start of and ongoing throughout any in-water construction activity.*

a) If any dam or other artificial obstruction is constructed, maintained, or placed in operation within the stream channel, ensure that sufficient water is allowed to pass down channel at all times to maintain aquatic life (native fish, native amphibians, and western pond turtles) below the dam or other artificial obstruction.

b) The project applicant shall hire a biologist to relocate all native fish/native amphibians/western pond turtles within the work site, with all necessary State and Federal permits, prior to dewatering. Captured native fish/native amphibians/western pond turtles shall be moved to the nearest appropriate site on the stream channel downstream. The applicant shall first obtain a project-specific authorization from the CDFG and/or USFWS, as applicable, to relocate these animals. The biologist/contractor shall check daily for stranded aquatic life as the water level in the dewatering area drops. All reasonable efforts shall be made to capture and move all stranded aquatic life observed in the dewatered areas. Capture methods may include fish landing nets, dip nets, buckets, and by hand. Captured aquatic life shall be released immediately in the nearest appropriate downstream site. This condition does not allow the take or disturbance of any state- or federally listed species nor state-listed species of special concern, unless the applicant obtains a project-specific authorization from the CDFG and/or USFWS, as applicable.

2. Impacts and Mitigation Measures

This section discusses potential impacts to biological resources that could result from implementation of Measure DD. The section begins with the significance criteria, which establish the thresholds used to determine whether an impact is significant. The latter part of this section presents the impacts associated with Measure DD and identifies mitigation measures, as appropriate.

a. Criteria of Significance. Implementation of the proposed project components would have a significant impact on biological resources if they would:

1) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;

2) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS;

3) Have a substantial adverse effect on federally protected wetlands (as defined by Section 404 of the Clean Water Act) or state protected wetlands, through direct removal, filling, hydrological interruption, or other means;

4) 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;

5) Fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan;

6) Fundamentally conflict with the City of Oakland Tree Preservation and Removal Ordinance (OMC Chapter 12.36) by removal of protected trees under certain circumstances. Factors to be

considered in determining significance include: the number, type, size, location and condition of (a) the protected trees to be removed and/or impacted by construction and (b) the protected trees to remain, with special consideration given to native trees.[33]

Protected trees include the following:

Coast live oak measuring 4 inches dbh or larger, and any other tree measuring 9 inches dbh or larger except eucalyptus and Monterey pine; however, Monterey pine trees on City property and in development-related situations where more than five Monterey pine trees per acre are proposed to be removed are considered to be protected trees; or

7) Fundamentally conflict with the City of Oakland Creek Protection Ordinance (OMC Chapter 13.16) intended to protect biological resources. Although there are no specific, numeric/quantitative criteria to assess impacts, factors to be considered in determining significance include whether there is substantial degradation of riparian and aquatic habitat through: (a) discharging a substantial amount of pollutants into a creek; (b) significantly modifying the natural flow of the water; (c) depositing substantial amounts of new material into a creek or causing substantial bank erosion or instability; or (d) adversely impacting the riparian corridor by significantly altering vegetation or wildlife habitat.

The level of impact to biological resources is discussed in the following section and summarized in Table IV.F-2. Many of the potential impacts will be reduced to a less-than-significant level through implementation of the City's Standard Conditions of Approval (see above), which are included as part of the project.

b. Impacts Applicable to All Project Groups. Several of the impacts to biological resources that may result from the implementation of Measure DD would essentially be the same for each or most of the four project groups. These impacts are defined below for each criterion of significance listed above. Where applicable, the City's specific Standard Conditions of Approval that will reduce potential impacts to a less-than-significant level are identified in the text after the discussion of the impact.

(1) Candidate, Sensitive, or Special-status Species. The only special-status species potentially occurring within all component groups is Cooper's hawk, a California Species of Special Concern. The numerous tall trees throughout the Measure DD Implementation Project area provide nesting habitat for a variety of native bird species, potentially including Cooper's hawk. In addition, some of the creek restoration sites in the upper Oakland watershed may contain suitable nest trees for sharp-shinned hawk. Both these species are California Species of Special Concern. Proposed tree removal within the Lake Merritt and the Lake Merritt Channel group area and potential tree removal within other group sites could directly impact nesting Cooper's and sharp-shinned hawks by removing trees that support active nests. Prolonged loud construction noise could also disturb nesting birds, resulting in nesting failure and/or nest abandonment.

[33] Oakland Planning Code section 17.158.280E2 states that "Development related" tree removal permits are exempt from CEQA if no single tree to be removed has a dbh of 36 inches or greater **and** the cumulative trunk area of all trees to be removed does not exceed 0.1 percent of the total lot area.

Table IV.F-2: Summary of Potential Impacts – Biological Resources

	Project Group[a]			
Would the Project:	**Group 1 Lake Merritt**	**Group 2 Waterfront Trail**	**Group 3 Recreational Facilities**	**Group 4 City-wide Creeks**
1. Adversely affect a candidate, sensitive or special-status species?	O	⊙ BIO-1 BIO-2	O	O
2. Adversely affect riparian habitat of other sensitive natural community?	==	==	==	O
3. Adversely affect federally or state protected wetlands?	⊙ BIO-3	⊙ BIO-3	==	⊙ BIO-3
4. Interfere with a migratory wildlife corridor or wildlife nursery site?	⊙ BIO-4	O	O	O
5. Conflict with any applicable habitat conservation plan or natural community conservation plan?	==	==	==	==
6. Conflict with the City of Oakland Tree Preservation and Removal Ordinance?	O	O	O	O
7. Conflict with the City of Oakland Creek Protection Ordinance?	O	O	==	O

[a] The Lake Merritt and Waterfront Trail groups are analyzed at the project level. The Recreational Facilities and City-wide Creeks groups are analyzed at the program level. The level of impact and the proposed mitigation measure, if any, are identified as follows:

== No impact
O Less-than-Significant or Less-than-Significant with Standard Conditions of Approval
⊙ Reduced to Less-than-Significant after recommended mitigation
● Significant
NA Not Applicable
BIO-1, etc. identifies the mitigation measure, if any, that addresses the impact and reduces it to a level that is less than significant.

Source: LSA Associates, 2007

Implementation of the City's Standard Conditions of Approval (Condition 32) will reduce potential impacts to nesting Cooper's and sharp-shinned hawks to a less-than-significant level. The pre-construction survey shall be conducted within 15 days prior to the start of work from March 15 though May (since there is higher potential for birds to initiate nesting during this period), and within 30 days prior to the start of work from June through August 15.

(2) Riparian Habitat. No riparian habitat or other sensitive natural communities are present at the Lake Merritt and Lake Merritt Channel or Recreational Facilities groups. A small area of pickleweed wetland, considered a sensitive natural community by the CDFG, is present on the 66th Avenue Gateway site within the Waterfront Trail group, but will not be affected by any proposed project activities. Potential impacts to wildlife that may use this plant community are discussed in Section IV.F2c. The only project group that may result in direct impacts to riparian habitat or other sensitive natural communities is the City-wide Creeks group. This potential impact is discussed in Section IV.F2c.

(3) Wetlands. Waters of the U.S. and State are present on or adjacent to several components within the Lake Merritt and the Lake Merritt Channel, Waterfront Trail, and City-wide Creeks groups. Since no such features are present within the two components of the Recreational Facilities group, this potential impact is discussed in Section IV.F2c.

(4) Native Resident or Migratory Wildlife Movement, Wildlife Corridors, or Nursery Sites. Suitable nesting habitat for native bird species protected by the federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Code is present within all of the project group areas. Additional impacts unique to the Lake Merritt Channel are discussed in Section IV.F2c.

Most existing vegetation and some un-vegetated areas within the project area have at least some potential to support breeding activities by native birds protected under the MBTA and California Fish and Game Code. Proposed removal of trees and other vegetation at Lake Merritt and the Lake Merritt Channel and potential vegetation removal for other project components (e.g., grading, clearing, and grubbing of existing landscaped areas at creek restoration sites) could directly impact nesting birds by removing vegetation that contains active nests. In addition, species that nest in un-vegetated areas (i.e., killdeer) may be vulnerable to construction activities (e.g., grading, site demolition, equipment traffic). Implementation of the City's Standard Conditions of Approval (Condition 32) will reduce potential impacts to nesting birds to a less-than-significant level.

(5) Regional Conservation Plans. The areas covered by the Measure DD Implementation Project are not currently subject to any adopted habitat conservation plans or natural community conservation plans.

(6) Protected Trees. Based on current plans, the Lake Merritt and Lake Merritt Channel group proposes to remove a number of protected trees. Protected trees might also be removed as part of the Waterfront Trail, Recreational Facilities, and City-wide Creeks groups. This impact is discussed in Section IV.F2c.

(7) Creek Protection Ordinance. Project components within the Lake Merritt and Lake Merritt Channel and City-wide Creeks groups are subject to the City's Creek Protection Ordinance. In addition, some creeks (e.g., Sausal Creek) discharge to the Oakland Harbor Channel within or adjacent to the Waterfront Trail group study area. No creeks are located on or adjacent to the site of the proposed Recreational Facilities group. This impact is discussed in Section IV.F2c.

c. Impacts and Mitigation Measures Unique to Specific Project Components. This section describes potential impacts that are unique to individual project components.

(1) Candidate, Sensitive, or Special-status Species. Potential site-specific impacts to special-status species are discussed below.

Western leatherwood and most beautiful jewel-flower, CNPS List 1B species, and Presidio clarkia, a State- and federally listed species as well as a CNPS List 1B species, are known to occur in the Oakland watershed, and suitable habitat (particularly mixed evergreen forest for western leatherwood, and serpentine for Presidio clarkia and most beautiful jewel-flower) may be present at some of the proposed creek restoration sites. Potential restoration activities that may impact these species include grading, clearing, and grubbing of landscaped areas, as well as tree pruning and removal. Surveys of

existing habitat and vegetation would be conducted during the design phase and would identify special-status plants that require protection during restoration activities and that would be incorporated into the restored site design. Other native species would be incorporated into the design to the extent feasible. Implementation of the City's Standard Conditions of Approval (Conditions 35, 70 and 72) will further ensure that any special-status plant species found at creek restoration sites will be fully protected during project activities, reducing any potential impacts to a less-than-significant level.

Pacific pond turtles, a California Species of Special Concern, are known to occur in the Oakland watershed and suitable habitat may be present at some of the creek restoration sites, depending on their level of disturbance. In-stream restoration activities (e.g., creek bed grading, creek realignment, in-stream improvements) may result in direct mortality of Pacific pond turtles if present. Implementation of the City's Standard Conditions of Approval (Condition 73) and approval of all relocation plans and involved biologists by the CDFG will reduce potential impacts to Pacific pond turtles to a less-than-significant level.

Impact BIO-1 (Group 2): Construction of an observation structure at the 66th Avenue Gateway site may impact state or federally listed tidal marsh species. (S)

Suitable habitat for California black rail, California clapper rail, and salt marsh harvest mouse (SMHM) is present in Damon Marsh adjacent to the 66th Avenue Gateway site. Construction would not extend into existing marsh habitat. A fenced buffer of upland habitat at least 20 feet wide would be set up between marsh habitat and any nearby construction areas. Nevertheless, these species are known to use grasslands and other dense vegetation adjacent to marshes as escape cover during very high tides. As such, there is a small chance that they may occur within the construction footprint during very high tides, if present in Damon Marsh. In addition, construction noise could potentially disturb nesting tidal marsh rails since suitable habitat is present within 100 feet of the construction footprint.[34]

> Mitigation Measure BIO-1a (Group 2): Ground disturbance in the vicinity of Damon Marsh shall be conducted only when high tides are not at their winter or summer extremes, to reduce the likelihood that tidal marsh rails and SMHM will be present in the construction footprint. Ground disturbance shall be avoided during the highest tides of June–July and December–January (± one week each month). (LTS)
>
> Mitigation Measure BIO-1b (Group 2): Prior to ground disturbance, a qualified biologist experienced with SMHM exclusion procedures shall prepare a site-specific SMHM avoidance plan. At a minimum, the plan shall include (1) the installation of silt fencing around the entire portion of the work area (that is within 100 feet from the edge of the marsh) to exclude SMHM from entering, (2) the clearing of all ground vegetation within the fenced area, and (3) the relocation to Damon Marsh of any SMHM found during the vegetation removal effort. Construction work shall start as soon as possible (and no longer than one week) after vegetation has been cleared. All exclusion measures and initial ground

[34] This proposed project component has been designed and the City is currently requesting bids to construct it. Mitigation included in this environmental document has been incorporated into the bid documents.

disturbance activities shall be monitored by a biologist, who has the necessary state and federal permits to handle and relocate SMHM. (LTS)

Mitigation Measure BIO-1c (Group 2): To avoid potential disturbance to nesting tidal marsh rails, construction of the observation structure shall be conducted during the non-breeding season (September 1 through January 31), unless prior surveys indicate that marsh habitat within 100 feet of the construction footprint is not part of an active rail breeding territory. Such surveys must be conducted in accordance with a project-specific survey protocol prepared in accordance with the USFWS and CDFG guidelines. (LTS)

Impact BIO-2 (Group 2): Construction of the pile-supported boardwalks along the Waterfront Trail may impact fisheries resources within the Oakland Inner Harbor. (S)

Construction of the proposed boardwalks under the bridges at Park Street, Fruitvale Avenue, and High Street has the potential to impact fisheries resources within the Oakland Inner Harbor. Specifically, pile driving activities could directly impact Pacific herring and migrating salmonids, as well as other native San Francisco Bay fish species protected under the Magnuson-Stevens Act (i.e., Essential Fish Habitat [EFH]). Pile driving can generate intense underwater sound pressure waves that may injure and kill fish.[35]

Mitigation Measure BIO-2 (Group 2): To avoid adverse impacts to Pacific herring, federally listed salmonids (chinook salmon, coho salmon, and steelhead), and EFH, pile driving shall occur within the June 1 to November 30 work window in accordance with NMFS guidelines.[36] Any pile driving occurring outside this period will require informal or formal consultation with the NMFS (for listed salmonids and EFH) and CDFG (for Pacific herring) prior to the Corps' issuance of a Section 404 permit for impacts to waters of the U.S. (LTS)

(2) Riparian Habitat. Although the proposed creek restoration activities will ultimately result in improved and increased riparian habitat throughout the Oakland watershed, short-term impacts may include removal and/or pruning of existing native riparian trees and shrubs.

Due to the programmatic level at which the City-wide Creeks project group is being evaluated, the number of existing riparian trees and/or shrubs that would be removed is unknown. However, it is anticipated that removal of some riparian vegetation would be necessary at some sites to accommodate re-grading of creek channels, bank stabilization, to allow for re-vegetation with native vegetation and other activities. Implementation of the City's Standard Conditions of Approval (Conditions 34, 69, 70, and 72) will reduce potential impacts to riparian habitat to a less-than-significant level.

(3) Wetlands. Most components within the Lake Merritt and Lake Merritt Channel group (i.e., 12th Street Reconstruction, Lakeshore Avenue/El Embarcadero, E. 18th Street Pier Overlook,

[35] Hanson, J., M. Helvey, and R. Strach, editors. 2003. Non-fishing Impacts to Essential Fish Habitat and Recommended Conservation Measures. National Marine Fisheries Service, Alaska Region, Northwest Region, Southwest Region. August.

[36] National Marine Fisheries Service (NMFS). San Francisco Bay Project Impact Evaluation System (PIES) website. <http://mapping.orr.noaa.gov/website/portal/pies/faqs.html> Accessed April 12, 2007.

Municipal Boathouse) have already obtained the proper regulatory permits (e.g., Corps permit, Water Board water quality certification, CDFG Lake or Streambed Alteration Agreement) for actions within or adjacent to waters of the U.S. and State. Proposed activities within the Waterfront Trail and City-wide Creeks groups have yet to obtain permits for potential impacts to waters of the U.S. and State, or BCDC approval, since planning has not yet been completed for these groups.

Impact BIO-3 (Groups 1, 2, and 4): Construction of some components within the Lake Merritt and Lake Merritt Channel, Waterfront Trail, and City-wide Creeks groups may impact waters of the U.S. and State. (S)

The proposed fixed pier boardwalks at Park Street, Fruitvale Avenue, and High Street along the Waterfront Trail would involve the square-drilling or driving of concrete piers within waters of the Oakland Inner Harbor, which is under the jurisdiction of the Corps, Water Board, and BCDC as waters of the U.S. and State. In addition, proposed restoration activities within the Oakland watershed would likely result in temporary, short-term impacts to waters of the U.S. and State.

> Mitigation Measure BIO-3a (Groups 1, 2, and 4): All Measure DD-funded activities within jurisdictional waters shall first obtain authorization from the appropriate agencies (Corps, Water Board, CDFG, and BCDC). At a minimum, each activity will likely require a Section 404 Corps permit and Section 401 water quality certification from the Water Board. Creek restoration activities may also require a CDFG Lake or Streambed Alteration Agreement, depending on site-specific conditions. Construction of the fixed pier boardwalks along the Waterfront Trail will require BCDC approval since it proposes construction over and filling of Bay waters (i.e., concrete piers). (LTS)
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> Mitigation Measure BIO-3b (Groups 1, 2, and 4): Impacts to jurisdictional wetlands shall be mitigated at a minimum replacement ratio of 1:1 (i.e., one acre created [and preserved] for every acre impacted). If feasible, replacement habitat shall be created/preserved in the same general area as the original impact. Off-site mitigation may be approved if the amount of required replacement habitat exceeds that which is available near a given impact site. A wetland mitigation and monitoring plan (MMP) shall be developed for each mitigation site, detailing the mitigation design, wetland planting design, adaptive management, maintenance and monitoring requirements, reporting requirements, and success criteria for the created wetland(s). (LTS)

(4) Native Resident or Migratory Wildlife Movement, Wildlife Corridors, or Nursery Sites. Several species of migratory waterbirds have been observed using the Lake Merritt Channel during the winter (approximately October through March), often in flocks of 40 to 70 birds (e.g., scaup, common goldeneye). A 2004 study of waterbird use and disturbance response within Berkeley's Aquatic Park found that disturbance sensitivity was positively related to flock size, with large flocks flushing more readily than smaller ones.[37] Although no such studies have been conducted at the Lake Merritt Channel, LSA observed a flock of approximately 50 common goldeneyes swimming away from a group of schoolchildren crossing the pedestrian bridge during the January 19 site visit, indicating sensitivity to disturbance. Human-caused disturbance negatively affects wintering ducks by causing the expenditure of energy (i.e., flying or moving away from the source of

[37] Avocet Research Associates. 2005. Aquatic Park, Berkeley, California: Waterbird Population and Disturbance Study, 2004. Prepared for the City of Berkeley, California. May 12. 41 pp.

disturbance) that would otherwise be used for behaviors necessary for survival, such as resting or feeding.[38] Repeated or periodic disturbance would cause a greater expenditure of energy and thus have a greater effect on wintering birds than singular events.

Both construction activities and future recreational use of the Channel have the potential to disturb wintering waterfowl. Although most construction would occur outside of the wintering period during April through September, some may be conducted during the period when waterbirds are most abundant (approximately October through March). Construction activities at the Lake Merritt Channel (e.g., grading, demolition of existing culverts, tree removal) during this time would disturb waterbirds by causing them to fly away from loud noises and/or workers and equipment. However, because construction would occur nearly daily, except weekends, for several months the birds would likely relocate to nearby areas on Lake Merritt or the Oakland Estuary during this time rather than returning to the disturbed area. This temporary displacement of birds to nearby suitable habitat areas would be a less-than-significant impact.

Impact BIO-4 (Group 1): The introduction of small boat traffic to the Lake Merritt Channel would result in increased disturbance levels to wintering migratory ducks and other waterbirds. (S)

As discussed above, wintering ducks are sensitive to a variety of human-caused disturbances, including both motorized and non-motorized boat traffic. Based on a review of several thousand scientific journal articles and books, Korschgen and Dahlgren[39] identified four categories of human disturbance to ducks. The second-most disruptive category was defined as over-water movement with little noise (sailing, wind surfing, rowing, and canoeing). If kayaks, rowboats, and other such vessels were allowed to use the Lake Merritt Channel during the wintering period (October–March), they would create a new source of disturbance to wintering ducks and other waterbirds in the channel. Because disturbance of waterbirds by recreational users could happen multiple times each day the birds are likely to experience frequent episodes of hazing. Many of the birds would likely relocate to nearby areas on Lake Merritt or the Oakland Estuary, rather than returning to Lake Merritt Channel, thus greatly reducing the average number of waterbirds using Lake Merritt Channel. In addition, the potential disturbance would continue for the life of the project. Therefore, this impact would be significant.

> Mitigation Measure BIO-4 (Group 1): Small boat use of the Lake Merritt Channel shall be restricted to the non-wintering period of April–September, when waterbird abundance is low. During the closure period, booms shall be placed across the outlet to the Channel from Lake Merritt and at the 7th Street dam to prevent boat access and signs shall be posted indicating that the Channel is closed to recreational users. This would reduce the impact to a less-than-significant level. (LTS)

(5) Regional Conservation Plans. The area covered by the Measure DD Implementation Project is not currently subject to any adopted habitat conservation plans or natural community conservation plans.

[38] Korschgen, C. E., and R. B. Dahlgren. 1992. Human disturbances of waterfowl: causes, effects, and management. Fish and Wildlife Leaflet 13.2.15.

[39] Op. Cit.

(6) Protected Trees. In order to create additional parkland along the south shore of Lake Merritt and make other improvements around the Lake, approximately 259 trees, including 129 protected trees, would be removed and 521 new trees and other landscaping would be installed to replace them. Approximately 510 existing trees would be retained. Overall, the trees would be replaced at about a 2:1 ratio, that is, two trees would be planted for each tree removed. Table IV.F-3 summarizes proposed tree removals and new plantings by project component within the Lake Merritt and Lake Merritt Channel project group. As part of the project design process the City engaged a certified arborist to evaluate the trees proposed for removal in this group. The arborist recommended preserving five trees by redesigning the project or by relocating some of the trees. The City has incorporated these recommendations into the project and the numbers in Table IV.F-3 reflect the preservation of these trees. The arborist's report is provided in Appendix I.

Table IV.F-3: Proposed Tree Removals for the Lake Merritt and Lake Merritt Channel Project Group

Project Component	Trees to be Retained[a]	Trees Proposed for Removal	Protected Trees Proposed for Removal	New Trees to be Planted	Ratio of Trees Planted to Trees Removed
Lakeside Drive/Municipal Boathouse	30	20	17	65	3.25
Lakeshore Avenue/El Embarcadero	90	24	6	135	5.4
12th Street Reconstruction	50	157	90	321	2.0
Lake Merritt Channel	340	58	16	0[b]	0
TOTAL	**510**	**259**	**129[c]**	**521**	**2.0**

[a] Numbers of trees are approximate. Totals include trees recommended for preservation or relocation by the certified arborist.
[b] No new trees would be planted along the Channel because the habitat type would be converted from landscaped urban parkland to wetlands and open water.
[c] Includes eight protected oak trees.
Source: HortScience, 2007.

The City of Oakland's Tree Preservation and Removal Ordinance (OMC Chapter 12.36) requires a permit for removal of protected trees. A permit is also required if work might damage or destroy protected trees. The project would comply with the Tree Preservation and Removal Ordinance and would obtain permits for the removal of any protected trees. In addition, the City considers other factors in determining significance for purposes of CEQA including: the number, type, size, location and condition of the protected trees to be removed and/or impacted by construction and the protected trees to remain, with special consideration given to native trees, as discussed below.

The majority of protected trees to be removed are located in the 12th Street reconstruction area. Although protected trees are present in this area many of the trees are in poor or fair condition (see Appendix I); are in the landscaped median strip for 12th Street that is accessible only via rarely used pedestrian underpasses; or are in small planting strips within the parking lot for the Kaiser Convention Center (see Figure III-3). Most of the trees are non-native ornamental species. When the project components around Lake Merritt are looked at as a whole, about twice as many trees are retained in the project area as would be removed and approximately two trees would be planted for each tree removed. The new trees in the 12th Street reconstruction area would be part of proposed landscaped areas that would have direct pedestrian access to Lake Merritt and surrounding civic

buildings. The four components of Group 1 (Lakeside Drive/Municipal Boathouse, Lakeshore Avenue/El Embarcadero, and Lake Merritt Channel) either retain more trees than they would remove and/or plant at least twice as many new trees as would be removed (Lakeside Drive/Municipal Boathouse, Lakeshore Avenue/El Embarcadero, and 12th Street Reconstruction). Eight trees to be removed are protected native oak trees.

The project would not fundamentally conflict with the City of Oakland's Tree Preservation and Removal Ordinance and would therefore be a less-than-significant impact for the following reasons: approximately twice as many trees would be retained as would be removed; removed trees would be replaced at a 2:1 ratio; the majority of trees to be removed are in poor or fair condition; and many are located in a parking lot or an inaccessible median strip. In addition, because trees are being replaced at a 2:1 ratio many benefits lost by the removal of trees, such as aesthetics, energy conservation, reductions in stormwater runoff, improvements in air quality, and capture of carbon dioxide (a greenhouse gas) would be compensated for in a few years because of the large number of new trees being planted. The impacts of removing trees and the benefits of planting new trees in the Lake Merritt and Lake Merritt Channel group were estimated quantitatively using a computer application developed by scientists at the United States Department of Agriculture (USDA) Forest Service's Pacific Southwest Research Station to assess populations of street trees.[40] The results of this study are provided in Appendix I. Because the City would comply with the Tree Preservation and Removal Ordinance, the Lake Merritt and Lake Merritt Channel project components would have a less-than-significant impact. To reach this conclusion, the City considered the number, type, size, location and condition of the protected trees to be removed and/or impacted by construction and the protected trees to remain, including native trees.

A small number of protected trees may require removal as part of the Waterfront Trail, Recreational Facilities, City-wide Creeks groups or other components of the Lake Merritt group (e.g., the Cleveland Cascade). The trees would be replaced in accordance with the City's Tree Protection Ordinance and Standard Conditions of Approval (Condition 32), which would reduce the impact to a less-than-significant level.

(7) Creek Protection Ordinance. Some proposed project components within the Lake Merritt and Lake Merritt Channel, City-wide Creeks and Waterfront Trail groups would be subject to the City's Creek Protection Ordinance. These project components would comply with the requirements of the Creek Protection Ordinance and would be constructed in accordance with a Creek Protection Permit issued by the City. Creek Protection Permits have already been obtained for the Lakeshore Avenue/El Embarcadero and East 18th Street Pier Overlook project components, for example.

Proposed project activities for creek sites range from manual activities such as hand planting, tree pruning or weed abatement, which would have no or minimal impacts, to activities that use heavy machinery such as creek bed or bank grading, culvert or concrete channel alterations, and creek realignment, as noted in Section III.C.4 of the Project Description. No mitigation is needed for manual activities with minimal impacts. For those activities that involve heavy machinery or equipment to excavate or move soil, to demolish structures, or to realign stream banks or waterways,

[40] USDA Forest Service. http://www.itreetools.org/street_trees/introduction_step1.shtm.

the City's Standard Conditions of Approval (Conditions 69 through 73) would ensure compliance with the Creek Protection Ordinance and reduce impacts to a less-than-significant level.

Creek Protection Permits will include requirements to minimize erosion and sedimentation in accordance with the Manual of Standards for Erosion and Sediment Control Measures, [41] as well as the mitigation measures described in Section IV.F.2.b, above (as applicable). In addition, Creek Protection Permits will require the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) and C3 requirements pursuant to Water Board requirements. With the incorporation of these requirements into project approvals, proposed project components would have a less-than-significant impact on City creeks or other areas subject to the Creek Protection Ordinance.

[41] Association of Bay Area Governments. 1995. *Manual of Standards for Erosion and Sediment Control Measures.* Second edition. Association of Bay Area Governments, Oakland, California. 422 pp.