

4.3 BIOLOGICAL RESOURCES

This section analyzes impacts of the proposed project on biological resources based on a review of existing city plans and review of potential impacts upon riparian and aquatic habitats and species by Dudek biologists and Kittleson Environmental Consulting as part of the preparation of this EIR. This section also draws from the City of Santa Cruz General Plan 2030 EIR (SCH#2009032007), which was certified on June 26, 2012, regarding background information on regulatory setting and sensitive habitats. The General Plan EIR is incorporated by reference in accordance with section 15150 of the State CEQA Guidelines. Relevant discussions are summarized in subsection 4.3.1. The General Plan EIR is available for review at the City of Santa Cruz Planning and Community Development Department (809 Center Street, Room 107, Santa Cruz, California) during business hours: Monday through Thursday, 8 AM to 12 PM and 1 PM to 5 PM. The General Plan EIR is also available online on the City's website at:

<http://www.cityofsantacruz.com/government/city-departments/planning-and-community-development/general-plan>.

Public and agency comments related to air quality and emissions were received during the public scoping period in response to the Notice of Preparation (NOP). Issues raised in these comments include:

- ☐ Analysis of impacts on San Lorenzo River habitat and wildlife, including establishing the appropriate setback of new development, and potential impacts from shading resulting from the proposed building heights.
- ☐ Impacts to birds due to new taller buildings and associated shading, glare from east-facing windows, new lighting, and more people in the area.
- ☐ Evaluation of the "urban heat island" effect on riparian habitat.

To the extent that issues identified in public comments involve potentially significant effects on the environment according to the California Environmental Quality Act (CEQA) and/or are raised by responsible agencies, they are identified and addressed within this EIR. Public comments received during the public scoping period are included in Appendix B.

4.3.1 Environmental Setting

Regulatory Setting

Federal Regulations

The United States Fish and Wildlife Service (USFWS) is responsible for the protection of terrestrial and freshwater organisms through the federal Endangered Species Act and the Migratory Bird Treaty Act, while the National Oceanic and Atmospheric Administration National Fisheries (NOAA Fisheries) is responsible for protection of anadromous fish (fish that live most of

their adult life in saltwater but spawn in freshwater) and marine wildlife. The U.S. Army Corps of Engineers (ACOE) has primary responsibility for protecting wetlands and jurisdictional “other waters of the U.S.” under Section 404 of the Clean Water Act. A brief summary of relevant laws is provided below, and a full description is provided on pages 4.8-1-4,8-6 of the General Plan 2030 EIR (Draft EIR volume), which is incorporated by reference.

Federal Endangered Species Act. The federal Endangered Species Act (ESA) of 1973 (Title 16 United States Code, Section 1531 *et seq.*, as amended) prohibits federal agencies from authorizing, permitting or funding any action that would result in biological jeopardy to or take of a species listed as threatened or endangered. NOAA Fisheries jurisdiction under the ESA is limited to the protection of marine mammals and fish and anadromous fish; all other species are within USFWS jurisdiction. ESA defines “take” to mean to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Exemptions to the prohibitions against take may be obtained through coordination with the USFWS through interagency consultation for projects with federal involvement (i.e., funded, authorized, or carried out by a Federal agency) pursuant to Section 7 of the ESA; or through the issuance of an incidental take permit under Section 10(a)(1)(B) of the ESA if the applicant submits a habitat conservation plan (HCP) that meets statutory requirements including components to minimize and mitigate impacts associated with the take.

Birds of Conservation Concern. USFWS’ *Birds of Conservation Concern* (BCC) (2008) was developed to fulfill the mandate of the 1988 amendment to the Fish and Wildlife Conservation Act (Public Law 100-653 (102 Stat. 3825) to “identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973” (U.S. Fish and Wildlife Service, September 2015). The overall goal of the Birds of Conservation Concern is to accurately identify the migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent the highest conservation priorities. The bird species included on the BCC lists include nongame birds, gamebirds without hunting seasons, ESA candidate, proposed endangered or threatened, and recently delisted species.

Migratory Bird Treaty Act. All migratory birds and their nests are federally protected under the Migratory Bird Treaty Act of 1918 (MBTA) (Title 16 United States Code, Section 703-712 as amended; 50 Code of Federal Regulations Section 21; and 50 Code of Federal Regulations Section 13) and by California Department of Fish and Wildlife codes that support the act. The MBTA makes it unlawful to “take” any migratory bird or raptor listed in the 50 Code of Federal Regulations Section 10, including their nests, eggs or products.

Wetlands and Waters of the U.S. The ACOE has regulatory authority for activities within wetlands under the Clean Water Act (CWA, 1977, as amended), which serves as the primary federal law protecting the quality of the nation’s surface waters. Section 404 of the CWA establishes a program to regulate discharge of dredged or fill material into “waters of the United States,” which is administered by the ACOE. The term “waters” includes wetlands and non-

wetland bodies of water that meet specific criteria as defined in the Code of Federal Regulations. In general, a permit must be obtained before fill can be placed in wetlands or other waters of the U.S. The type of permit depends on the amount of acreage and the purpose of the proposed fill, subject to discretion of the Corps. Under Section 404, general permits may be issued on a nationwide, regional, or state basis for particular types of activities that will have only minimal adverse impacts. Individual permits are required for projects with potentially significant impacts.

Under section 401 of the CWA, the California Regional Water Quality Control Boards (RWQCB) have regulatory authority over actions in waters of the U.S. through issuance of water quality certifications, which are issued in combination with permits issued by the ACOE under section 404 of the Clean Water Act. A 401 Certification is required from the RWQCB whenever improvements are made within Jurisdictional Waters of the U.S.

State Regulations

The California Department of Fish and Wildlife (CDFW) administers the California Endangered Species Act and protects streams and water bodies through the Streambed Alteration Agreement under Section 1600 of the California Fish and Game Code (CFGC 2005).

California Endangered Species Act. The 1984 California Endangered Species Act (CESA) (Fish & Game Code, Section 2050-2098) declares that deserving plant or animal species be given protection by the State because they are of ecological, historic, educational, recreational, aesthetic, economic, and scientific value to the people of the State. Under state law, plant and animal species may be formally designated rare, threatened, or endangered by official listing by the CDFW. CESA authorizes that entities may take plant or wildlife species listed as endangered or threatened under FESA and CESA, pursuant to a federal incidental take permit issued in accordance with Section 10 of the FESA, if the CDFW certifies that the incidental take statement or incidental take permit is consistent with CESA (Fish & Game Code, Section 2080.1(a). Section 2081(b) and (c) of the CESA allows CDFG to issue an incidental take permit for a state-listed threatened and endangered species only if specific criteria are met. These criteria can be found in Title 14 CCR, Sections 783.4(a) and (b).

Species of Special Concern and Fully Protected Species. In addition to lists of designated Endangered, Threatened, and Rare plant and animal species, the CDFW maintains a list of animal “Species of Special Concern,” most of which are species whose breeding populations in California may face extirpation. Although these species have no legal status under the CESA, the CDFW recommends considering these species during analysis of proposed project impacts to protect declining populations, and to avoid the need to list them as threatened or endangered in the future. These species may “be considered rare or endangered [under CEQA] if the species can be shown to meet the criteria”. Additionally, the California Fish and Game Code contains lists of vertebrate species designated as “Fully Protected” (California Fish & Game Code 3511 [birds], 4700 [mammals], 5050 [reptiles and amphibians], and 5515 [fish]. No Section 2081(b) permit

may authorize the take of “fully protected” species and “specified birds.” If a project is planned in an area where a species or specified bird occurs, an applicant must design the project to avoid all take; the CDFG cannot provide take authorization under CESA.

Streambed Alteration Agreements. Jurisdictional authority of the CDFW over stream areas is established under Section 1600 of the Fish and Game Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. Section 1602 of the Fish and Game Code stipulates that it is unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake without notifying the CDFG, incorporating necessary mitigation, and obtaining a Streambed Alteration Agreement. Typical activities that require a Streambed Alteration Agreement include excavation or fill placed within a channel, vegetation clearing, structures for diversion of water, installation of culverts and bridge supports, cofferdams for construction dewatering, and bank reinforcement.

Native Plant Protection. The Native Plant Protection Act of 1977 (NPPA) and implementing regulations pursuant to Section 1900 et seq. of the Fish and Game Code designate rare and endangered plants, and provide specific protection measures for identified populations. It is administered by the CDFG. The NPPA was enacted to “preserve, protect and enhance endangered or rare native plants of this state.” The NPPA defines a plant as endangered when its prospects of survival and reproduction are in immediate jeopardy from one or more causes. A rare plant is defined as a plant species that, though not presently threatened with extinction, occurs in such small numbers throughout its range that it may become endangered if its present environment worsens. The NPPA prohibits the take or sale of rare and endangered species in California, except for some exemptions provided by the law.

The California Native Plant Society has prepared and regularly updated an “Inventory of Rare and Endangered Vascular Plants of California.” In general, the CDFW qualifies plant species on List 1B (Plants Rare, Threatened, or Endangered in California and Elsewhere) or List 2 (Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere) of the California Native Plant Society’s (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* for consideration under CEQA. Species on CNPS List 3 (Plants About Which We Need More Information--A Review List) or List 4 (Plants of Limited Distribution--A Watch List) may, but generally do not, qualify for consideration under CEQA.

Local Regulations

Local Coastal Program (LCP). The Coastal Act defines an “environmentally sensitive area” as “any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments” (Coastal Act section 30107.5). The City’s existing certified LCP identifies the following sensitive habitats: wetlands, riparian habitat, grasslands,

mima mounds¹ and habitats that support Ohlone tiger beetle, tidewater goby, burrowing owl, California brown pelican, Monarch butterfly, pigeon guillemot, black swift, Santa Cruz tarplant or American peregrine falcon (City of Santa Cruz, 1994-Map EQ-9). Existing LCP policies seek to preserve and enhance the character and quality of riparian and wetland habitats (EQ 4.2). A separate Creeks Management Plan and policies related to the San Lorenzo River also are part of the LCP as further described below.

General Plan 2030. Four habitat types found within the City of Santa Cruz are recognized as sensitive habitat types: freshwater wetland, salt marsh, riparian forest and scrub, and coastal prairie portions of grassland habitats. Except for freshwater wetland, these habitat types correspond to habitat types that the CNDDDB has designated as “high priority.” In addition, coastal bird habitat is considered sensitive habitats because of high biological diversity. Additionally, any area supporting a special status species would also be considered a sensitive habitat. Locally, the overwintering monarch butterfly habitat is considered sensitive due to its restricted range and CNDDDB ranking as rare. Its habitat is also identified in the City’s existing General Plan as being a sensitive habitat. The General Plan sets forth protocols for evaluation of sensitive habitat and sensitive species. For riparian areas, this includes compliance with the *City-Wide Creeks and Wetlands Management Plan*.

Management Plans. Resource management and park plans have been adopted by the City for management of City-owned open space areas. Two plans are pertinent to the project area. The *City-Wide Creeks and Wetlands Management Plan* was adopted by the City in 2007 and approved by the California Coastal Commission as a Local Coastal Plan amendment in October 2007. The *San Lorenzo River Urban Management Plan* was adopted in 2003 for the portion of the river south of Highway 1. Policies developed from recommendations in this plan were included in the LCP as a Coastal Commission-approved LCP amendment in 2004.

The *City-Wide Creeks and Wetlands Management Plan* was adopted by the City Council to provide a comprehensive approach to managing all creeks and wetlands within the City. Long-term goals to manage these resources include reduction and/or elimination of pollutants; improvement of water quality; improvement and restoration of natural habitat; and increased public awareness of the value of watershed quality. The Management Plan recommends development setbacks along each watercourse in the City based on biological, hydrological, and land use characteristics for various watercourse types. The recommended setbacks within a designated management area includes a riparian corridor, a development setback area, and an additional area that extends from the outward edge of the development area. The riparian corridor² is adjacent to the watercourse and is the width of a riparian and/or immediate watercourse influence area and is measured from the centerline of the watercourse. The

¹ Mima mounds are A land form of small, distinct raised hummocks amidst shallow depressions, usually supporting native grasslands (City of Santa Cruz, 1994).

² The riparian corridor is intended to provide an adequate riparian width to maintain or enhance habitat and water quality values. Allowable uses within the riparian corridor are limited.

development setback area³ is the area outward from the edge of the designated riparian corridor where development is restricted, providing a buffer between the riparian corridor and development. The management area, riparian corridor, and development setback area distances vary depending on the watercourse area and its categorization.⁴ All distances are measured from the centerline of the watercourse outward as shown on the above schematic. The *Plan* establishes the requirements for obtaining a Watercourse Development Permit, and specifies uses permitted within the designated management area, development setback area and riparian corridor. The *management area* is the area where the watercourse regulations would apply.

The *San Lorenzo Urban River Plan* (SLURP) is the outcome of a planning process initiated by City Council in 1999 to update previous plans for the San Lorenzo River that guided flood control, vegetation restoration and public access improvements along the San Lorenzo River. Only the lower portion of the river is within the coastal zone. The need for updated plans was a result of the river levee improvement project in the late 1990s, listing of steelhead and coho salmon as federally threatened species, and federal designation of the San Lorenzo River as critical habitat for these species. The Plan contains recommendations for habitat enhancement, as well as public access and ideas to promote river-oriented development. One of the key goals of the plan is to enhance and restore biotic values of the river, creek and marsh fish and wildlife habitat.

The SLURP includes the Lower *San Lorenzo River and Lagoon Management Plan* as an appendix, which provides resource management and restoration recommendations within the constraints of providing flood protection. Management and restoration recommendations address: annual vegetation management; summer lagoon water level management; enhancement of the aquatic, shoreline and riparian habitats; and marsh restoration.

Municipal Code Regulations. Section 24.14.080 of the City's Municipal Code includes provisions to protect wildlife habitat and protected species for areas specified in the City's existing General Plan (Maps EQ-8 and EQ-9). Section 24.08.21 also regulates development adjacent to city watercourses, consistent with provisions of the adopted *City-Wide Creeks and Wetlands Management Plan*, including requirements for issuance of a "watercourse development permit." The City of Santa Cruz also regulates heritage trees and shrubs through a Heritage Tree Ordinance. Chapter 9.56 of the City Municipal Code defines heritage trees, establishes permit requirements for the removal of a heritage tree, and sets forth tree replacement requirements as adopted by resolution by the City Council. City regulations require tree replacement for removal of a heritage tree to consist of replanting three 15-gallon size trees or one 24-inch size specimen for each heritage tree approved for removal.

³ The development setback width is intended to provide an appropriate water quality and habitat buffer between the riparian corridor and development within the remaining management area. New development generally would be limited in this area to landscaping and limited pervious surfaces.

⁴The 25 feet outward from the edge of the development setback is intended to provide an adequate area for permit review and to be consistent with the *Management Plan* goals and City of Santa General Plan/LCP policies to maintain or enhance water quality or riparian habitat values.

Study Area

The project area consists of the downtown area generally covered by the Downtown Recovery Plan (DRP) and the Central Business District zone, and specifically the lower downtown area generally between Soquel Avenue and Laurel Street on the north and south, and Cedar Street and the San Lorenzo River on the west and east. (Locations are shown on Figures 1-2 and 2-1 in Section 3, Project Description.) The proposed project includes an amendment to the land use designation text for the downtown portion of Regional Visitor Commercial land use designation. The study area includes properties adjacent to the western San Lorenzo River levee.

Existing Habitat Areas

The downtown area, including the project area, is developed and does not support special status species or sensitive habitat. However, the eastern edge of the project area is situated along the western San Lorenzo River levee. The San Lorenzo River and associated habitats in the project area are described in the following section. Properties designated RVC in the City's General Plan are located within developed areas and are not within sensitive habitat areas.

San Lorenzo River Setting

The San Lorenzo River is the major watercourse through the City and a major physical feature in the City. The river originates in the Santa Cruz Mountains and traverses through the center of the City. The study area is located adjacent to an approximate .26-mile segment of the river between Soquel Avenue and Broadway.

Following severe flooding in downtown Santa Cruz in the winters of 1938, 1941, and 1955, the ACOE completed a flood control project along San Lorenzo River in 1959 that straightened and confined the river within its current configuration. The project created a channelized flood control channel for the river's lower 2.5 miles below Highway 1. The project included rip-rap levee banks, removal of all vegetation from the banks, and dredging of the river channel bottom with an excavated channel. Operation and maintenance for the original project included annual excavation of the channel, but this proved to be economically and environmentally infeasible for the City (Dudek, August 2016). Significant flood improvements along the river were completed in 2000 as part of the ACOE's San Lorenzo River Flood Control and Environmental Restoration Project. This project raised the river levee heights, provided landscaping and improved the pedestrian/bicycle path on the levee, and rehabilitated three of the four downtown bridges (over the San Lorenzo River) to increase flood flow capacity. The habitat enhancement efforts focused on the land side of the levees in the study area which were landscaped with native trees, shrubs, and groundcover.

The project area is within the "Transitional Reach" of the San Lorenzo River as described in the SLURP. This reach includes the area from Laurel Street Bridge to the Water Street Bridge. Water

levels in this area are influenced by seasonal closures at the downstream river mouth. When a sandbar creates a closed lagoon at the river mouth, this reach fills with freshwater; at times when there is no sandbar closure, extreme tides can bring saltwater into this reach. During most of the year, this reach is freshwater and includes important riparian habitat areas along San Lorenzo Park to the north of the study area (City of Santa Cruz, June 2003).

San Lorenzo River Habitats

The habitat types most common along the San Lorenzo River within the City of Santa Cruz are ruderal grassland, mixed riparian forest, willow thickets, freshwater marsh, and brackish water tule marsh. The three most prevalent plant communities along the river in the project area are urban landscape, ruderal grassland and mixed riparian forest (City of Santa Cruz, June 2003, Appendix C).

Native riparian tree species present include arroyo willow (*Salix lasiolepis*), white alder (*Alnus rhombifolia*), yellow willow (*Salix lucida* ssp. *lasiandra*), black cottonwood (*Populus trichocarpa*), redwood (*Sequoia sempervirens*) and box-elder (*Acer negundo*). Broadleaf cattail (*Typha latifolia*), floating primrose (*Ludwigia peploides* ssp. *peploides*), and longroot smartweed (*Persicaria amphibia*) are most common in the freshwater marsh habitats in the upstream area, and California bulrush (*Schoenoplectus californicus*) becomes the dominant marsh plant along the water's edge in the downstream areas subject to tidal influence and brackish lagoon conditions. The levee crests are paved and the levee-top ruderal community is regularly mowed and weed-whipped for fire suppression and offers relatively little habitat value (Kittleson Environmental Consulting, January 2016).

Waterside levee slopes throughout the project area are dominated by ruderal grassland with scattered coyote brush (*Baccharis pilularis*), red valerian (*Centranthus ruber*), fennel (*Foeniculum vulgare*), field mustard (*Brassica rapa*) and ice plant (*Carpobrotus edulis*). Dominant species include perennial ryegrass (*Festuca perennis*), wild oat (*Avena fatua*), Himalayan blackberry (*Rubus armeniacus*) and ripgut brome (*Bromus diandrus*). Rip-rap, rock slope protection underlies the waterside levee embankments and is exposed in many places just below the levee crest. Soils placed by the ACOE contractors over newly placed rip-rap on the east side levee have partially eroded in the 15 years since placement, and rock is now visible within the ruderal grasses on the upper slope. Abundant California ground squirrels (*Spermophilus beecheyi*) are present throughout the levees (Kittleson Environmental Consulting, January 2016).

Landside levee slopes were landscaped with a broad assemblage of native trees, shrubs and forbs during the 1999-2003 San Lorenzo River Flood Control Improvement Project. Fence line trees and adjacent landscape shrubs represent a broad mix of native and introduced species (Kittleson Environmental Consulting, January 2016).

San Lorenzo River from the Soquel Avenue Bridge to the Railroad trestle bridge near the river mouth covers approximately 47 acres and is characterized by a single, wide channel that is less heavily vegetated with willow riparian vegetation on its margins and is characterized by

relatively abundant bulrush occurring in a narrow band along both sides of the water's edges. In addition to the numerous ruderal species mentioned above, weedy species such as kikuyugrass (*Pennisetum clandestinum*) and yellow sweet clover (*Melilotus albus*) are prevalent along much of the waterside levee toe (Kittleson Environmental Consulting, January 2016).

The river supports fish species, and a variety of wildlife species utilize the river habitats, particularly avian species. A fall bird survey conducted in 2015 reported that 103 species of birds were observed between the river mouth and Highway 1 during September, October and November 2015. A total of 9,036 birds were identified and counted, representing a wide range of year-round resident waterfowl, wading birds, raptors, songbirds, and migratory species (Kittleson Environmental Consulting, January 2016).

San Lorenzo River Maintenance

The City of Santa Cruz conducts annual vegetation thinning and periodic sandbar “ripping” in certain areas to minimize channel roughness and to facilitate sediment transport through the reach. The City holds a ACOE Section 404 nationwide permit (NWP File 268761S) and obtains CDFW Streambed Alteration Agreements for these activities. River channel maintenance also is permitted by a 5-year Streambed Alteration Agreement (SAA) issued by the CDFW. The SAA allows for routine maintenance activities, including removal of sediment, vegetation and logs in channel beds and vegetation control on banks. The SAA includes 66 “avoidance and minimization measures” to avoid or minimize adverse impacts to fish and wildlife resources, including tree and vegetation replacement under specified conditions. The annual maintenance program limits the size of riparian trees to less than four inches in diameter at breast height, and creates 4 to 10-foot wide riparian strands of immature willow, alder, cottonwood, and California sycamore (*Platanus racemosa*) at the levee toes and on the edges of instream islands. This annual maintenance activity significantly limits bird nesting opportunities by creating sparse riparian patches. The semi-annual bed-ripping activities required to maintain hydraulic capacity in this reach also result in dry sand and gravel bar habitats in the areas upstream of the Water Street Bridge (Kittleson Environmental Consulting, January 2016). Within the project area, typical maintenance is limited to vegetation thinning, mowing, and landscaping of landside levee slopes.

Sensitive Habitat Areas

Sensitive habitats generally include riparian habitat and corridors, wetlands, habitats for legally protected species and CDFW Species of Special Concern, areas of high biological diversity, areas providing important wildlife habitat, and unusual or regionally restricted habitat types. The California Natural Diversity Data Base (CNDDDB), managed by CDFW, maintains a working list of “high priority” habitats for inventory (i.e., those habitats that are rare or endangered within the borders of California). CNDDDB “high priority” habitats are generally considered sensitive habitats under CEQA.

The project area is currently developed. According to maps developed for the City’s General Plan 2030 and included in the General Plan EIR, the project area is not within a mapped sensitive

habitat area (City of Santa Cruz, April 2012, DEIR volume). However, the project area is located adjacent to the San Lorenzo River levees, and the river is mapped as a sensitive riparian habitat in the General Plan 2030. The river also supports special status species as described in the following section. The southern portion of the project study area is located within the coastal zone. The segment of the San Lorenzo River adjacent to the project area also is mapped as sensitive riparian habitat in the City's LCP (City of Santa Cruz, 1994, Map EQ-9).

Special Status Species

Special-status species include species listed as Threatened or Endangered under provisions of the federal ESA and species listed as Rare, Threatened, or Endangered by the state of California under provisions of the CESA and NPPA. Species formally proposed for federal listing by the USFWS are afforded limited legal protection under ESA. Other special-status plant species are those on List 1A, List 1B, or List 2 of the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Vascular Plants of California*. These species are subject to state regulatory authority under CEQA. California "Species of Special Concern" are given special consideration by the CDFW because they are biologically rare, very restricted in distribution, declining throughout their range, or at a critical stage in their life cycle when residing in California or taxa that are closely associated with a habitat that is declining in California (e.g., wetlands) (City of Santa Cruz, April 2012, DEIR volume).

No plant species listed as threatened or endangered by the USFWS or the CDFW are expected to occur in the study area. No species ranked by the California Native Plant Society (CNPS) on List 1 were observed or are expected to be present.

Special status wildlife species known to occur or have potential to occur within the San Lorenzo River and lower San Lorenzo River adjacent to the Main Beach include steelhead (*Oncorhynchus mykiss*), coho salmon (*Oncorhynchus kisutch*), tidewater goby, western pond turtle (*Emys marmorata*), tricolored blackbird (*Agelaius tricolor*), and yellow warbler (*Setophaga petechia*). These species are found within the San Lorenzo River habitats. Steelhead and coho salmon are anadromous fish, spending time in both freshwater and saltwater. The coho salmon population in the San Lorenzo River is identified as being nearly extirpated, however the watershed is identified as a focus population for recovery by the NOAA Fisheries (Dudek, August 2016).

Some bird species are only occasional visitors, such as osprey (*Pandion haliaetus*), a CDFW Watch List (WL) species; olive-sided flycatcher (*Contopus cooperi*), a Species of Special Concern (SSC); and migrating willow flycatchers (*Empidonax traillii*), which are state-listed as endangered (SE), but only where they nest. Others use the area for foraging but do not nest there (e.g., merlin (*Falco columbarius*; WL), peregrine falcon (*Falco peregrinus*; state fully protected and federally delisted), and Vaux's swift (*Chaetura vauxi*; CSC). Brown pelican (*Pelecanus occidentalis*), double-crested cormorant (*Phalacrocorax auritus*), and yellow warbler (*Dendroica petechia brewsteri*), all Species of Special Concern have been reported along the river (City of Santa Cruz, April 2012, DEIR volume).

The California red-legged frog (*Rana draytonii*) is a federally listed threatened species that was historically widely distributed in the central and southern portions of California. The species requires still or slow-moving water during the breeding season, where it deposits large egg masses, usually attached to submergent or emergent vegetation. Breeding typically occurs between December and April, depending on annual environmental conditions and locality. CRLFs are known to exist in the upper San Lorenzo River watershed in Bean Creek and Mountain Charlie Gulch approximately 8 miles north but are not known to occur at proposed project site. The closest known breeding site is the pond at the University of California Santa Cruz (UCSC) Arboretum approximately 1.9 miles west of the project area. The Arboretum pond is in the headwaters of the Moore Creek watershed, which drains the far west side of the city of Santa Cruz. CRLFs are also known to occur in the lower Moore Creek Preserve and the upper reaches of Antonelli Pond, approximately 2.5 miles southwest of the proposed project site (Dudek, August 2016).

CRLFs are not known to occur in the San Lorenzo River or the nearby Neary Lagoon Wildlife Preserve. Other studies in the project area indicate that the species appears to have been extirpated from the lower San Lorenzo River drainage, and the area was excluded from the USFWS critical habitat designation (City of Santa Cruz, July 2005). Additionally, scouring flows that occur during winter and into early spring probably make the river unsuitable for breeding.

Discussion of special status species known to occur in the project area is provided below.

- ❑ *Central California Coast (CCC) Steelhead (Oncorhynchus mykiss)*. The Central California Coast (CCC) steelhead is a federally-listed threatened species. The CCC steelhead ESU (Evolutionarily Significant Unit) includes steelhead in coastal California streams from the Russian River to Aptos Creek, and the drainages of Suisun Bay, San Pablo Bay, and San Francisco Bay, California. CCC steelhead occur in the San Lorenzo River; the river, including the project area, is designated as critical habitat for CCC steelhead. “Critical habitat” is habitat key to the survival of threatened and endangered species, which may require special management considerations or protection. Essential features of critical habitat for steelhead in the project area are estuarine areas free of obstruction and excessive predation with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders and side channels; and juvenile and adult forage, including aquatic macroinvertebrates and fishes, supporting growth and maturation (Hagar Environmental Science, March 2015). Although variation occurs in coastal California, steelhead usually live in freshwater for one to three years in central California, then spend an additional one to three years in the ocean before returning to their natal stream to spawn.

Steelhead are present in the project area throughout the year and use the reach for migration to and from the upper watershed during winter and spring, typically from

December through mid-June. The project area provides habitat for migrating steelhead adults and smolts, and the reach to the east of the project area serves as juvenile rearing habitat when lagoon habitat conditions are favorable in summer and fall.

In general, the reach downstream of Soquel Avenue Bridge has limited willow riparian habitat and has narrow tule stands along the edge of water. The riverbed is generally flat and composed primarily of sand with some gravel. Depths are less than 2 feet, but vary with the tides when the lagoon is open. Large instream woody debris, overhanging riparian trees and other potential fish cover are limited in the project reach.

- ❑ *Central California Coast (CCC) Coho Salmon (*Oncorhynchus kisutch*)*. The Central California Coast (CCC) coho salmon is a state and federally-listed endangered species. The CCC coho salmon ESU (Evolutionarily Significant Unit) ranges from Punta Gorda in southern coastal Humboldt County to Aptos Creek in Santa Cruz County, and the drainages of San Francisco Bay, California. CCC coho salmon historically have occurred in San Lorenzo River. The San Lorenzo River, including the project area, is designated as critical habitat for CCC coho salmon. For coho salmon, essential habitat types in the project area include: juvenile (smolt) migration corridors and adult migration corridors.

The San Lorenzo River is at the extreme southern end of the range of coho salmon. Recent information documents CCC coho salmon abundance is very low. A self-sustaining run of wild coho has been presumed to be extirpated from the San Lorenzo River since the drought of the late 1980s. Small numbers of adult coho salmon have been observed in the San Lorenzo River in recent years during trapping operations conducted at the Felton Diversion Dam by the Monterey Bay Salmon and Trout Project. The number of coho captured peaked at 183 adults in 1989-1990. In most years, however, few coho have been captured. Possible origins for these fish include: straying from more hospitable nearby drainages including San Vicente, Scott and Waddell Creeks; return of hatchery reared fish released in various locations in the San Lorenzo drainage; and returns from natural production in the basin. No juvenile coho salmon were captured during electrofishing surveys conducted throughout the San Lorenzo River watershed (including both mainstem and tributary locations) between 1994 and 2002 (Hagar Environmental Science, March 2015). The coho salmon population in the San Lorenzo River is identified as being nearly extirpated, however the watershed is identified as a focus population for recovery by the National Marine Fisheries Service (Ibid.).

- ❑ *Tidewater Goby*. Tidewater goby (*Eucyclogobius newberryi*) is a federally-listed endangered species, but has been proposed for reclassification as threatened. Tidewater goby also is a State Species of Special Concern. The San Lorenzo River, including the project area, is not within the designated critical habitat for tidewater goby. The tidewater goby is a small, short-lived species that inhabit coastal brackish water habitats entirely within California, ranging from Del Norte County near the Oregon border to northern San Diego County. The species is uniquely adapted to coastal lagoons and the

uppermost brackish zone of larger estuaries, rarely invading marine or freshwater habitats. Tidewater gobies are known to be preyed upon by native species such as small steelhead, prickly sculpin (*Cottus asper*), and staghorn sculpin (*Leptocottus armatus*) (Hagar Environmental Science, March 2015).

Certain physical or biological features and habitat characteristics are believed to be required to sustain the species' life-history processes. These include persistent, shallow (in the range of approximately 0.3 to 6.6 feet), still-to-slow-moving lagoons, estuaries, and coastal streams with salinity up to 12 ppt, that contain one or more of the following:

- a) Substrates (e.g., sand, silt, mud) suitable for the construction of burrows for reproduction;
- b) Submerged and emergent aquatic vegetation that provides protection from predators and high flow events; or
- c) Presence of a sandbar(s) across the mouth of a lagoon or estuary during the late spring, summer, and fall that closes or partially closes the lagoon or estuary, thereby providing relatively stable water levels and salinity (Hagar Environmental Science, March 2015).

Tidewater goby are present in the San Lorenzo Lagoon and have been observed in the project area. Tidewater goby was identified in the San Lorenzo Lagoon and lower Branciforte Creek Flood Control Channel in 2004. Prior to that time, the species was not known to occupy the San Lorenzo River or Lower Branciforte Creek. During dewatering for major embankment construction by the ACOE, 11 tidewater goby were found in the San Lorenzo River lagoon and, later that fall, numerous tidewater gobies were found in the lower, tidally influenced reach below Ocean Street in the Branciforte Creek concrete channel. Tidewater goby were observed as far upstream as the Water Street Bridge during instream debris removal activities in 2016 (Kittleson, personal communication, 2017).

- ☐ *California Species of Special Concern.* Western pond turtle (*Emys marmorata*) and yellow warbler are California "species of special concern," which are taxa given special consideration because they are biologically rare, very restricted in distribution, declining throughout their range, or at a critical stage in their life cycle when residing in California or taxa that are closely associated with a habitat that is declining in California (e.g., wetlands) (City of Santa Cruz, September 2011). Western pond turtles are known to occur in the San Lorenzo River adjacent to the project area, although they are not known to breed in the project area (Kittleson, personal communication, May 2017). At least one individual Western pond turtle has been observed in the upper transitional reach of the river, in 2015, 2016, and 2017. No western pond turtle records are known from the lower transitional reach in the project area, but suitable habitat exists throughout the lower San Lorenzo River.

Yellow warbler is a potential nesting bird species that occurs in occasional high numbers in migration seasons. Yellow warblers seem to favor willow riparian woodlands in the project area and an average of 3.6 yellow warblers per visit were observed in the fall 2015 surveys. No breeding records are known from the project impact area, but that may reflect a paucity of breeding season observations (Kittleson Environmental Consulting, June 2016).

Tricolored blackbird is a potential nesting bird species that utilizes dense wetland vegetation like that found along San Lorenzo River north of the Water Street Bridge. There are no records of tricolored blackbird nesting activity in the lower San Lorenzo River or elsewhere in the San Lorenzo Watershed (Kittleson Environmental Consulting, June 2016).

Wildlife Movement and Breeding

San Lorenzo River provides habitat for migrating steelhead adults and smolts. For coho salmon, essential habitat types include juvenile (smolt) and adult migration corridors. Although variation occurs in coastal California, steelhead usually live in freshwater for one to three years in central California, then spend an additional one to three years in the ocean before returning to their natal stream to spawn. Steelhead may spawn one to four times over their life. Adult CCC steelhead typically immigrate from the ocean to freshwater between December and April, peaking in January and February, and juveniles migrate as smolts to the ocean from January through May, with peak emigration occurring in April and May (Dudek, August 2016).

Wildlife corridors are segments of land that provide a link between these different habitats while also providing cover. Wildlife dispersal corridors, also called dispersal movement corridors, wildlife corridors or landscape linkages, are features whose primary wildlife function is to connect at least two significant or core habitat areas and which facilitate movement of animals and plants between two or more otherwise disjunct habitats (City of Santa Cruz, April 2012, DEIR volume). Three main corridors have been identified within the City that could provide connectivity between core habitats within or adjacent to the city: western corridor (Moore Creek), central corridor (San Lorenzo River and major tributaries), and eastern corridor (Arana Gulch). The San Lorenzo River and two of its main tributaries, Branciforte Creek and Carbonera Creek, create a potential wildlife corridor in the central portion of the City. Here, a relatively narrow strip of riparian habitat could provide opportunities for wildlife movement between the San Lorenzo River lagoon region and core habitat located within and adjacent Pogonip, UC Santa Cruz, and Henry Cowell (via the San Lorenzo River) and DeLaveaga Park, via Branciforte and Carbonera Creeks (Ibid.).

There are areas along the San Lorenzo River of known bird nesting sites. Native cliff swallows (*Petrochelidon pyrrhonota*), northern rough-winged swallows (*Stelgidopteryx serripennis*) and black phoebes (*Sayornis nigricans*) nest on the bridges that cross the San Lorenzo River. Non-native rock pigeons (*Columba livia*) and house sparrows (*Passer domesticus*) also make use of

the bridges. Other native bird species including pie billed grebe (*Podilymbus podiceps*), marsh wren (*Cistothorus palustris*), song sparrow (*Melospiza melodia*), Anna's hummingbird (*Calypte anna*) and hooded oriole (*Icterus cucullatus*) have been observed nesting in the emergent marsh wetland and willow/cottonwood riparian habitats in the transitional reach of the San Lorenzo River. While killdeer (*Charadrius vociferus*) are known to nest downstream in Mike Fox Park, no ground nesting birds are known to successfully nest in the project area, due to regular human disturbance on the levee slopes and limited available habitat between the levees.

San Lorenzo River Plans

The *City-wide Creeks and Wetlands Management Plan* establishes requirements for structural setbacks and development standards and guidelines that would be applicable to future development along watercourses within the City. Properties within the “management area” defined in the Plan must comply with provisions of the Plan regarding riparian and development setbacks unless an area is governed by a specific management plan. Within the project area, the eastern edges of some properties on the east side of Front Street between Laurel Street and Soquel Avenue are within the defined management area of the San Lorenzo River. Riparian and development setbacks for the San Lorenzo River are not established in the Creeks Plan, but rather, according to the Creeks Plan, all projects in this area are subject to provisions of the SLURP.

The project area is within the “Transitional Reach” of the San Lorenzo River in the SLURP. This reach includes the area from Laurel Street Bridge to the Water Street Bridge. Recommended improvements in the study area include:

- Front Street Plaza at Cathcart or Maple Lane: Construction river view plaza; add riverway makers, directional and interpretive and public art opportunities
- Mimi de Marta Park:
- Urban Interface Connections – the goal of the urban interface connections in the Transitional Reach is to provide features that connect downtown areas with the river via “green corridors” of trees and landscaping via Cathcart St and Maple Lane to the River.

The project area also is located along the “Front Street Riverfront Area” identified in the SLURP as a significant riverfront area that is a prime opportunity site to engage the community with the river with improved public access being a primary goal of the SLURP. Twelve existing specific recommendations for this area are included in the SLURP; those pertinent to the discussion of biological resources include:

- ☐ Maintain maximum heights to 50 feet with development above 35 feet in height stepping back at least 10 feet at an angle not to exceed 42 degrees.
- ☐ Maintain the ten-foot setback area between residential and commercial uses adjacent to the levee trail from the western edge of the trail. The setback area should be filled to raise the adjacent ground-level use to the same elevation as the levee trail. This area should also incorporate outdoor public seating or visually accessible garden space for

residential development. Trees planted as part of the San Lorenzo Flood Control Improvement Project should be maintained and incorporated into new development.

4.3.2 Impacts and Mitigation Measures

Thresholds of Significance

In accordance with the California Environmental Quality Act (CEQA); State CEQA Guidelines (including Appendix G); City of Santa Cruz plans, policies, and/or guidelines; and agency and professional standards, a project impact would be considered significant if the project would:

- 3a 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 California Department of Fish and Wildlife or US Fish and Wildlife Service;
- 3b Have a substantial adverse effect, either directly or through habitat modifications on; or substantially reduce the number or restrict the range of any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
- 3c Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- 3d 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;
- 3e Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
- 3f Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan;
- 3g Substantially reduce the habitat of a fish or wildlife species;
- 3h Cause a fish or wildlife population to drop below self-sustaining levels; or
- 3i Threaten to eliminate a plant or animal community.

Analytical Method

The proposed project consists of amendments to the City's Downtown Recovery Plan, General Plan, Local Coastal Plan and Zoning Code regarding development in the downtown area and Central Business District. The proposed project would not directly result in new development. However, the proposed Downtown Plan amendment would expand areas for potential additional building height that could accommodate intensified redevelopment of existing developed sites.

The proposed General Plan amendment would increase FAR in downtown areas designated as RVC in the General Plan. The proposed LCP and Zoning Code amendments would not result in changes that could indirectly lead to intensified development. The impact analysis is based on review by local biologist, Gary Kittleson (Kittleson Environmental Consulting) in consultation with Dudek biologists, including review of existing data and studies.

Impacts and Mitigation Measures

The proposed Downtown Plan and General Plan amendments would expand areas for potential additional building height that could accommodate intensified redevelopment of existing developed sites. Thus, future development would not remove or alter sensitive habitat (3b, 3g) or result in permanent fill of wetlands or future development with wetlands or waters of the U.S., and thus would not result in direct or indirect impacts to wetland habitat (3c). The project area is within an existing developed area, and future redevelopment would not affect wildlife movement along the river corridor as future development would be within the existing development footprint in the downtown area. Therefore, adoption and implementation of the proposed plan amendments would not directly or indirectly substantially interfere with wildlife movement or with established wildlife corridors (3d). The proposed amendments to not conflict with policies or regulations protecting biological resources (3e) and there are no Habitat Conservation or Natural Community Plans in the area (3f). The proposed project would not directly or indirectly cause a fish or wildlife species to drop below self-sustaining levels or threaten to eliminate a plant or animal community (3h, 3i).

A comment was raised regarding the potential for subsequent development under the proposed Plan amendments to create an “urban heat island” that would affect riparian vegetation. The phrase “urban heat island” refers to the effect of urbanized areas on surface and air temperature compared to their rural surroundings. Buildings, roads, and other “hardscape” create an island of higher temperatures within the regional landscape. This is addressed in Section 4.2, Air Quality and Greenhouse Gas Emissions.

The following impact analyses address potential indirect impacts to special status species (3a) and sensitive habitat (3b) within the San Lorenzo River corridor, potential impacts to nesting species (3d).

Impact 4.3-1: Indirect Impacts to Special Status Species and Aquatic Habitat. Future development of taller buildings as a result of the proposed Downtown Plan amendments could result in indirect to impacts to riparian and aquatic special status species due to increased shading due to increased building heights, but would not substantially affect habitats (3a). This is considered a *less-than-significant* impact

Additional building height and the resultant increase in shade is not likely to impact the established native riparian tree species in the area. Arroyo willow, white alder, black

cottonwood, and box-elder are all shade-tolerant tree species that are scattered singly along the linear landside slope of the levee and along the water's edge. The maturing landside riparian trees were planted for habitat enhancement and landscape value during the 1999-2003 levee raising project, and some are now greater than 50 feet in height. The waterside riparian trees in lower San Lorenzo River are all subject to regular vegetation management, which limits the size of both individual trees and the width of the riparian buffer zone on the riverbank. Riparian species along the project reach are deciduous and lose leaves during the winter.

Under the proposed building height increases, adjacent riparian habitat will receive less sunlight in late afternoon in winter months, when the potential impact to trees is lessened by their deciduous state. Shading would not substantially change during other times of the year as shown on Figure 4.3-1, which illustrates the change in shadows created by taller buildings with the proposed additional height. As a result, no adverse impacts related to shading are anticipated to either the landside or waterside riparian species.

Cattail, matted water primrose, water smartweed, and tule/bulrush are the dominant marsh plants along the water's edge, which will receive less sunlight in late afternoon in winter months. Due to the distance from proposed structures, increased shade is not anticipated to affect the marsh vegetation. The levee crests are paved and the levee-top ruderal community is regularly mowed and weed-whipped for fire suppression and offers relatively little habitat value under existing or proposed conditions (Kittleson Environmental Consulting, January 2016).

Water temperatures in the lagoon are unlikely to be impacted by the additional building heights. The existing lack of shaded riverine aquatic habitat in the lower San Lorenzo River results in high water temperatures in the lagoon system, particularly in the late summer and fall. These high temperature conditions can be deleterious to salmonid species. High water temperatures and poor water quality conditions are exacerbated by seasonal lagoon closures and low flow conditions into the lagoon. Increased building shadows will not affect direct mid-day solar inputs during any season. High water temperatures are not an issue during winter when added late-afternoon shade may fall on the project reach.

Mitigation Measures

No mitigation measures are required as a significant impact has not been identified.

Impact 4.3-2: Indirect Impacts to Sensitive Riparian Habitat. Future development of taller buildings as a result of the proposed Downtown Plan amendments could result in indirect impacts to birds in the area that could lead to bird mortalities (3b). This is a *potentially significant* impact

The proposed project would not result in new development, and potential future development that could occur as a result of the proposed plan amendments would not be located within riparian or other sensitive habitat areas. Thus, there would be no direct removal of habitat.

Future buildings would be set back from the western edge of the river levee by at least 10 feet which is consistent with City plans. The City-wide Creeks and Wetlands Management Plan references the SLURP as the guiding management plan for the area. The SLURP recommends a 10-foot setback between development and the western edge of the river levee, which also is a SLURP LCP policy. Both the existing and proposed Downtown Plan and LCP policies maintain this setback area, although the LCP policy includes minor language revisions related to use of publicly accessible lands (see revisions in Appendix C). The SLURP recommendations also seek to improve and enhance public access/use of the levee and adjacent areas. The proposed DRP amendment requires that residential and outdoor commercial uses adjacent to the Riverwalk not be sited closer than 10 feet from the western edge of the physical walkway, except where “people-oriented” commercial uses incorporate public access points to the Riverwalk. Therefore, future development accommodated by the Plan amendments would be sited to be consistent with the required setbacks.

The project will result in amendments to the DRP that would allow additional building heights under specified conditions. The proposed project includes both expansion of the Additional Height Zone south of Soquel Avenue along the river and elimination of the SLURP LCP policy to limit heights to 50 feet in the Front Street/Riverfront area. This policy is proposed to be eliminated due to the proposed additional height allowance. The policy was taken from the SLURP, which was intended as a resource protection programmatic guide and not a land use planning document. (See Section 4.9, Land Use, for further discussion.)

Generally building heights along the San Lorenzo River between Soquel Avenue and Broadway could increase from 50 feet under existing plans to 70 feet with the proposed amendments. The extent of the potential increase height would be limited; the proposed Downtown Plan amendments require the top floor of Front Street properties to not exceed 60% of the floor below and 60% of the building length, thereby avoiding a linear wall of building mass. The Downtown Plan allows for consideration or an exception to these standards when a publicly accessible accessway is included as part of the project site upon approval by the City Council upon a positive recommendation by the Planning Director. Additionally, along the west side of the Riverwalk along San Lorenzo River, a 10-foot setback from the exterior building face would be required for development above 50 feet, and the 10-foot setback would be required for at least 50% of the building frontage along Front Street above a height of 50 feet. However, the proposed amendments allow up to 25% of the Riverwalk building frontage to encroach into the required 10-foot setback area to provide massing variation. The proposed amendments also permit top floor cantilevered portions of the building to encroach over the property line a maximum of 5 feet in order to provide architectural interest to the façade, which shall not exceed 25 percent of the total building frontage along the riverfront. Nonetheless, the potential additional building would not likely result in full coverage of additional floors.

Concerns have been raised regarding potential hazards taller buildings may pose hazards to birds due to placement of reflective windows and/or lighting. Glass windows on buildings of all kinds are a known hazard to birds and cause the deaths of as many as a billion birds a year in the

United States alone (Klem, March 2009). Individual buildings have been estimated to cause one to ten deaths per building per year, while at least one study documented commercial buildings at one location to cause as many as 55 deaths per year (Klem, March 2009, Hager et al., September 2008). The hazard of buildings to birds can vary depending on several aspects of building design, including the amount of glass used, the type of glass used, and the proportion of windows reflecting surrounding vegetation (American Bird Conservancy, 2015, Klem et al., March 2009). The two primary hazards of glass for birds are reflectivity and transparency. Viewed from outside buildings, transparent glass often appears highly reflective. Reflective glass presents birds with the appearance of safe routes, shelter, and food. Buildings surrounded by lush landscaping may attract more birds, and reflections of vegetation in windows adjacent to these habitats may lure birds. Green spaces inside buildings, too, may entice birds to inaccessible habitat.

Windowed courtyards and open-topped atria can be hazardous, especially if they are landscaped. Birds fly into developed spaces, and when flushed may attempt try to leave by flying directly toward reflections. Glass skywalks, handrails and building corners with glass are also dangerous because birds can see through them to sky or habitat on the other side. As the amount of glazing increases on a building, the threat also increases. A study in New York found a 10% increase in the area of reflective and transparent glass on a building façade correlated with a 19-32% increase in the number of fatal collisions, in spring and fall, when visiting migrants are present (Klem et al, March 2009).

At night, artificial light degrades the quality of migratory corridors. Flood lights on tall buildings or intense lights that emit light fields that entrap birds reluctant to fly from a lit area into a dark one. This type of lighting has resulted in documented mass mortalities of birds (Evans Ogden, September 1996). Lights disrupt birds' orientation. Birds may cluster around such lights, increasing the likelihood of collisions with the structure or each other. In addition to the hazard from collisions, vital energy stores are consumed in such nonproductive flight. The combination of fog and light doubly affects birds' navigation and orientation (Ibid.). Migrating birds typically fly at heights over 500 feet, but often descend to lower altitudes during bad weather, where they may encounter artificial light from buildings. Water vapor in fog or mist refracts light, greatly increasing the illuminated area around light sources. Birds circle in the illuminated zone, appearing disoriented and unwilling or unable to leave (Evans Ogden, September 1996). They are likely to succumb to lethal collisions, exhaustion, and predators.

A notable, established monitoring program of bird-building collisions is NYC Audubon's Project Safe Flight in Manhattan. Project Safe Flight documented over 5,400 collisions between 1997-2008. Another study (Gelb and Delacretaz, 2009) analyzed this data to determine the critical contributing factors for the structures with the largest number of bird fatalities. The study looked at the 10 most deadly collision sites and found the combination of open space, vegetation, and large windows (greater than 1 meter x 2 meter) to be more predictive of death than building height. The frequency of collisions is highest along façades that have lush exterior vegetation and either reflective or transparent windows. The majority of the collisions occurred

during the daytime and involved migrant species. High-rise buildings and night lighting presented less risk than windows adjacent to open spaces two and half acres or greater in size. The majority of collisions are likely due to high collision sites that feature glass opposite exterior vegetation. The most dangerous building in this study was not a high-rise, but instead was a 6-story office building adjacent to densely vegetated open space.

Increasing the limits on building heights adjacent to the San Lorenzo River could result in impacts to birds from two causes: (1) an increase in the area of glass that would result in mortality to birds mistaking the reflective glass as safe passage to habitat beyond, and (2) an increase in the amount of lighting and the resultant potential for mortality of birds related to disorientation during migration. Most strikes to buildings due to reflective windows are thought to occur closer to the ground (American Bird Conservancy, 2015). Therefore, effects from reflective glass may be lower below 50 feet than above. Also, effects from reflective glass above 50 feet would be partly minimized by the proposed setback requirements that floors above 50 feet occupy no more than 60% of the area of the floor below and no more than 60% of the building length, and that floors above 50 feet be restricted by a 10-foot setback from the building face where it fronts the Riverwalk along the San Lorenzo River. Because of these restrictions, particularly the setbacks from the building face, relatively little surrounding vegetation would be reflected in these upper floors, a factor that should further limit bird mortality, based on data presented in Klem et al. (March, 2009), which showed the proportion of glass reflecting vegetation was a significant predictor of glass strikes.

However, even given these considerations, the generally accepted notion that greater amounts of glass at any height, during any season, and during day or night results in higher mortality from glass strikes, suggests that the increase in the amount of glass along the San Lorenzo River would likely result in an increase in bird mortality. Additional lighting may also result in increased bird mortality from the increased limit on building height. Therefore, the effects of the increased limit on the heights of buildings along the San Lorenzo River because of increased area of reflective glass and an increase in night-time lighting is a *potentially significant impact*.

Mitigation Measures

Implementation of the following mitigation measure will reduce the impact to a less-than-significant level.

- MITIGATION 4.3-2:** Revise Downtown Plan to include standard for design guidance for bird-safe structures along the San Lorenzo River, including:
- Minimize the overall amount of glass on building exteriors facing the San Lorenzo River.
 - Avoid mirrors and large areas of reflective glass.
 - Avoid transparent glass skyways, walkways, or entryways, free-standing glass walls, and transparent building corners.

- Utilize glass/window treatments that create a visual signal or barrier to help alert birds to presence of glass. Avoid funneling open space to a building façade.
- Strategically place landscaping to reduce reflection and views of foliage inside or through glass.
- Avoid or minimize up-lighting and spotlights.
- Turn non-emergency lighting off (such as by automatic shutoff), or shield it, at night to minimize light from buildings that is visible to birds, especially during bird migration season (February - May and August - November).

Impact 4.3-3: Indirect Impacts to Nesting Birds. Future development as a result of the proposed Downtown Plan amendments could result in disturbance to nesting birds if any are present in the vicinity of construction sites along the San Lorenzo River (3d). This is a *potentially significant* impact

While the project will not directly result in new construction that would affect nesting birds, future development accommodated by the proposed amendments could result in impacts to nesting birds at the time of construction. However, measures in the City-wide Creeks and Wetlands Management Plan include pre-construction surveys where construction may affect nesting birds in order to prevent disturbance if nesting is occurring when construction is initiated. Tree removal during the breeding season (generally March 1 to August 1) also could result in direct mortality to nesting avian species protected under the Migratory Bird Treaty Act (MBTA) due to destruction if active nest sites are present. Construction activity for a prolonged period could affect nesting adults and result in nest abandonment or failure. This is considered a *potentially significant impact*. Implementation of the pre-construction nesting surveys as set forth in the adopted Creeks Plan would reduce impacts to a less-than-significant level.

Mitigation Measures

Implementation of the following mitigation measure will reduce the impact to a less-than-significant level.

MITIGATION 4.3-3: Require that a pre-construction nesting survey be conducted by a qualified wildlife biologist if construction, including tree removal, adjacent to the San Lorenzo River is scheduled to begin between March and late July to determine if nesting birds are in the vicinity of the construction sites. If nesting raptors or other nesting species protected under the MBTA are found, construction may need to be delayed until late-August or after the wildlife biologist has determined the nest is no longer in use or unless a suitable construction buffer zone can be identified by the biologist. (Citywide Creeks and Wetlands Management Plan Standard 12).

