5.3 FISHERIES RESOURCES

5.3.1 OVERVIEW AND SUMMARY

This section identifies the fisheries resources within the project areas proposed by the proposed Master Plan Update including new well installation and water treatment plant construction, and assesses the potential impacts of the proposed Master Plan Update on fisheries resources. The new well site locations A and B proposed by the Master Plan Update are largely natural settings along the Santa Ynez River. In addition, the proposed treatment plant is located in a partially developed area and supports disturbed vegetation with no direct connection to the river.

The proposed Master Plan Update would minimize construction related impacts to surface waters through implementation of mitigation measures and incorporation of a storm water pollution prevention plan (SWPPP) required by the State Water Resources Control Board (SWRCB) to protect water quality. Construction related impacts to fisheries resources would be less than significant (Class II).

No significant impacts to listed special-status fish species, public trust fisheries resources, and associated fisheries habitat would occur because in the proposed Master Plan Update, potential impacts of these resources are avoided through the combination of project design features and mitigation measures. Impacts would be less than significant (Class II).

Residual cumulative impacts associated with ongoing operation and maintenance of the proposed new wells would be reduced to less than significant with mitigation and the ongoing coordinated regional effort to implement an integrated approach to water right management that protects the public trust fisheries resources, specifically O. mykiss, along the Santa Ynez River (Class II).

5.3.2 DATA SOURCES AND METHODOLOGY

Available literature and data sources were consulted to evaluate the fisheries resources found or potentially found within the project area. These included the Cachuma Project EIR/Cachuma Water Right 2011 2nd Revised Draft EIR[1], as well as information about southern steelhead trout (*O. mykiss)* and other fish based on presence/absence surveys, trapping records, and monitoring reports compiled by the Santa Ynez River Technical Advisory Committee (SYRTAC) and the biologists from the Cachuma Operations and Maintenance Board (COMB).

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1 California State Water Resources Control Board, Division of Water Rights. December 2011. Final Environmental Impact Report, Consideration of Modifications to the U.S. Bureau of Reclamation's Water Right Permits 11308 and 11310 (Applications 11331 and 11332) to Protect Public Trust Values and Downstream Water Rights on the Santa Ynez River below Bradbury Dam (Cachuma Reservoir). State Clearinghouse #1999051051

Additional resources consulted include, but are not limited to:

- Biological Opinion (BO) for U.S. Bureau of Reclamation (Reclamation) operation and maintenance of the Cachuma Project on the Santa Ynez River in Santa Barbara County, California[2]
- Compliance Report for the Biological Opinion (BO) for the Operation and Maintenance of the Cachuma Project on the Santa Ynez River in Santa Barbara County, California 2003-2009[3]
- Draft Southern Steelhead Recovery Plan[4]
- Lower Santa Ynez River Fish Management Plan (FMP)[5]
- Adult Steelhead Passage Flow Analysis for the Santa Ynez River[6]
- Studies by SYRTAC on behalf of the Reclamation and the Cachuma Operations Member Units under provisions of the 1994 MOU[7]

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2 National Marine Fisheries Service. 2000. Biological Opinion for U.S. Bureau of Reclamation operation and maintenance of the Cachuma Project on the Santa Ynez River in Santa Barbara County, California September 11, 2000.

3 U.S. Bureau of Reclamation. 2010. Compliance Report for the Biological Opinion for the Operation and Maintenance of the Cachuma Project on the Santa Ynez River in Santa Barbara County, California 2003-2009. Prepared for National Marine Fisheries Service.

4 National Marine Fisheries Service. 2009. Southern California Steelhead Recovery Plan. Public Review Draft Version. Southwest Regional Office, Long Beach, California.

5 Santa Ynez River Technical Advisory Committee. 2000. Lower Santa Ynez River Fish Management Plan. Volumes I and II. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, California. Final Report. October 2, 2000.

6 Ibid, 1999. Adult Steelhead Passage Flow Analysis for the Santa Ynez River. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, CA September 1999.

7 Ibid, 1994. *SYRTAC Compilation Report: 1993*. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, CA; SYRTAC. 1996. *SYRTAC Compilation Report: 1995*. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, CA; SYRTAC. 1997. *Synthesis and Analysis of Information on the Fisheries Resources and Habitat Conditions of the Lower Santa Ynez River: 1993-1996*. Prepared for Santa Ynez River Consensus Committee, Santa Barbara, CA; SYRTAC. 1998. *Data Compilation Report for 1996-1997*. Prepared for Santa Ynez River Consensus Committee, Santa Barbara, CA. Draft Report; SYRTAC. 2000a. *Lower Santa Ynez River Fish Management Plan*. Volumes I and II. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, CA. Final Report. October 2, 2000; SYRTAC. 2000b. *Data Compilation Report for 1998-1999*. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, CA. Draft Report; SYRTAC Adaptive Management Committee. 2009. *Summary and Analysis of Annual Fishery Monitoring in the Lower Santa Ynez River 1993-2004*.

5.3.3 APPLICABLE REGULATIONS

5.3.3.1 Federal Regulations

Federal Endangered Species Act of 1973

Section 3 of the federal Endangered Species Act (ESA) defines an endangered species as any species or subspecies "in danger of extinction throughout all or a significant portion of its range." A Threatened species is defined as any species or subspecies of fish, wildlife, or plants "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Threatened or Endangered species and their critical habitat are designated through publication of a final rule in the Federal Register. Designated Endangered and Threatened animal species are fully protected from "take" unless an applicant has an incidental take permit issued by the US Fish and Wildlife Service (USFWS) under Section 10, or an incidental take statement issued under Section 7 of the ESA. Take is defined as the killing, capturing, or harassing of a species. Proposed Endangered or Threatened species or their critical habitat are those for which a proposed regulation, but no final rule, has been published in the Federal Register.

Section 7 of the ESA requires that any proposed "federal action" that may affect a federally listed endangered or threatened species, or its designated habitat, requires consultation with the National Marine Fisheries Service (NMFS) for marine or anadromous species to ensure that there will be no adverse modification of designated critical habitat or in any way jeopardize the continued existence of the species. This Environmental Impact Report is a component in determining whether it is necessary to conduct a Biological Assessment (BA), to analyze the potential effects of the implementation of the proposed Master Plan Update and alternatives on *O. mykiss* and designated critical habitat in the Santa Ynez River.

Final Southern California Steelhead Recovery Plan

Steelhead are the anadromous, or ocean-going, form of the species *Oncorhynchus mykiss* (*O. mykiss*). Steelhead are one of six Pacific salmon species that are native to the west coast of North America, and are currently the only species of this group that naturally reproduces within the coastal watersheds of southern California. Because steelhead employ several different life-history strategies that exploit all portions of a river system, they serve as an indicator of the health of southern California watersheds. Southern California steelhead populations have declined precipitously, largely due to extensive watershed development.

Following a comprehensive status review of all West Coast steelhead populations by the National Marine Fisheries Service (NMFS), southern California steelhead were listed as an endangered species under the ESA on August 18, 1997; the range of the listed steelhead was extended to the U.S.-Mexico Border in 2002. Following a status review in 2005, a final listing determination was issued on January 5, 2006 for the Southern California Steelhead Distinct Population Segment (DPS); critical habitat was also designated within 32 DPS watersheds.

The Southern California Steelhead (SCS) Recovery Planning Area extends from the Santa Maria River to the Tijuana River at the U.S.-Mexico border. It includes both those portions of coastal watersheds that are at least seasonally accessible to steelhead entering from the ocean, and the upstream portions of watersheds that are currently inaccessible to steelhead due to man-made barriers but were historically used by steelhead. Major steelhead watersheds in the northern portion of the SCS Recovery Planning Area include the Santa Maria, Santa Ynez, Ventura, and Santa Clara Rivers, and Malibu and Topanga Creeks. Major steelhead watersheds in the southern portion of the SCS Recovery Planning Area include the San Gabriel, Santa Margarita, San Luis Rey, San Dieguito, and Sweetwater Rivers, and San Juan and San Mateo Creeks. The Santa Ynez River downstream of Bradbury Dam was included in the critical habitat designation.

The *Final Southern Steelhead Recovery Plan*[8] identifies the Monte Arido Highlands Biographic Population Group (BPG) that includes the Santa Ynez River. The Plan lists the Santa Ynez River as Core 1 population, which has a high priority for recovery.[9] Critical recovery actions identified for the Santa Ynez River include implementing operating criteria to ensure:

- the pattern and magnitude of water releases from Bradbury, Gibraltar, and Juncal dams provide the essential habitat functions to support the life history and habitat requirements of adult and juvenile steelhead;
- physically modify Bradbury, Gibraltar, Mono, and Juncal dams to allow natural rates of migration of steelhead to upstream spawning and rearing habitats, and passage of smolts and kelts downstream to the estuary and ocean; and
- identify, protect, and where necessary, restore estuarine and freshwater rearing habitats.

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8 National Marine Fisheries Service. *Southern California Steelhead Recovery Plan*. Public Review Draft Version. Southwest Regional Office, Long Beach, California. January 2012.

9 Ibid, Table 9-3.

5.3.3.2 State Regulations

California Endangered Species Act

The California Endangered Species Act (CESA) declares that deserving plant or animal species will be given protection by the state because they are of ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the state. CESA establishes that it is state policy to conserve, protect, restore, and enhance endangered species and their habitats. Under state law, plant and animal species may be formally designated as Rare, Threatened, or Endangered through official listing by the California Fish and Game Commission. Listed species are given greater attention during the land use planning process by local governments, public agencies, and landowners than are species that have not been listed.

California Department of Fish and Game considers the tidewater goby (*Eucyclogobius newberryi*), southern steelhead trout (*Oncorhynchus mykiss irideus*), and arroyo chub (*Gila orcutti)* as Species of Special Concern. Species of Special Concern have low, scattered, or highly localized populations and require active management to avoid becoming a Class 1 Endangered or Threatened Species.

The Salmon, Steelhead Trout and Anadromous Fisheries Program Act of 1988 (SB 2261)[10] mandates the restoration of the anadromous fish populations of California by increasing the natural production of salmon and steelhead by the year 2000 so that they are self-sustaining and in good condition. The strategies needed to accomplish this goal include restoring degraded habitat, and restoring historical access to streams that are currently blocked. The major factor causing decline in California is freshwater habitat loss and degradation. The Santa Ynez River is identified as an example of where severe environmental problems have been identified, associated with insufficient releases from reservoirs. Additional factors causing environmental degradation include gravel mining, water extraction, incompatible land uses, and migration barriers.[11]

Short-term actions that were recommended by the Steelhead Restoration and Management Plan for California[12] specific to the Santa Ynez River in 1996 included:

- Restore and enhance spawning and rearing habitat conditions in Hilton, Alisal, and Salsipuedes creek and other tributaries of the Santa Ynez River below Bradbury Dam.

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10 California Fish and Game Code. Sections 6900 to 6930.

11 McEwan, Dennis and Terry A. Jackson. 1996. Steelhead Restoration and Management Plan for California. California Department of Fish and Game. Sacramento. 234 pp.

12 Ibid.

- Provide adequate interim releases from Lake Cachuma to maintain steelhead habitat until more permanent restoration measures are implemented.
- Investigate status and habitat needs.
- Investigate the feasibility of modifying the release schedule of water release from Bradbury Dam to downstream users so that it provides benefits to fish and wildlife. At that time, water was released only on an as-needed basis as called for by the Santa Ynez River Water Conservation District and that provided relatively little benefit to aquatic species and habitat.

A memorandum of understanding (MOU) was established in 1994[13] to conduct cooperative studies of fish and habitat, and develop management recommendations for the Santa Ynez River. There are eight signatories of the MOU and an additional 10 agencies and community groups participating in the technical advisory committee. The Santa Ynez River Water Conservation District (SYRWCD), which includes the entire Solvang service area, is a signatory and an active participant in the MOU. The City is not individually listed as a participant in the MOU, but it is bound by the MOU and participates through the SYRWCD. As will be discussed in **Section 5.3.4 Existing Conditions**, the issues described in the 1996 Steelhead Management and Restoration Plan are being addressed through the MOU group working with USFWS and NMFS.

California Environmental Quality Act – Treatment of Listed Plant and Animal Species

ESA and CESA protect only those species formally listed as Threatened or Endangered (or Rare in the case of the state list). Section 15380 of the State *California Environmental Quality Act (CEQA) Guidelines* independently defines "endangered" species of plants or animals as those whose survival and reproduction in the wild are in immediate jeopardy and "rare" species as those who are in such low numbers that they could become endangered if their environment worsens. Therefore, a project normally will have a significant effect on the environment if it will substantially affect a rare or endangered species of animal or plant or the habitat of the species. The significance of impacts to a species under CEQA must be based on analyzing actual rarity and threat of extinction despite legal status or lack thereof.

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13 U.S. Bureau of Reclamation, California Department of Fish and Game, U.S. Fish and Wildlife Service, Cachuma Conservation Release Board, Santa Ynez River Water Conservation District, Improvement District No. 1, Santa Ynez River Water Conservation District, Santa Barbara County Water Agency and City of Lompoc. 1994. Memorandum of Understanding for Cooperation in Research and Fish Maintenance.

California Fish and Game Code – Section 1602

The State of California regulates water resources under Sections 1600 – 1605 of the Fish and Game Code[14] of California.

It is unlawful for any person to divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the department, or use any material from the streambeds, without first notifying the California Department of Fish and Game (CDFG) of that activity.

CDFG considers most natural drainages to be streambeds unless it can be demonstrated otherwise. Streams are defined in the California Code of Regulations Title 14[15] as follows:

> *A stream is a body of water that follows at least periodically or intermittently through a bed or channel having banks and that support fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation.*

CDFG jurisdiction includes ephemeral, intermittent, and perennial watercourses, and is often extended to the limit of riparian habitats that are located contiguous to the water resource and that function as part of the watercourse system. Section 2785(e) of the Fish and Game Code of California states:

> *"Riparian habitat" means lands, which contain habitat which grows close to and which depends on soil moisture from a nearby freshwater source.*

Any project that impacts CDFG jurisdictional areas, including fills, vegetation removal, or bridging, requires a Section 1602 Streambed Alteration Agreement from CDFG. Much of the same information (*i.e.*, project description, potential impacts, mitigation measures, etc.) necessary to apply for US Army Corps of Engineers (USACE) Section 404 permits is required for the Streambed Alteration Agreement application.

See **Section 2.5 Required Permits and Approvals**, for description of the approvals and permits that may be required by state and local public agencies.

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14 California Fish and Game Code. Section 1600-1605.

15 California Code of Regulations. Title 14. Natural Resources, Division 1. Fish and Game Commission, Subdivision 1. Fish, Amphibians and Reptiles, Chapter 1. General Provisions and Definitions, Section 1.72 Streams.

5.3.3.3 Local Regulations

City of Solvang

General Plan

The Conservation and Open Space Element of the City of Solvang General Plan[16] contains the following Goals, Objectives, and Policies addressing the conservation of biological resources, which are relevant to the proposed Master Plan Update.

Goal 3.1—To protect and conserve the City's Natural and Cultural Resources

Objective 1.0— Ensure that the quality of the Santa Ynez River and its tributaries do not violate state and federal water quality standards as a result of development within the City of Solvang.

Policy 1.a— The City shall cooperate with District 3 of the Regional Water Quality Control Board and other agencies within the Santa Ynez Valley in the implementation of the [Clean Water Act Section] 208 water quality program.

Policy 1.b— The City shall require the incorporation of adequate erosion control measures into development projects that may otherwise impact water resources adversely. Such measures shall include sandbagging of newly graded slopes, prompt planting of disturbed areas, phasing of grading and construction activities to minimize exposed areas susceptible to erosion, and the routing of runoff flows through desilting basins prior to discharge into any watercourse. Such provisions shall be included in a grading ordinance.

Policy 1.c— The City shall implement a periodic street sweeping program to minimize the urban pollutant load which enters the City's drainage system.

Policy 1.d— The City shall preserve important groundwater recharge areas as open space. Further, the City shall restrict land uses which may create

16 City of Solvang. 1988 General Plan. Conservation and Open Space Element.

potential water quality hazards from locating within or near groundwater recharge areas.

Objective 2.0— Maintain and protect adequate domestic water supplies for all residents and uses, both present and future, within the City.

Policy 2.a— The City shall require all new developments to incorporate water conservation measures into project designs to the greatest extent practical. Such measures may include, but are not limited to, the use of plumbing fixtures which reduce water usage (in accordance with Title 24 of the California Administrative Code or its successor) and landscaping which maximizes the use of drought-tolerant plant species and drip irrigation systems.

Policy 2.b— The City shall use reclaimed water for irrigation of public landscaped areas to the greatest feasible extent.

Policy 2.c— The City shall cooperate with the Santa Ynez River Water Conservation District by providing the district with general plan buildout projections and by keeping the district fully informed of amendments to the general plan which may affect the district's planning for the provision of adequate water supplies.

Policy 2.d— The City shall encourage the extension of the state water project for the purpose of insuring and maintaining an adequate water supply for the City.

Objective 4.0— Preserve areas of important biological habitat and protect sensitive, rare, and endangered species of flora and fauna.

Policy 4.a— The City shall require that all development proposals provide adequate mitigation measures for identified significant biological resources, including selective preservation, replanting, and/or sensitive site planning techniques.

Goal 3.2—To protect and enhance sensitive open space areas and viewsheds

Objective 1.0— Preserve existing open spaces at appropriate locations throughout the City.

Policy 3.a— The City shall restrict development along the Santa Ynez River, Alisal Creek, Adobe Creek, Alamo Pintado Creek, and the area between Manzanita Drive and Willow Drive to those uses which retain the open space character of these areas (e.g., parks, open space spines, golf courses, etc.).

Policy 3.c— The City shall consider the purchase of property, development rights or other appropriate means to acquire and protect open space and viewsheds.

County of Santa Barbara

Portions of the project area, specifically those areas that may be used for future Well Site B, are located in unincorporated areas of Santa Barbara County. As such, they are under the jurisdiction of the County Comprehensive Plan and Santa Ynez Valley Community Plan.

Comprehensive Plan Conservation Element

The Conservation Element[17] of the County of Santa Barbara Comprehensive Plan describes the ecological communities in the unincorporated areas of the County including the Santa Ynez Valley.

The Conservation Element notes that freshwater marshes are rare plant communities in the state, providing a unique habitat with a long growing season and relatively constant physical conditions. Very few freshwater marshes occur in the County. Several spots along the Santa Ynez River support freshwater marsh communities.[18]

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17 County of Santa Barbara, Comprehensive Plan, Conservation Element, Adopted 1979 – amended August 2010.

18 Ibid, 120.

Santa Ynez Valley Community Plan

The Santa Ynez Valley Community Plan updates the Comprehensive General Plan and provides policy direction for issues and development trends specific to the Plan Area.[19] The Santa Ynez Valley Community Plan provides the general public, landowners and decision makers with a framework for planning future development in the region.

The Santa Ynez Valley Community Plan states that the Santa Ynez River is an important resource to Valley residents and beyond. It serves important ecological functions for the wildlife that rely on it for their entire life cycle or for one or more of their survival needs (e.g., foraging or breeding. The river is habitat for the endangered steelhead and other sensitive species. It also performs important hydrologic functions including transport of nutrients and sediment to wetlands and estuaries, flood flow conveyance, surface and subsurface water storage, groundwater recharge and nutrient removal through plant uptake.[20]

The Santa Ynez River and its tributaries below Bradbury Dam of are particular significance as designated critical habitat for the endangered steelhead trout.[21] The river in particular functions as a migration corridor for steelhead returning to spawning grounds upstream. Habitat quality is measured by riparian vegetation cover, cover provided by undercut banks, ledges and woody debris, substrate, water flow and abundance of pools. Higher upstream reaches often provide the best quality spawning habitat: protecting the migration corridor is key to permitting fish passage. Protection of headwaters is also of importance as they affect flow patterns and water velocities downstream, further affecting migration and spawning habitat.

Numerous streams and creeks and their tributaries drain the Santa Ynez Valley area, eventually feeding into the Santa Ynez River. Streams and creeks are defined as watercourses, drainage ways and small lakes, ponds and marshy areas through which water flows, whether or not the area has been formally identified as environmentally sensitive habitat. Streams and creeks may have perennial or intermittent flow, or they may be ephemeral, flowing only during storm events. They are often bordered by riparian vegetation. They provide important habitat for many plant and animal species, provide transport of nutrients and sediment and provide movement corridors for wildlife.

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19 County of Santa Barbara, Santa Ynez Valley Community Plan, adopted October 6, 2009.

20 Ibid, 160.

21 Ibid, 160-161.

The Santa Ynez Valley Community Plan notes that private and public projects have the potential to affect biological resources in the Santa Ynez Valley planning area, directly through removal of habitats and indirectly through the effects of urbanization (noise, fencing, domestic animals, lighting, erosion, etc.).[22] Public projects required to support development under the Santa Ynez Valley Community Plan which may impact biological resources include roadway widening, trails and bike paths, parks and recreational facilities, expansion of sewer services, flood control activities and facilities, and fire management activities.

Planning Issues

The Community Plan notes that in addition to providing habitat for many sensitive animal and plant species, the river and its tributaries provide drinking water, provide surface and groundwater storage and recharge, convey flood flows and transport sediment and nutrients, while the riparian habitats that line their channels and in-stream vegetation filter sediments and nutrients, protect stream banks from erosion and improve water quality.[23] In order to protect the river it is also necessary to protect the tributaries that feed the river. Santa Barbara County Ordinance No. 3095 establishes creek and river setback requirements to address flood hazards to structures and other development.[24] In general, development shall be set back a minimum of 50 feet from the top of bank of streams and creeks and 200 feet from the top of bank of the Santa Ynez River.

Biological Resources Goals and Policies

The following goals and policies of the Santa Ynez Valley Community Plan[25] apply to biological resources:

Goal BIO-SYV: The Biological Resources of the Santa Ynez Valley Community Plan Area are an Important Regional Asset that Should be Protected, Enhanced and Preserved.

Policy BIO-SYV-1: Environmentally sensitive biological resources and habitat areas shall be protected and, where appropriate, enhanced.

Policy BIO-SYV-4: Sensitive habitats shall be protected to the maximum extent possible, and compensatory mitigation shall be prescribed when impacts to or loss of these areas cannot be avoided. In addition, federally designated critical

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22 County of Santa Barbara, Santa Ynez Valley Community Plan, adopted October 6, 2009, 162.

23 Ibid, 163.

24 Santa Barbara County Ordinance No. 3095, County Code 15B, Development Along Watercourses.

25 County of Santa Barbara, Santa Ynez Valley Community Plan, adopted October 6, 2009, 164 to 172.

habitat for threatened or endangered species shall also be considered to be sensitive habitat. Natural stream corridors (channels and riparian vegetation) shall be maintained in an undisturbed state to the maximum extent feasible in order to protect banks from erosion, enhance wildlife passageways and provide natural greenbelts. Setbacks shall be sufficient to allow and maintain natural stream channel processes (e.g., erosion, meanders) and to protect all new structures and development from such processes. Prior to the approval of a Land Use permit for discretionary projects, County staff will determine whether sensitive biological resources may be present on the subject property by consulting Appendix D, the Santa Ynez Valley Vegetation Map; the CNDDB; and/or other P&D references. If these resources may be present on the parcel or within 100 feet, the applicant must provide a biological survey report from a qualified biologist that determines whether or not the project would impact sensitive biological resources. If wetlands, riparian habitats or jurisdictional waters occur on the property, the report would include a wetland delineation following the U.S. Army Corps of Engineers (2006) procedures.

Policy BIO-SYV-5: Pollution of the Santa Ynez River, streams and drainage channels, underground water basins and areas adjacent to such waters shall be minimized.

Policy BIO-SYV-6: "Hardbank" channelization (e.g., use of concrete, riprap, gabion baskets) of stream channels shall be prohibited, except where needed to protect existing structures. Where hardbank channelization is required, the material and design used shall be the least environmentally damaging alternative and site restoration on or adjacent to the stream channel shall be required, subject to a restoration plan.

Policy BIO-SYV-7: Southern California steelhead trout is a federally listed endangered species that shall be protected.

Policy BIO-SYV-14: Where sensitive plant species and sensitive animal species are found pursuant to the review of a discretionary project, efforts shall be made to preserve the habitat in which they are located to the maximum extent feasible. For the purpose of this policy, sensitive plant species are those

species which appear on a list in the California Native Plant Society's Inventory of Endangered Vascular Plants of California. Sensitive animal species are those listed as endangered, threatened or candidate species by the California Department of Fish and Game and the U.S. Fish and Wildlife Service.

Policy BIO-SYV-15: The County shall support and encourage public education of the importance of protecting, enhancing and restoring the Santa Ynez Valley's natural resources and habitats.

5.3.4 EXISTING CONDITIONS

The City of Solvang is located along the mainstem of the Santa Ynez River, approximately 10 stream miles downstream of Bradbury Dam, and approximately 38 miles upstream from the ocean. Bradbury Dam defines the limit of the lower reach of the Santa Ynez River. A total of 26 species of native and non-native fish have been observed in the mainstem of the Santa Ynez River, including 11 native species, of which two, the tidewater goby (*Eucyclogobius newberryi*) and southern steelhead trout (*Oncorhynchus mykiss irideus*) are federally listed endangered species. Both *O. mykiss* and *E. newberryi* are also California species of special concern.

Bradbury Dam and Lake Cachuma are managed by Reclamation and, along with other upstream reservoirs, provides water to the Cachuma Project members, providing water for municipal, residential, agricultural, recreational, and public trust benefits for much of Santa Barbara County.

In addition to supplying water to its members according to their contracts, the Cachuma Project Permits require it to supply water to downstream water right permit holders and riparian water users and to also support the fisheries for the public trust. Currently the Cachuma Project allocates 3,200 acre-feet to a Fish Passage Account, including 500 acre-feet for an Adaptive Management Account, which is released to augment surface flows in spill years and the year following a spill year. Target flows for rearing have also been set, requiring a minimum flow of 1.5 cubic feet per second (cfs) at the Alisal Bridge in the year Cachuma Lake spills more than 20,000 acre-feet and the year after such spill.

The proposed Master Plan Update's components are proposed along the north bank of the Santa Ynez River from Alisal Bridge, westward for approximately 1.5 miles, and within the City's Alisal Commons open space, between Alisal Road and the Alisal Glen housing subdivision, extending approximately 1,150 feet north of the Santa Ynez River.

Suburban density residential development and agricultural uses lie immediately to the north of the proposed well site locations A and B; the active channel and associated floodplain of the Santa Ynez River lie immediately to the south, east, and west.

The Mediterranean climate of the Santa Ynez River basin provides extremely variable seasonal and yearly conditions of rainfall, streamflow, and water supply. As with most river systems in Southern California, the storm hydrographs are "flashy," rising and falling quickly in response to storm events.

The City is located in a reach of the river identified as within the "Above Narrows" alluvial basin, which contains one of two groundwater basins along the mainstem of the river. Releases are made from Lake Cachuma to recharge downstream groundwater basins in order to satisfy downstream water right holders as dictated by water right Order 89-18.[26] Releases are made with the intention of recharging the groundwater basin between Bradbury Dam and the Lompoc "Narrows" using water stored in the "Above Narrows" account, and to recharge the basin in the Lompoc Valley, which is identified as the "Below Narrows" basin. The duration, timing, and extent of the water releases are driven by hydrologic factors associated with facilitating groundwater recharge at specific locations in the lower Santa Ynez River. Water right releases are typically not needed in wet years, but in average and dry years when the river channel is dry, releases may be made in the late spring through fall.

The Highway 154 Bridge and the Alisal Road Bridge are where measurements are made to confirm that target flows for fish are sufficient downstream of Bradbury Dam. Because *O. mykiss* are the most sensitive of the native fish found in the Santa Ynez River, as well as being federally endangered, the focus on fish management has been to create suitable conditions to support this species. The target flows were identified by the Lower Santa Ynez Fish Management Plan[27] and the Biological Opinion (BO) for the Operation and Maintenance of the Cachuma Project[28] and have guided water release patterns since 2000.

Since 1999, the Reclamation and the members of the Cachuma Project have been in formal consultation under the Endangered Species Act Section 7(a)(2)[29] with NMFS. A BO was issued in 2000 that regulates

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26 California Water Resources Control Board. Water Rights Order 89-18. September 21, 1989. U.S. Bureau of Reclamation Permits 11308 and 11310. Santa Ynez River.

27 Santa Ynez River Technical Advisory Committee (SYRTAC). 2000. *Lower Santa Ynez River Fish Management Plan*. Volumes I and II. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, CA. Final Report. October 2, 2000.

28 National Marine Fisheries Service. 2000. Biological Opinion for U.S. Bureau of Reclamation operation and maintenance of the Cachuma Project on the Santa Ynez River in Santa Barbara County, California September 11, 2000.

29 16 U.S.C. section 1531 *et seq*. Federal Endangered Species Act of 1973. Section 7. Interagency Cooperation.

the operation and maintenance of the Cachuma Project. Reclamation holds the appropriative water right permits 11308 and 11310[30] from the SWRCB for the benefit of the members of the Cachuma Project.

The BO identified 15 non-discretionary RPMs and specific Terms and Conditions (T&C) to be implemented by Reclamation, which included actions related to ongoing maintenance and operations impacts as well as implementation of tributary passage restoration projects. These are summarized in **Table 5.3-1, Summary of Reasonable and Prudent Measures/Terms and Conditions Described in the Cachuma Project Biological Opinion.** Several of these projects were not completed by 2005, triggering the need for reconsultation. Consultation was re-initiated in 2010 and is in progress.

An Adaptive Management Committee was formed to manage flow releases for the benefit of *O. mykiss*. The committee includes representatives of Reclamation, NMFS, CDFG, Cachuma Conservation Release Board (CCRB), the Santa Ynez River Water Conservation District, Improvement District No. 1 (ID No. 1), the City of Lompoc and Santa Ynez River Water Conservation District (SYRWCD). Numerous studies have been completed examining flow conditions, with the resulting establishment of the Real Time Decision Group, who make decisions on when and how much water to release in support of *O. mykiss* passage.

30 U.S. Bureau of Reclamation. Water Rights Permits 11308 and 11310 (Applications 11331 and 11332). The Cachuma Project.

Table 5.3-1
Summary of Reasonable and Prudent Measures/Terms and Conditions Described in the Cachuma Project Biological Opinion

Biological Opinion Reference	Summary of RPM and T&C
RPM 1/T&C 1[1]	Maintain and monitor residual pool depth in Alisal and Refugio reaches during spill years and the first year after spill years if steelhead are present until the 3 foot surcharge is achieved (done) and the 11 passage barrier fixes are completed
RPM 2/T&C 2[1]	Maintain flow in Hilton Creek at flows ≥ 2 cfs unless 1) the AMC decides otherwise and NMFS approves or 2) the transect data indicate that habitat space does not decrease significantly at flows less than 2 cfs
RPM 2/T&C 2[2]	Hilton Creek habitat monitoring:
	Reclamation shall implement the Hilton Creek Habitat Monitoring study plan described on page 3-60 of the Revised Project Proposal (U.S. Bureau of Reclamation 2000) and report the results to NMFS in each year the study is conducted
RPM 3/T&C 3[1]	Develop and implement a plan for supplemental releases for fish mitigation;
	Reclamation shall design a strategy within six months of the issuance of this opinion to further refine the supplemental flow releases for steelhead migration. Such a strategy shall include shifting migration supplementation releases away from dry years when releases may not be helpful to the steelhead population in the Santa Ynez and review of storm flow decay curves (mean, median, etc.) and other methodologies for providing increased migration availability.
RPM 4/T&C 4[1]	Reconsult with NMFS if planned passage improvements will not be completed in 2005.
RPM 5/T&C 5[1]	Do not mix CCWA water into the SYR during December through June unless flow is discontinuous in the mainstem.
RPM 6/T&C 6[1]	During the next three years of water right releases, monitor steelhead downstream of Bradbury to confirm that they are not encouraged to move downstream.
RPM 7/T&C 7[1-2]	Monitor mainstem and Hilton Creek stage and wetted width during first year of ramping.
	T&C 7[1]: WR 89-18 ramp down wetted width and depth monitoring.
	T&C 7[2]: Report results in the year they are collected
RPM 8/T&C 8[1-19]	Reclamation shall avoid and minimize turbidity, sedimentation, loss of riparian vegetation, and steelhead relocation during implementation of tributary passage fixes, the El Jaro Creek demonstration project, and future Reclamation enhancement measures.
	Reclamation shall obtain NMFS's approval of final project designs.
	Nineteen T&Cs specify project implementation best management practices (BMP) and monitoring
RPM 9/T&C 9[1-3]	Avoid and minimize steelhead harm and death during predator relocation and predator removal. Three T&Cs specify rescue implementation:
	T&C 9[1]: Hilton Creek Fish Rescue Plan
	T&C 9[2]: Electrofishing Policy
	T&C 9[3]: BMPs for Predator Removal
RPM 10/T&C 10[1]	All decisions that affect steelhead made by the AMC must be approved by NMFS before they are implemented
RPM 11/T&C 11[1]	Monitoring of project impacts on steelhead;
	Monitoring of Cachuma Project shall occur as described above and as described in the revised project description (Reclamation 2000) under the direction of a qualified biologist. Reclamation shall provide NMFS with yearly reports (unless otherwise noted) that include the data taken each year and preliminary data analysis

Biological Opinion Reference	Summary of RPM and T&C
RPM 11/T&C 11[2]	Monitoring of project impacts on steelhead; Monitoring involving take of endangered steelhead such as migrant trapping, snorkel and bank observations, tagging, and tissue sampling, shall be conducted as described in the revised project description and the following take minimization and avoidance measures shall apply.
RPM 11/T&C 11[3]	Monitoring of project impacts on steelhead; Develop a plan to monitor changes to the bed and banks of the SYR within one year of the issuance of this opinion.
RPM 11/T&C 11[4]	Monitoring of project impacts on steelhead; Target flow compliance monitoring at Highway 154 bridge.
RPM 11/T&C 11[5]	Monitoring of project impacts on steelhead; If conditions occur during the interim period that require pool surface areas to be maintained in the Alisal and Refugio reaches, Reclamation shall monitor these pools on a weekly basis and adjust flows as necessary to maintain residual pool depth.
RPM 11/T&C 11[6]	Monitoring of project impacts on steelhead; NMFS shall receive quarterly reports detailing water releases for fish and the achievement of the flow targets (and pool surface areas) during the interim period (until the 3.0 surcharge is achieved) and for the first three years of long-term operations. In later years, these reports may occur on a yearly basis.
RPM 11/T&C 11[7]	Monitoring of project impacts on steelhead; Reclamation shall provide plans for changes in monitoring locations and methodologies and obtain approval from NMFS prior to implementation
RPM 11/T&C 11[8]	Monitoring of project impacts on steelhead; Reclamation shall identify to NMFS the personnel designated to conduct the monitoring activities described in this opinion prior to each monitoring season and confirm their experience through resumes or other evidence of their accomplishments
RPM 12/T&C 12[1-3]	Reclamation shall relocate steelhead in danger of becoming stranded should releases fall due to mechanical or human error. T&C 12[1]: Notify NMFS & relocate steelhead T&C 12[2]: Use Hilton Creek Fish Rescue Plan methods T&C 12[3]:Emergency procedures under 50CFR 402.05
RPM 13/T&C 13[1-2]	Temporary road crossing maintenance and vehicle use during seismic retrofit T&C 13[1]: Implement Steelhead Protection Measures T&C 13[2]: Limit crossing to six or fewer vehicle round-trips
RPM 14/T&C 14[1]	If upgrading the Hilton Creek water supply line to increase capacity requires shutting down the supply of water to steelhead in Hilton Creek and/or the Santa Ynez, Reclamation shall reinitiate consultation on the Cachuma Project.
RPM 15/T&C 15[1]	Reclamation shall work with NMFS to design and implement a strategy to further verify the analysis of migration supplementation and mainstem rearing targets within six months of the issuance of this opinion

Source: National Marine Fisheries Service. 2000. Biological Opinion for U.S. Bureau of Reclamation operation and maintenance of the Cachuma Project on the Santa Ynez River in Santa Barbara County, California September 11, 2000.

Several of the RPM specifically address conditions in the proposed Master Plan Update reach including:

RPM 1 T&C 1[1] Maintain and monitor residual pool depth in Alisal and Refugio reaches during spill years and the first year after spill years if steelhead are present until the 3 foot surcharge is achieved (done in 2005) and the 11 passage barrier fixes are completed (still in progress). Residual pool depths were monitored following the spills in 2005, 2006, 2008, and 2011 and the year following each spill.

RPM 3 T&C 3[1] Develop and implement a plan for supplemental releases for fish migration. The program for implementation shall include shifting migration releases away from dry years when releases may not be helpful to the population. Target flows and implementation protocols were established in 2006 subsequent to achieving the 3-foot surcharge.

RPM 6 T&C 6[1] Monitor fish movement during water right releases. As part of the Cachuma Project operations, water right releases are made to recharge downstream groundwater basins in accordance with WR 89-18. The duration, timing, and magnitude of these releases are driven by groundwater recharge operations and often occur in summer months. In compliance with the requirements of the BO COMB biologists have conducted snorkel surveys in areas upstream and downstream of the Alisal Bridge before, during and after the highest water releases since 2004.

RPM 11 T&C 11[1] Monitor project impacts on steelhead by a qualified biologist and provide annual reports to NMFS. Reports have been submitted since 2003.

RPM 11 T&C 11[3] Develop a plan to monitor changes to the bed and banks of the Santa Ynez River within one year of the issuance of the opinion. This report was completed and submitted to NMFS in June 2009.

Between 2005 and 2010, the long-term rearing target flows required by the BO have been met to the Highway 154 bridge. Flashboards on Bradbury Dam to achieve a 3.0 surcharge were installed in 2005, and surcharge occurred in 2005 and 2006. Spills also occurred in 2005, 2006 and 2008, providing additional flows downstream to the Alisal reach in 2006, 2007, 2008, and 2009. These additional flows have resulted in increased abundance of *O. mykiss* in the lower Santa Ynez River and its tributaries, increased riparian vegetation quantity and quality, as well as spawning and rearing habitat along the mainstem. Restoration projects implemented in the main tributaries have increased passage opportunities

for adults to access upstream spawning and rearing habitat, contributing to the increased numbers of young-of-the-year and juveniles observed.

The federally listed endangered southern steelhead trout (*O. mykiss*) is most sensitive fish living in the Santa Ynez River in that it requires higher water quantity and quality than other native fish in order to survive. Thus description of habitat suitability, temperature limitations, and dissolved oxygen requirements of this species is used as an umbrella under which all other native species would also be protected.

Habitat for *O. mykiss* has been characterized and monitored by the Santa Ynez River Technical Advisory Committee (SYRTAC) since 1997[31]. Using existing landmarks along the river, the SYRTAC divided the 48 river miles downstream of Bradbury Dam into six reaches (**Table 5.3-2, Mainstem Study Reaches Below Bradbury Dam**). Management Actions are specific to each reach. Impacts associated with the proposed wells to be installed, as part of the Master Plan Update, would be confined to the "Alisal" reach if wells are drilled upstream of the Alisal Bridge, or to the "Avenue of the Flags" reach if the wells are placed downstream of the Alisal Bridge. Both reaches are important for both upstream anadromous adult and downstream smolt migration.

Table 5.3-2
Mainstem Study Reaches Below Bradbury Dam

Reach Name	Landmarks	Reach Length (miles)	Miles below Bradbury Dam
Highway 154	Bradbury Dam down to Highway 154 Bridge	2.9	0 - 2.9
Refugio	Highway 154 Bridge down to Refugio Road	5.0	2.9 - 7.9
Alisal	Refugio Road down to Alisal Bridge in Solvang	2.6	7.9 - 10.5
Avenue of the Flags (Highway 101 Bridge)	Alisal Bridge in Solvang down to Avenue of the Flags Bridge in Buellton	3.1	10.5 - 13.6
Buellton to Lompoc	Buellton to Highway 1 Bridge in Lompoc (includes Weister and Cargasachi study sites)	23.9	13.6 - 37.5
Below Lompoc	Highway 1 Bridge in Lompoc to lagoon	8.3	37.5 - 45.8

Source: National Marine Fisheries Service. 2000. Biological Opinion for U.S. Bureau of Reclamation operation and maintenance of the Cachuma Project on the Santa Ynez River in Santa Barbara County, California September 11, 2000.

31 Santa Ynez River Technical Advisory Committee, Adaptive Management Committee. 2009. *Summary and Analysis of Annual Fishery Monitoring in the Lower Santa Ynez River 1993-2004*.

The following summary of *O. mykiss* habitat conditions was based on Entrix[32] and updated based on SYRTAC,[33] and the Cachuma Project 2nd Revised Environmental Impact Report.[34]

Alisal Reach. The Alisal Reach extends about 2.6 miles from the Refugio Road Bridge to the Alisal Road Bridge in Solvang (approximately 10.5 miles downstream from Bradbury Dam). Quiota and Alisal creeks join the mainstem Santa Ynez River in this reach. Surface flows generally disappear during the summer and fall months except in very wet years. The habitat composition of this reach was identified as consisting of 35 percent riffles, 29 percent runs, 27 percent glides, and only 9 percent pools.[35] The substrate is comprised of small cobble, gravel, and fine sediments. Riparian vegetation is not well developed, and canopy coverage is poor. Floating mats of algae can be extensive in the summer. The Alisal Reach is the downstream extent to which *O. mykiss* have been observed on a regular basis in the mainstem. Temperatures suitable for *O. mykiss* (less than 24°C) are not presently maintained in this portion of the river on a reliable basis.[36]

Alisal Creek. Riparian and instream habitat is similar to that of upper Quiota Creek. The lower creek runs through a golf course. A dam and small reservoir (Alisal Reservoir) are located about 3.6 miles upstream from the confluence and block passage for *O. mykiss* to upstream areas. Conditions below the reservoir appear fair, with good riparian vegetation and canopy cover. Alisal Creek flows for approximately 2 miles above the Alisal Reservoir. The habitat above the reservoir is very good with excellent riparian vegetation and canopy, and has perennial flow. No temperature monitoring has been conducted, but observations suggest good temperature conditions in upper Alisal Creek.[37]

High flows in early 1995 washed away a concrete drop structure, and *O. mykiss* were subsequently trapped in the lower creek. Trapping in lower Alisal Creek in January 1995 captured two anadromous adult *O. mykiss* migrating upstream into the creek. Twenty resident *O. mykiss* juveniles and adults were

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32 ENTRIX. 2001. *Baseline Chapter for the SWRCB EIR on Cachuma Project Operations*. Dated May 10, 2001. Prepared for URS Corporation.

33 Santa Ynez River Technical Advisory Committee, Adaptive Management Committee. 2009. *Summary and Analysis of Annual Fishery Monitoring in the Lower Santa Ynez River 1993-2004*.

34 California State Water Resources Control Board, Division of Water Rights. December 2011. 2nd Revised Final Environmental Impact Report, Consideration of Modifications to the U.S. Bureau of Reclamation's Water Right Permits 11308 and 11310 (Applications 11331 and 11332) to Protect Public Trust Values and Downstream Water Rights on the Santa Ynez River below Bradbury Dam (Cachuma Reservoir). State Clearinghouse #1999051051

35 Santa Ynez River Technical Advisory Committee, Adaptive Management Committee. 2009. *Summary and Analysis of Annual Fishery Monitoring in the Lower Santa Ynez River 1993-2004*.

36 Ibid, *Lower Santa Ynez River Fish Management Plan*. Volumes I and II. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, CA. Final Report. October 2, 2000.

37 ENTRIX. 2001. *Baseline Chapter for the SWRCB EIR on Cachuma Project Operations*. Dated May 10, 2001. Prepared for URS Corporation.

found in Alisal Creek upstream of Alisal Reservoir.[38] Bass and sunfish inhabit the reservoir. Many other *O. mykiss* of various size classes were common to abundant within the upper portions of Alisal Creek.[39]

Quiota Creek. Studies on this tributary into the Alisal reach have been limited due to lack of access on private property. Oaks and willows generally are abundant, although riparian vegetation is lacking in many places. Silt is the predominant substrate, especially in pools. Summer flow in the lower section is intermittent in average and dry years. Grazing practices have decreased the amount of streamside vegetation in this area. Refugio Road crosses Quiota Creek nine times. The numerous road crossings of Refugio Road impede upstream passage at low and high flows. All nine crossings are shallow-water "Arizona" style crossings with concrete beds. Several sites have a 2- to 3-foot drop downstream of the concrete apron. In 2008, Crossing No. 6 was replaced with a bridge. A bridge was installed at Crossing No. 2 in 2011. Plans are in progress for removing additional barriers as well.

Good canopy conditions provide shading along portions of the stream. Pool habitats have good depth and complexity of instream cover. Numerous undercut banks exist (particularly in pools) providing excellent rearing habitat. In contrast to several other tributaries, substrate is composed of larger size gravel, cobbles, and boulders. In the lower reach, lack of good shading suggests that water temperature may not be suitable in the summer. Cattle fecal material that may contribute to nutrient loading was also observed in and around the stream in this area .

CDFG conducted visual surveys from 1993 to 1998[40] and SYRTAC biologists conducted roadside surveys from 1993 to 2000,[41] which show that Quiota Creek, especially in the upper reach, supports *O. mykiss*. Over 100 young-of-the-year were observed in August 1994, and another 100 young-of-the-year and 20 to 30 juvenile/adults were observed in a tributary to Quiota Creek in August 1994.[42] A visual survey in February 1995 documented spawning activity, redds and two adults (one 16-inch female and 6-to 8-inch male) approximately 2 miles upstream of the confluence with the Santa Ynez River[43]. Observations from nine road crossings in late 1998 documented approximately 100 young-of-the-year from about 1.5 to 3

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38 Santa Ynez River Technical Advisory Committee. 1997. *Synthesis and Analysis of Information on the Fisheries Resources and Habitat Conditions of the Lower Santa Ynez River: 1993-1996*. Prepared for Santa Ynez River Consensus Committee, Santa Barbara, CA.

39 Ibid.

40 Ibid, Adaptive Management Committee. 2009. *Summary and Analysis of Annual Fishery Monitoring in the Lower Santa Ynez River 1993-2004*.

41 Ibid.

42 Ibid. 1997. *Synthesis and Analysis of Information on the Fisheries Resources and Habitat Conditions of the Lower Santa Ynez River: 1993-1996*. Prepared for Santa Ynez River Consensus Committee, Santa Barbara, CA.

43 Ibid.

miles upstream of the confluence. Surveys pre- and post-restoration of both the No. 2 in 2011 and the No. 6 road crossing in 2008 document presence of *O. mykiss* in these reaches.[44]

Avenue of the Flags Reach (Highway 101 Bridge). This 3.1-mile reach extends from the Alisal Bridge in Solvang downstream to the Avenue of the Flags bridge where Highway 101 crosses the river, approximately 13 miles downstream of Bradbury Dam. The habitat along the Avenue of the Flags Reach is almost exclusively runs. The substrate is mostly sand and gravel, mined by two gravel and sand extraction companies. This reach is essentially devoid of canopy cover consisting of terrace scrub, willow/mulefat scrub. Water temperatures at Buellton are potentially adverse or lethal for steelhead.[45]

Summer snorkel surveys have been conducted episodically by COMB Biologists since 2005[46] and indicate that *O. mykiss* are found in this reach.

Water right releases contribute to groundwater replenishment and surface flows in the reach. Despite this input, the reach is often interrupted and has been identified as having poor habitat conditions for *O. mykiss* during much of the summer and fall. The main tributary contributing flow to this reach is Nojoqui Creek.

Nojoqui Creek. Data for this creek is limited. Electro-fishing and snorkel surveys in May 1994[47] found arroyo chub and threespine stickleback abundant in Nojoqui Creek, with small populations of green sunfish and large-mouth bass in a few pools. However, no *O. mykiss* were observed or captured. Two adults were captured migrating upstream in March 1998 and another adult observed in a pool, but no *O. mykiss* were captured in 1995 or 1997. Unlike the other creeks in the lower basin, Nojoqui may not have a remnant resident population within its watershed. Average daily temperatures in Nojoqui Creek during summer months exceeded 20^0C and maximum temperatures frequently exceeded 24^0C. These temperatures are considered extremely stressful for *O. mykiss* over extended periods of time.

5.3.4.1 Special Status Fish Species

Two federally listed endangered fish species and three California Species of Special Concern are found in the Santa Ynez River watershed:

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44 Personal communication between T. Robinson and Rosi Dagit. October 2011.

45 ENTRIX. 2001. *Baseline Chapter for the SWRCB EIR on Cachuma Project Operations*. Dated May 10, 2001. Prepared for URS Corporation.

46 Cachuma Operation and Maintenance Board. 2010. Data from the Lower Santa Ynez River Steelhead / Rainbow Trout Monitoring and Habitat Restoration Program.

47 Santa Ynez River Technical Advisory Committee, Adaptive Management Committee. 2009. *Summary and Analysis of Annual Fishery Monitoring in the Lower Santa Ynez River 1993-2004*.

- Southern California Evolutionary Significant Unit of steelhead trout *(Oncorhynchus mykiss)* – Federally listed endangered species, California Species of Special Concern
- Tidewater goby *(Eucyclogobius newberryi)* – Federally listed endangered species, California Species of Special Concern

The Santa Ynez River downstream of Bradbury Dam and its tributaries are designated as critical habitat for the endangered *O. mykiss*. The Santa Ynez River lagoon is not designated as critical habitat for the tidewater goby. Tidewater goby populations north of Orange County were proposed for de-listing in 1999 but no action has yet occurred.

Southern Steelhead Trout (Oncorhynchus mykiss irideus)

O. mykiss are native to the Santa Ynez River and exhibit three distinctive life history patterns.[48] Resident *O. mykiss* spend their entire lives in freshwater. Fluvial anadromous *O. mykiss* are born in freshwater, emigrate to the ocean as 1- to 3-year-old smolts, rear to maturity in the ocean and then return to freshwater to spawn. Lagoon anadromous *O. mykiss* are primarily juveniles who over-summer in the estuary of their natal creek, where they grow quickly and emigrate to the ocean at a larger size than fish that rear in freshwater habitats[49]. Because it is difficult to differentiate or segregate individuals adhering to one or more of these life history strategies, the term *O. mykiss* is used to refer to both resident and anadromous fish.

It is common to find populations exhibiting multiple life history strategies within the same river system. Individuals exhibiting one life history strategy can produce offspring that exhibit another strategy. Juveniles of rainbow trout and steelhead are indistinguishable except when steelhead juveniles smolt, typically during February through May. In August 1997, the NMFS listed[50] anadromous steelhead as an endangered species under the federal ESA.

In the Santa Ynez River system, adult *O. mykiss* migrate from the ocean to spawn mainly from December through April. Upstream migration requires sufficient streamflow to breach the sandbar at the river mouth and to allow passage in the river. In dry years, passage can be impeded by low flows at critical locations (e.g., riffles). *O. mykiss* typically migrate upstream when streamflow rises during a storm event. The eggs are laid in a nest (redd) in gravel. Fish prefer gravels that are free of fine sediment to promote

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48 Santa Ynez River Technical Advisory Committee, Adaptive Management Committee. 2009. *Summary and Analysis of Annual Fishery Monitoring in the Lower Santa Ynez River 1993-2004*.

49 Bond, M. H., S. A. Hayes, C. V. Hanson, and R. B. MacFarlane. 2008. *Marine survival of steelhead (Oncorhynchus mykiss) enhanced by a seasonally closed estuary*. Canadian Journal of Fisheries and Aquatic Sciences 65: 2242–2252.

50 National Marine Fisheries Service (National Oceanic and Atmospheric Administration). 1997. Endangered and Threatened Species: Listing of Several Evolutionary Significant Units (ESUs) of West Coast Steelhead. 50 CFR Parts 222 and 227.

water circulation around the incubating eggs. After spawning, adult *O. mykiss* may return to the ocean (about 30 percent of adults). *O. mykiss* may spend one to several years in freshwater before emigrating to the ocean, during which time the anadromous life history form are indistinguishable from the resident life history form in both appearance and habitat use. Typically, however, Southern California *O. mykiss* migrate to the ocean when they are one or two years old (5 to 10 inches long). The juvenile outmigration period is usually February through May, but the timing of migration is dependent upon streamflows. Juveniles undergo physiological changes that adapt them to a life in saltwater, and become "smolts." Unlike most salmonids, anadromous *O. mykiss* may return to spawn in later years. Resident rainbow trout may reach maturity and spawn in their second year of life (based on size class observations,[51] although the time of first spawning is generally in their third or fourth year.

Juveniles of anadromous or resident life history forms are also indistinguishable in habitat use. Young-of-the-year often utilize riffle and run habitat during the growing season and move to deeper, slower water during the high flow months. Larger fish (yearlings or older) use heads of pools for feeding. Pools provide over-summer refugia for *O. mykiss* in small streams during low flow conditions. A second strategy is to rear in a lagoon.

CDFG has used[52] a daily average temperature of 20°C (68°F) in central and Southern California to evaluate the suitability of stream temperatures for *O. mykiss*. This level represents a water temperature below which reasonable growth of *O. mykiss* may be expected. However, elevated water temperatures are consistently observed throughout Southern California. Studies suggest that *O. mykiss* can survive short-term temperature spikes as high as 29°C and have determined that juvenile *O. mykiss* are able to forage and remain active with an elevated body temperature.[53] These observations support the hypothesis that *O. mykiss* in Southern California have a higher thermal tolerance than salmonids found in cooler

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51 Santa Ynez River Technical Advisory Committee, Adaptive Management Committee. 2009. *Summary and Analysis of Annual Fishery Monitoring in the Lower Santa Ynez River 1993-2004*.

52 National Marine Fisheries Service. 2000. *Biological Opinion*. U.S. Bureau of Reclamation Operation and Maintenance of the Cachuma Project on the Santa Ynez River in Santa Barbara County, California. September 11, 2000.

53 Carpanzo, C.M. 1996. *Distribution and habitat associations of different age classes and mitochondrial genotypes of Oncorhynchus mykiss in stream in southern California*. Master's Thesis, UC Santa Barbara; Matthews, K. R. and N.H. Berg. 1997. Rainbow trout responses to water temperature and dissolved oxygen stress in two southern California stream pools. Journal of Fish Biology 50:50-67; Myrick, C.A., and J. J. Cech, Jr. 2000a. Growth and thermal biology of Feather River steelhead under constant and cyclical temperatures. Department of Water Resources Contract. Final Report. Department of Wildlife, Fish, and Conservation Biology, University of California, Davis; Myrick, C. A., and J. J. Cech, Jr. 2000b. Temperature influences on California rainbow trout physiological performance. Fish Physiology and Biochemistry 22: 245–254; Myrick, C. A., and J. J. Cech. 2005. Effects of temperature on the growth, food consumption, and thermal tolerance of age-0 Nimbus-strain steelhead. North American Journal of Aquaculture 67: 324–330; Spina, A. P. 2007. Thermal ecology of juvenile steelhead in a warm-water environment. Environmental Biology of Fishes 80: 23–24.

regions.[54] Lethal temperature limits are based on laboratory and field observation, but current practice uses daily water temperatures greater than 24°C as an indicator of high stress.[55]

Data collected since 1993[56] indicates that all life stages of *O. mykiss* are consistently found in the Lower Santa Ynez River Mainstem and in south side tributaries (such as Quiota and Alisal Creek), although abundance and distribution are both greater in wet years than average and dry years[57]. In the two reaches of the river potentially within the City's water system well field area, flows are also augmented by input from Quiota, Alisal, and Nojoqui Creeks.

This is consistent with historical distribution patterns, which estimated a range from between 10,000 to 20,000 adult spawners prior to the installation of all the dams on the Santa Ynez River[58]. Shapovalov studied the *O. mykiss* in the Santa Ynez and documented that during the summer, especially in dry years, the mainstem of the river became intermittent with sub surface flows.[59] However, the cyclic pattern of wet and dry periods historically supported a substantial population of *O. mykiss*. Spawning in the mainstem was documented between Solvang and Gibraltar[60].

Migrant trapping was conducted by COMB Biologists between 2005 and 2010[61] at Salsipuedes Creek, in the lower Santa Ynez River Mainstem in the Refugio reach and Hilton Creek, except in 2007 when low flow conditions precluded trapping in the mainstem. Trapping results show that upstream migrating *O. mykiss* are most frequently trapped at Hilton Creek, which is just below Bradbury Dam. Although only a

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54 Marine, Keith R. and Joseph J. Cech, Jr. "Effects of High Water Temperature on Growth, Smoltification, and Predator Avoidance in Juvenile Sacramento River Chinook Salmon." North American Journal of Fisheries Management 24: 198-210, 2004.

55 Myrick, C. A., and J. J. Cech, Jr. 2000. Temperature influences on California rainbow trout physiological performance. Fish Physiology and Biochemistry 22(3):245-254.

56 Santa Ynez River Technical Advisory Committee, Adaptive Management Committee. 2009. *Summary and Analysis of Annual Fishery Monitoring in the Lower Santa Ynez River 1993-2004*.

57 Ibid. 2000. *Data Compilation Report for 1998-1999*. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, CA. Draft Report.

58 California Department of Fish and Game. 1940. *Report on Planting of Marked Steelhead Trout in the Lagoon of the Santa Ynez River, Santa Barbara County, CA*. Administrative Report 40-15: 1-8; CDFG. 1944. *Preliminary Report on the Fisheries of the Santa Ynez River, Santa Barbara County, CA*. Administrative Report 44-14: 1-22; CDFG. 1945. Report on the Relation to maintenance of Fish Resource of Proposed Dams and Diversions in Santa Barbara County, CA. Administrative Report 45-25: 1-11; Adaptive Management Committee. 2004. Historical rainbow trout/steelhead stocking in the Santa Ynez River above Bradbury Dam. Prepared by ENTRIX for the Santa Ynez River Consensus Committee.

59 Shapovlov, L. 1944a. Preliminary report on the fisheries of the Santa Ynez River system, Santa Barbara County, California. Calif. Div. of Fish and Game. Inland Fish. Admin Report No. 44-14. 22

60 ENTRIX. 1995. *Fish resources technical report for the EIS/EIR*, Cachuma Project Contract

61 Cachuma Operation and Maintenance Board. 2010. Data from the Lower Santa Ynez River Steelhead / Rainbow Trout Monitoring and Habitat Restoration Program.

few upstream migrants are trapped in the mainstem of the Refugio reach, the fish rely upon passage through all mainstem reaches to reach Hilton Creek and are stopped at the dam.

The pattern is similar for downstream migrating smolts. The majority of smolts are trapped at Hilton Creek, with few trapped in the mainstem Refugio reach. The highest number of smolts were captured in 2010. This is two years following the highest number of anadromous adult *O. mykiss* being trapped in 2008[62].

Snorkel surveys have been conducted by COMB biologists since 2005[63] in the spring, summer and fall at specific long-term monitoring locations within the Avenue of the Flags, Refugio and Alisal reaches on the mainstem, as well as in Hilton, Quiota, Salsipuedes, and El Jaro Creeks. *O. mykiss* have been observed in the Refugio and Alisal reaches in all three seasons. Due to low flow conditions, the Avenue of the Flags reach was often dry, but *O. mykiss* were documented in that reach in 2006 and 2008. Size classes observed followed the seasonal pattern of more fish under 6 inches in spring and summer, moving into the larger size classes in the fall. The majority of *O. mykiss* observed are between 3-21 inches, with only a few larger adults.

Distribution of *O. mykiss* varies seasonally, but use of refugia pools primarily in the Highway 154, Refugio, and Alisal reaches increases during wet years. Following the addition of flow into Hilton Creek since 2000[64], young-of-the-year and juvenile *O. mykiss* were observed downstream as far as the Alisal reach, which suggests that the high reproduction rates observed in Hilton Creek are contributing to expanding the distribution of *O. mykiss* into available habitats. Greater numbers of adult *O. mykiss* were seen in the Refugio and Alisal reaches during years when Lake Cachuma spilled (1995, 1998, 2001, 2005, 2006, 2008)[65] than in other years. Spill years are typically wet years and thus more water is available throughout the entire watershed.

Genetic Analysis

Despite the addition of thousands of hatchery fish over the years throughout the watershed, Garza and Clemento found that over 1,581 tissue samples collected in the Santa Ynez were genetically differentiated

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62 Cachuma Operation and Maintenance Board. 2010. Data from the Lower Santa Ynez River Steelhead / Rainbow Trout Monitoring and Habitat Restoration Program.

63 Ibid.

64 Santa Ynez River Technical Advisory Committee, Adaptive Management Committee. 2009. *Summary and Analysis of Annual Fishery Monitoring in the Lower Santa Ynez River 1993-2004*.

65 California State Water Resources Control Board, Division of Water Rights. April 2011. 2nd Revised Draft Environmental Impact Report, Consideration of Modifications to the U.S. Bureau of Reclamation's Water Right Permits 11308 and 11310 (Applications 11331 and 11332) to Protect Public Trust Values and Downstream Water Rights on the Santa Ynez River below Bradbury Dam (Cachuma Reservoir). State Clearinghouse #1999051051

and relatively stable.[66] Their results were based on a more comprehensive analysis than that previously done, and found that although there has been some introgression of hatchery genes (primarily in the Juncal Creek drainage), the *O. mykiss* throughout the Santa Ynez are primarily native, wild fish and show similar differentiations to populations of *O. mykiss* found throughout the Southern California region. The progress report further analyzed relatedness by examining individual assignments to determine the most probable origin of the fish.[67] This supported the previous observation that there is a strong population structure within the Santa Ynez River, with Hilton Creek and Salsipuedes Creeks remaining genetically distinct. Importantly, these data indicate that hatchery and native fish periodically are able to migrate downstream over Bradbury Dam, presumably during high flows. Several of the samples assigned to *O. mykiss* populations found above the dam at Santa Cruz Creek either historically descended from native wild fish from upstream, or were able to migrate downstream. The strains of hatchery trout from Fillmore Hatchery are highly distinct from the Santa Ynez population and although stocking has been significant, it appears that the hatchery fish are sufficiently different in physiology and life history that they do not successfully reproduce with naturally spawning native fish.[68]

Further, the analysis of genetic origin from several adult anadromous *O. mykiss* sampled in 2008 found that four of these fish assigned to Hilton Creek, five to Salsipuedes Creek, and one captured in the mainstem, which assigned to Quito Creek.[69] None of these fish had any evidence of hatchery ancestry. The genetic origin matched the location where the fish was captured for the Hilton and Salsipuedes Creek individuals, indicating that these adults were returning to their natal creeks to spawn. The other six individuals appear to be migrants from other systems. This pattern is consistent with our understanding of *O. mykiss* patterns of dispersal observed in other streams, including San Antonio River and Tasajarra Creek in Monterey County over 220 miles up coast, Lopez Canyon Creek and Arroyo Grande Creek in San Luis Obispo County, approximately 31 miles up coast.[70] These relationships are illustrated in data collected by the Cachuma Operation and Maintenance Board.[71]

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66 Garza, J. C. and A. Clemento. *Population genetic structure of Oncorhynchus mykiss in the Santa Ynez River, California*. June 2010. Final report to the Cachuma Conservation Release Board.

67 Ibid.

68 Ibid.

69 Cachuma Operation and Maintenance Board. 2010. Data from the Lower Santa Ynez River Steelhead / Rainbow Trout Monitoring and Habitat Restoration Program.

70 Garza, J. C. and A. Clemento 2010. *Progress report on population genetic analysis of Oncorhynchus mykiss in the Santa Ynez River, California*. June 2010. Report to the Cachuma Conservation Release Board.

71 Cachuma Operation and Maintenance Board. 2010. Data from the Lower Santa Ynez River Steelhead / Rainbow Trout Monitoring and Habitat Restoration Program.

Habitat Suitability

The quantity and quality of physical habitat and flow regime are critical factors that affect habitat suitability for *O. mykiss*. Each life stage depends on a suite of habitat characteristics, of which habitat type, depth, instream cover, temperature, and dissolved oxygen are considered most significant.

The Santa Ynez River Fish Management Plan[72] used the following criteria to identify and prioritize habitat protection and improvement in the mainstem of the Santa Ynez River below Bradbury Dam:

- Seasonal and annual instream flow patterns
- Water temperatures
- Quality and suitability of existing habitat
- Opportunities for habitat improvement
- Ownership of the subject habitat areas

Maintaining flow sufficient for rearing in the reach between the Highway 154 Bridge and Alisal Bridge was identified as a priority in spill years (greater than 20,000 af) and the year following a wet year. The Fish Management Plan[73] also recommended that habitat along the mainstem be created or improved by releasing water to meet a target flow of 1.5 cfs at the Alisal Road Bridge in spill years and the year following.

Habitat mapping provides essential information on the quantity, quality, and spatial distribution of habitat necessary to support all life stages and life-history forms of O. *mykiss.* Mapping also provides information critical to assessing enhancement opportunities to improve degraded habitat or reconnect access to suitable habitats. Documenting habitat restoration effectiveness as outlined in the BO is also accomplished by repeated habitat mapping that illustrates before and after conditions. Stream channel configuration changes occurring following spill events and wet years provide information critical to understanding the relationship between the current hydrologic regime and the geomorphologic response of the river. Surveys of all available mainstem habitat were fragmented due to access limitations.

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72 Santa Ynez River Technical Advisory Committee. 2000. *Lower Santa Ynez River Fish Management Plan*. Volumes I and II. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, CA. Final Report. October 2, 2000.

73 Ibid.

SYRTAC and others[74] have assessed habitat conditions in the lower Santa Ynez River and its tributaries where landowners granted access. Habitat types (e.g., pool, run, riffle) and other habitat variables were documented including water quality, substrate, cover, instream vegetation, and riparian canopy. Habitat quality was ranked as Good, Fair, and Poor based on the matrix of flow, water temperature, habitat structures, dissolved oxygen levels, presence/absence of *O. mykiss*, gradient, and potential refugia (unsurveyed private areas)[75].

See **Table 5.3-3, Stream River Miles and Percentages of Potential *O. mykiss* Habitat Quality**.

The condition and distribution of fish habitat below Bradbury Dam evaluated prior to implementation of the BO, is presented below, based on Entrix[76] and updated based on surveys conducted following implementation of several restoration actions[77].

Spawning Habitat

Suitable spawning habitat for *O. mykiss* consists of unconsolidated gravel of appropriate size with sufficient water quantity and quality to support opportunities for spawning, incubation, and larval development. **Figure 5.3-1, Steelhead Spawning Habitat on the Lower River,** illustrates the distribution of potential spawning habitat found below Bradbury Dam.[78]

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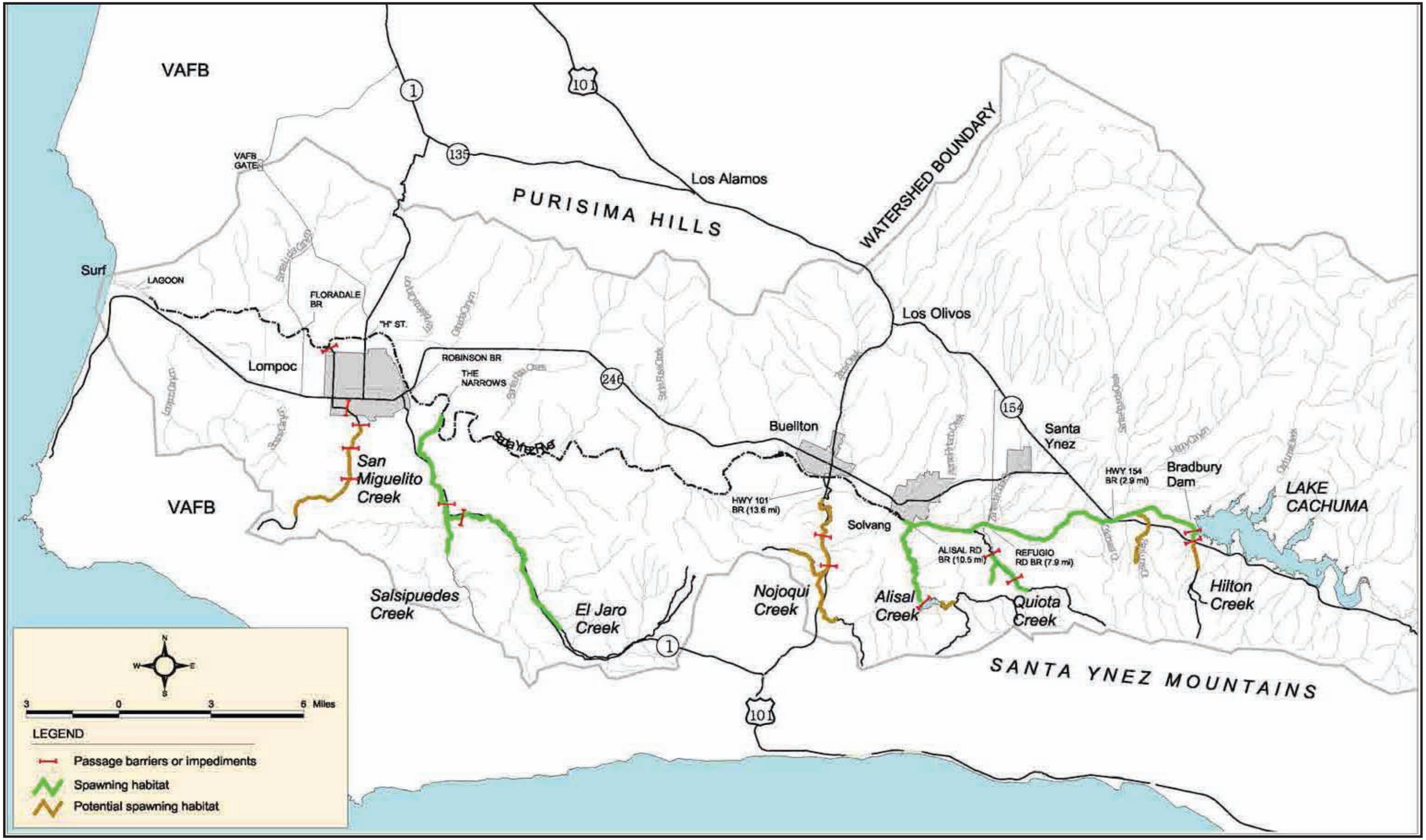
74 ENTRIX. 1995. *Fish resources technical report for the EIS/EIR*, Cachuma Project Contract; SYRTAC. 1997. *Synthesis and Analysis of Information on the Fisheries Resources and Habitat Conditions of the Lower Santa Ynez River: 1993-1996*. Prepared for Santa Ynez River Consensus Committee, Santa Barbara, CA; SYRTAC. 1998. *Data Compilation Report for 1996-1997*. Prepared for Santa Ynez River Consensus Committee, Santa Barbara, CA. Draft Report; SYRTAC. 2000. *Data Compilation Report for 1998-1999*. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, CA. Draft Report; SYRTAC, Adaptive Management Committee. 2009. *Summary and Analysis of Annual Fishery Monitoring in the Lower Santa Ynez River 1993-2004*.

75 Santa Ynez River Technical Advisory Committee, Adaptive Management Committee. 2009. *Summary and Analysis of Annual Fishery Monitoring in the Lower Santa Ynez River 1993-2004*.

76 ENTRIX. 2001. *Baseline Chapter for the SWRCB EIR on Cachuma Project Operations*. Dated May 10, 2001. Prepared for URS Corporation.

77 Santa Ynez River Technical Advisory Committee, Adaptive Management Committee. 2009. *Summary and Analysis of Annual Fishery Monitoring in the Lower Santa Ynez River 1993-2004*.

78 Ibid.



SOURCE: Cachuma Operation and Maintenance Board - 2010
Data from the Lower Santa Ynez River Steelhead/Rainbow Trout Monitoring and Habitat Restoration Program

FIGURE **5.3-1**

Meridian Consultants

Steelhead Spawning Habitat on the Lower River

001-001-12

Table 5.3-3
Stream River Miles and Percentages of Potential *O. mykiss* Habitat Quality

Stream-River	Good (mi)	Fair (mi)	Poor (mi)	Potential (mi)	Not-Classed (mi)	Total (mi)	Not-Classed (%)
Hilton Creek	2.24	0	0	2.76	0	5.00	0%
Quiota Creek	1.91	0.66	3.38	0	1.78	7.73	23%
Alisal Creek	0	1.92	1.74	3.86	0	7.52	0%
Nojoqui Creek	0	0	7.88	0	1.87	9.75	29%
El Jaro Creek	0	10.44	0	2.10	0	12.54	0%
Salsipuedes Creek	1.59	4.19	0	1.06	0	6.84	0%
San Miguelito Creek	0	5.68	0	0	2.92	8.60	34%
Lower Santa Ynez River	3.12	0	7.48	0	38.95	49.54	79%
Mainstem and Tributary total:	**8.9**	**22.9**	**20.5**	**9.8**	**45.5**	**107.5**	**42%**

Source: SYRTAC, 2009

There must be sufficient flow to provide habitat during the spawning season, which is typically between February and April in the Santa Ynez River.[79] The period analyzed to assess spawning starts at the onset of the peak spawning season (February) through the end of the peak fry emergence period (May). A study conducted by the SYRTAC[80] assessed the relationship of stream flow at Highway 154 to habitat area, average depth, and average velocity in the Highway 154, Refugio, and the Alisal reaches. The SYRTAC biological team observed[81] that spawning can occur in the mainstem at low flows (greater than 2.5 cfs). While there is little habitat area under low flow conditions, there is sufficient flow in some locations of the mainstem to enable spawning to occur.

Spawning activity has been observed in the mainstem downstream of Bradbury Dam as far as the Alisal Bridge, and in tributaries such as Alisal Creek from December through May, although the majority of redds were observed between March and May. In addition to documenting number of redds, the location and habitat conditions relevant to spawning success were also noted. It appears that spawning is triggered by high flow events. The relative abundance of resident *O. mykiss* to anadromous *O. mykiss* redds was associated with passage conditions. During dry years when the ocean sandbar did not breach, it was assumed that all spawners were resident *O. mykiss*. Observations by CPWA biologists[82] indicate that it is difficult to differentiate between smaller resident and anadromous redds, however, those larger than 3 feet are more likely to be created by larger resident or anadromous *O. mykiss*, as the range of length (2.2-9.8 feet) and width (1.4 to 3.9 feet) were comparable for both life-history forms. Redds were more frequently observed in the tributaries than in the mainstem, although redd surveys are opportunistic and have not systematically been conducted[83].

Rearing Habitat and Target Flows

Suitable rearing habitat for *O. mykiss* consists of habitat having sufficient water quantity and quality, as well as connectivity, to support growth and development, and providing sufficient food resources and

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79 Santa Ynez River Technical Advisory Committee. 2000. *Lower Santa Ynez River Fish Management Plan*. Volumes I and II. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, CA. Final Report. October 2, 2000.

80 Ibid. 1999. *Adult steelhead passage analysis for the Santa Ynez River, CA*. Draft report. Prepared for Santa Ynez River Consensus Committee, Santa Barbara, CA.

81 Ibid.

82 Ibid. 2009. *Summary and Analysis of Annual Fishery Monitoring in the Lower Santa Ynez River 1993-2004*.

83 Ibid.

cover. Juveniles rear throughout the entire year. Fry rear in the Santa Ynez system from April through approximately August.[84]

Potentially good quality *O. mykiss* rearing habitat is primarily concentrated in the mainstem between Bradbury Dam and Highway 154, as shown in **Figure 5.3-2, Steelhead Rearing Habitat on the Lower River**. In general, the Refugio and Alisal reaches of the mainstem have poor rearing habitat conditions, although refuge pools in these reaches are valuable. Rearing habitat is unavailable downstream of the Alisal Reach in the mainstem, although the lagoon could provide some moderate-quality rearing habitat. Mainstem habitat for *O. mykiss* is typically not found below the Alisal Bridge except in the portion of the river where flow is enhanced by the releases from the Lompoc wastewater treatment plant. In addition to mainstem habitat, a number of the south-side tributary streams provide over-summering habitat for *O. mykiss*. High quality *O. mykiss* rearing habitat is located in Quiota Creek. Fair quality habitat exists above impassible barriers in Alisal creek. Lower Quiota and lower Alisal creeks have poor habitat and often little or no flow to support over-summering fish. While Nojoqui Creek appears to have some good habitat elements, the lack of fish suggests otherwise.

No-flow conditions are important to avoid, as they result in fish being concentrated in discontinuous pools having poor water quality conditions (low dissolved oxygen, high water temperatures). These conditions are problematic because higher concentration of fry, juveniles, and adults are forced to compete in a smaller space. When non-native predators such as largemouth bass are also confined to these small refugia, the trout often suffer high mortality.

Migration Patterns for *anadromous O. mykiss*

Anadromous fish such as southern steelhead trout *(O. mykiss*) and pacific lamprey (*Lampetra tridentata*) enter freshwater systems to spawn and the young rear in these systems for several years. Adult *O. mykiss* require adequate passage opportunities to enter freshwater systems and migrate upstream to suitable spawning habitat. Juvenile fish require adequate passage opportunities to migrate downstream in order to enter the ocean phase of their life cycle. Passage barriers identified on the Lower Santa Ynez River include the sand berm that forms seasonally at the mouth of the river where it meets the ocean, reaches of the mainstem river with insufficient depth for upstream migration caused by shallow riffles, gravel bars, and beaver dams.[85] Each of these potential barriers are not significant during wet years, but can be problematic during normal and dry years when flows below the Bradbury Dam are not as strong. Historic migration conditions (prior to the Cachuma Project) provided 12 events where passage was

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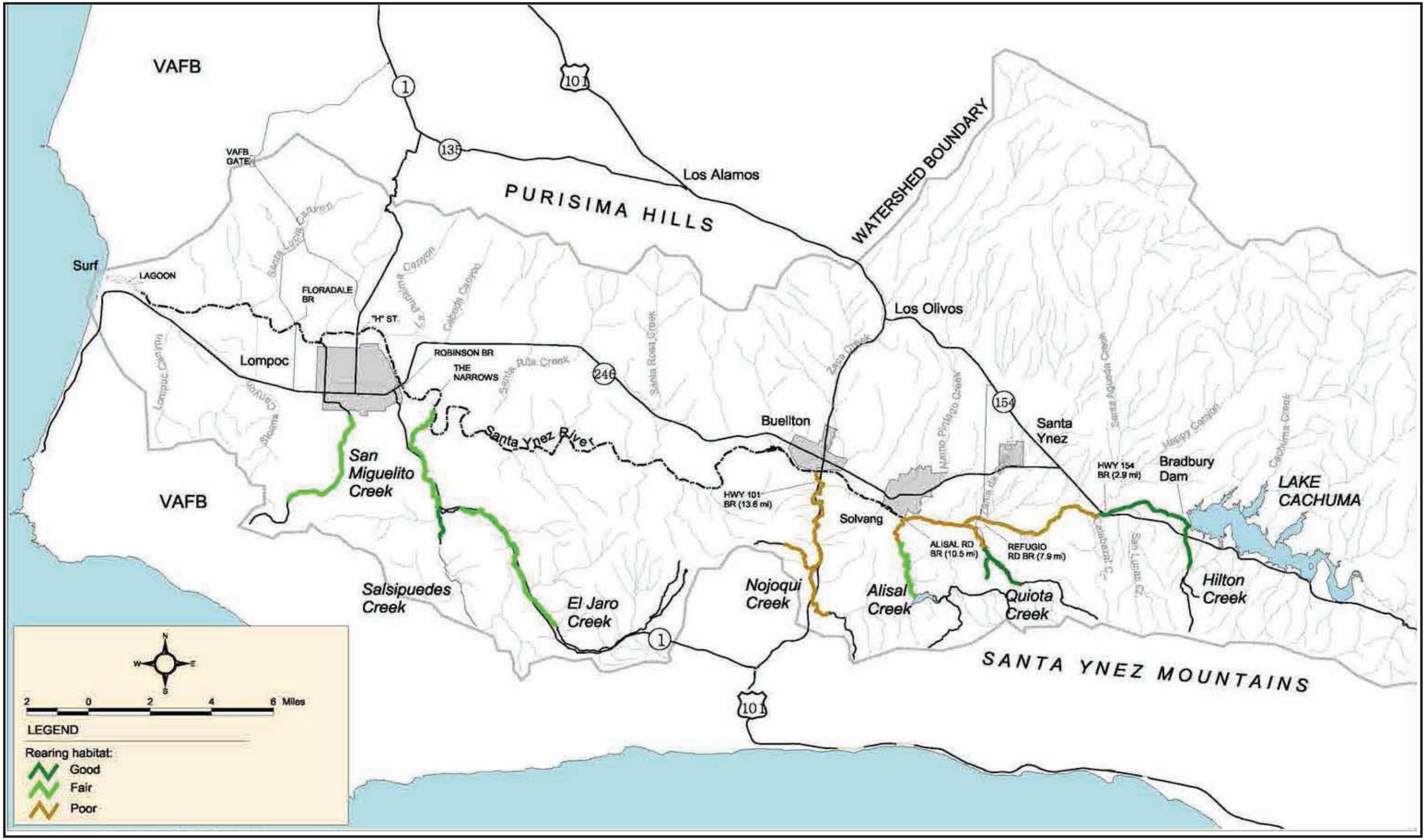
84 Santa Ynez River Technical Advisory Committee. 2000. *Lower Santa Ynez River Fish Management Plan*. Volumes I and II. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, CA. Final Report. October 2, 2000.

85 ENTRIX. 1995. *Fish resources technical report for the EIS/EIR*, Cachuma Project Contract



SOURCE: Cachuma Operation and Maintenance Board - 2010
Data from the Lower Santa Ynez River Steelhead/Rainbow Trout Monitoring and Habitat Restoration Program

FIGURE **5.3-2**

Meridian Consultants

Steelhead Rearing Habitat on the Lower River

001-001-12

possible for 3 days in 57 percent of years, and a lower percentage of years having few or no passage opportunities.[86] One of the main findings was that it was critical to assess flows at specific river reaches, rather than just rely on release volume from Bradbury Dam as a way of identifying conditions adequate to provide suitable passage opportunities.

Cachuma Fish Passage Supplementation Program

The purpose of the Fish Passage Supplementation Program is to extend migration opportunities for *O. mykiss* during the receding limb of a storm hydrograph occurring between January and May (fish migration period). Water releases from Cachuma Lake are provided according to a well-defined decision making criteria directed by the Adaptive Management Committee to specifically address the Terms and Conditions of the BO[87]. This program specifically addresses implementation of RPM No. 3 and the migration portion of RPM No. 15. The current implementation strategy relies upon the Real-Time Decision Group (RTDG), led by the Cachuma Project Biologist to monitor conditions in Cachuma Lake. The Cachuma Project Biologist monitors and evaluates hydrological and meteorological conditions, contacts other members of the RTDG and determines when conditions warrant supplemental releases to extend flows and prolong fish migration opportunities.

One of the key determinants of supplemental releases is that flows in the Santa Ynez River measured at the Solvang gauge must be 25 cfs or greater and accumulated flow from Salsipuedes Creek exceeds 1,000 af since October 1. The criteria specify that all storms in a migration season will be supplemented unless (1) flows at Solvang reach 25 cfs within the seven days following a prior migration flow release (the second storm will not be supplemented); (2) the AMC (or RTDG) determines that there is a greater biological benefit not to supplement a particular storm (saving water to supplement later storms); or, (3) there is no water left in the Fish Passage Account.[88]

Other fish species

Twenty-six species of fish inhabit the Santa Ynez River watershed (**Table 5.3-4, Native and Introduced Fish in the Santa Ynez River downstream of Lake Cachuma**), including 11 native species. Steelhead/rainbow trout, prickly sculpin, partially armored threespine stickleback, and Pacific lamprey are native to the Santa Ynez River and seven additional native species are found only in the lagoon

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86 Santa Ynez River Technical Advisory Committee. 1999. *Steelhead habitat analysis for the Santa Ynez River, CA*. Draft report. Prepared for Santa Ynez River Consensus Committee, Santa Barbara, CA.

87 National Marine Fisheries Service. 2000. *Biological Opinion*. U.S. Bureau of Reclamation Operation and Maintenance of the Cachuma Project on the Santa Ynez River in Santa Barbara County, California. September 11, 2000.

88 Real-Time Decision Making Group. 2007. 2006 Fish Passage Supplementation. Memorandum to Adaptive Management Committee, November 15, 2007.

(tidewater goby, Pacific herring, topsmelt, shiner perch, starry flounder, staghorn sculpin, and striped mullet). Fifteen fish species have been introduced to the watershed including the arroyo chub, large- and small-mouth bass, sunfish, and catfish, among others (**Table 5.3-4**). Of these, white crappie and threadfin shad are found only in Cachuma Lake.

Tidewater goby (Eucyclogobius newberryi)

The Santa Ynez River lagoon is not designated as critical habitat for the tidewater goby. Tidewater gobies are primarily found within the Vandenberg Air Force Base reach of the river, which has completed an Integrated Natural Resource Management Plan to direct conservation benefits. Tidewater gobies are not found in the main stem reach of the Santa Ynez River where the additional diversion or well site area is proposed (see **Figure 2.0-4**).

The tidewater goby is a small estuarine fish, rarely exceeding 2 inches in length, which inhabits lagoons and the tidally influenced region of rivers from San Diego County to Del Norte County, California. They are typically found in the upper ends of lagoons in brackish water, usually in salinities of less than 10 parts-per-thousand (ppt), but have been found in water ranging from 0 to 40 ppt.[89] Tidewater gobies are bottom dwellers and are typically found at depths of less than 3 feet. They prefer low-velocity habitats out of the main current. Tidewater gobies may spawn at any time of the year, but spawning typically peaks in late April through early May. Spawning takes place in burrows dug 4–8 inches deep in coarse sand. Spawning takes place at fairly low to moderate salinities (5 to 10 ppt). After hatching, the larval tidewater goby become planktonic (suspended in the water column) and are associated with aquatic plants in near-shore habitat. Juvenile tidewater goby are benthic dwellers, similar to adults. Tidewater gobies were common in the Santa Ynez River lagoon in 1987 and 1993, and both young-of-the-year and adults have been collected.[90]

In 1993, tidewater gobies were collected throughout the Santa Ynez River lagoon during seining surveys, in salinities ranging from 6.5 to 16.0 ppt.[91] Tidewater goby abundance was considerably higher in the upper half of the lagoon where the numbers of gobies per seine haul exceeded 100. The salinities in this portion of the lagoon ranged from approximately 8.0 to 13.5 ppt. Tidewater goby abundance in the lower half of the lagoon was considerably lower, ranging from one to 24 per seine haul. Corresponding

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89 Swift, C. C., J.L. Nelson, C. Maslow, and T. Stein. 1989. *Biology and distribution of the tidewater goby, Eucyclogobius Newberryi (Pisces: Gobiidae) of California*. Contributions in Science, Natural History Museum of Los Angeles County. 404:1-19.

90 Santa Ynez River Technical Advisory Committee. 1994. *SYRTAC Compilation Report: 1993*. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, CA.

91 Ibid. 1997. *Synthesis and Analysis of Information on the Fisheries Resources and Habitat Conditions of the Lower Santa Ynez River: 1993-1996*. Prepared for Santa Ynez River Consensus Committee, Santa Barbara, CA.

salinities in the lower half of the lagoon were approximately 14.0 to 16.0 ppt. During the August survey, most of the gobies observed were adult (i.e., approximately 1.5 inches in length). Observations in July 1994 indicated successful reproduction by tidewater gobies, as evidenced by the presence of large numbers of young-of-the-year. Overall, the lagoon appeared to be extremely productive.

Arroyo Chub (*Gila orcutti*)

The arroyo chub was introduced into the Santa Ynez River drainage during the early 1930s. Arroyo chub are native to the Los Angeles, San Gabriel, San Luis Rey, Santa Margarita, and Santa Ana River systems, as well as San Juan Creek. The arroyo chub is a relatively small, chunky minnow, typically less than 5 inches in length. Arroyo chub prefer slow-moving sections of rivers with sand or mud substrate, or standing waters in reservoirs. Although the arroyo chub seems to prefer very low water velocities, they are apparently adapted to surviving periodic high winter flows. They are adapted to survive in widely fluctuating water temperatures and oxygen levels. Arroyo chub were observed in a pool in the Santa Ynez River that had a predawn dissolved oxygen minimum level of approximately 1.6 ppm.[92] In 1993, SYRTAC[93] found arroyo chub along the river below the dam in abundant numbers in shallow pools. However, they were not observed in pools inhabited by large predators (bass and sunfish), and they were relatively scarce in riffle and run habitats. Arroyo chub are found throughout the Santa Ynez River Watershed.

Threespine Stickleback

Freshwater populations of threespine stickleback live in shallow, low-velocity habitats, often in association with aquatic plants. Spawning can occur from March through October. Threespine stickleback build nests in beds of aquatic plants with sand substrates. The diet of threespine stickleback consists of small organisms living on plants and the stream bottom. Stickleback generally live for one year or less, but some individuals may survive for two to three years. Threespine stickleback inhabit the Santa Ynez River above and below Cachuma Lake and are found in the Salsipuedes/El Jaro Creek system.

Prickly Sculpin

Prickly sculpin can live in an extremely wide range of habitats. Prickly sculpin are known to live in freshwater and saltwater, in streams that are small, clear, and cold, in rivers that are large, warm, and turbid, and in lakes of all sizes, rich in nutrients or infertile. They can tolerate water temperatures up to at

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92 Santa Ynez River Technical Advisory Committee. 1994. *SYRTAC Compilation Report: 1993*. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, CA.

93 Ibid. 1997. *Synthesis and Analysis of Information on the Fisheries Resources and Habitat Conditions of the Lower Santa Ynez River: 1993-1996*. Prepared for Santa Ynez River Consensus Committee, Santa Barbara, CA.

Table 5.3-4
Native and Introduced Fish in the Santa Ynez River downstream of Lake Cachuma

Common Name	Scientific Name	Status	Location
Steelhead/rainbow trout	*Oncorhynchus mykiss*	N[1]	RATCL
Threespine stickleback	*Gasterosteus aculeatus*	N	RATCL
Prickly sculpin	*Cottus asper*	N	RATCL
Pacific lamprey	*Lampetra tridentata*	N	R
Arroyo chub	*Gila orcutti*	I[2]	RATCL
Fathead minnow	*Pimephales promelas*	I	RTL
Mosquitofish	*Gambusia affinis*	I	RATCL
Smallmouth bass	*Micropterus dolomieui*	I	RACL
Largemouth bass	*Micropterus salmoides*	I	RATC
Bluegill	*Lepomis macrochirus*	I	RAC
Green sunfish	*Lepomis cyanellus*	I	RATCL
Redear sunfish	*Lepomis microlophus*	I	RC
Black crappie	*Pomoxis nigromaculatus*	I	RC
Channel catfish	*Ictalurus punctatus*	I	RACL
Black bullhead	*Ameiurus melas*	I	RATCL
Goldfish	*Carassius auratus*	I	RAC
Carp	*Cyprinus carpio*	I	RAC
Tidewater goby	*Eucyclogobius newberryi*	N[1]	L
Pacific herring	*Clupea harengus*	N	L
Topsmelt	*Atherinops affinis*	N	L
Shiner perch	*Cymatogaster aggregata*	N	L
Staghorn sculpin	*Leptocottus armatus*	N	L
Starry flounder	*Platichthys stallatus*	N	L
Striped mullet	*Mugil cephalus*	N	L
Brown trout	*Salmo trutta*	I	-3
Brook trout	*Salvelinus fontinalis*	I	-3
Walleye	*Stizostedion vitreum*	I	-3

[1] *Endangered species under the ESA*
[2] *California species of special concern.*
[3] *Introduction of these species was unsuccessful according to CDFG Region 5 data, so there is no location data.*
R = Santa Ynez River below Bradbury Dam; T = Tributary Streams; C = Lake Cachuma;
A = Santa Ynez River above Lake Cachuma; L = Santa Ynez River lagoon; N = Native species; I = Introduced species

least 82°F. Prickly sculpin inhabit Cachuma Lake, the Santa Ynez River below the lake, and the lower reaches of Hilton and Salsipuedes Creeks.

Pacific Lamprey

Pacific lamprey are anadromous, spending four to seven years in freshwater and one to two years in the ocean. Spawning lamprey, like *O. mykiss*, are dependent on winter storms providing sufficient

streamflow to open the mouth of the lagoon to the ocean, and to provide adequate streamflow to allow for upstream migration. Pacific lamprey spawning migration begins in February and lasts through early May. They build nests in gravel and rock substrates in areas of low velocity. The freshwater residency of the young is spent typically as bottom dwellers. Pacific lamprey inhabit the Santa Ynez River below Cachuma Lake and may inhabit the tributaries, although none have been observed in the tributaries.

Pacific Herring

Pacific herring are a small schooling marine fish that enter estuaries and bays to spawn. Pacific herring spawn from late October through March. After spawning has been completed, adult Pacific herring return to their ocean feeding grounds. After hatching, young herring usually remain through the spring and summer in the estuary or bay in which they were spawned before migrating to the ocean in the fall. Herring produced in the Santa Ynez River lagoon would likely remain until the following winter when high streamflow reopened the sandbar.

Topsmelt, Shiner Perch, Staghorn Sculpin, and Starry Flounder

Topsmelt, shiner perch, staghorn sculpin, and Starry flounder are common marine fish that also occur in estuaries and lower reaches of coastal streams. These species, particularly topsmelt and perch, exhibit a tolerance to a wide range of salinities. These species occur periodically in the Santa Ynez River lagoon.

5.3.4.2 Introduced Species

Thirteen introduced species have populations in the mainstem of the Santa Ynez River downstream of Cachuma Lake (**Table 5.3-4**). Most of these introduced species are game species or baitfish that were originally planted in Cachuma Lake but have since spread. Many of the game fish can prey on steelhead and other native species. Most notable among these predators are large- and small-mouth bass, green sunfish, and black bullhead (a type of catfish). The additional target flows provided to support *O. mykiss* downstream to the Alisal reach have also benefited these species by providing slightly more refugia pool depth and extended the duration of pool habitat that is favored by these primarily warm water species.

5.3.5 THRESHOLDS OF SIGNIFICANCE

In order to assist in determining whether a project would have a significant effect on the environment, the *State CEQA Guidelines* identify criteria for conditions that may be deemed to constitute a substantial or potentially substantial adverse change in physical conditions.

Specifically, Appendix G of the *State CEQA Guidelines* (Environmental Checklist Form) lists the following threshold, under which a project may be deemed to have a significant impact on fisheries resources if it would:

- Have a substantial adverse effect, either directly or through habitat modification, on any species identified as endangered, rare, or threatened, as listed in Title 14 of the California Code of Regulations (Section 670.2 or 670.5) or Title 50 of the Code of Federal Regulations (Sections 17.11 or 17.12).
- Have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the USFWS, CDFG, or NMFS.
- Substantially degrade the quality of the environment (CEQA Section 15065);
- Substantially reduce the habitat of a fish or wildlife species (CEQA Section 15065);
- Cause a fish or wildlife population to drop below self-sustaining levels (CEQA Section 15065);
- Substantially reduce the number or restrict the range of an endangered, rare, or threatened species (CEQA Section 15065);
- Reduce the area or habitat value of critical habitat areas designated under the Federal Endangered Species Act (FESA) (Essential Fish Habitat);
- Have a substantial adverse effect on any riparian habitat or other sensitive natural communities identified in local or regional plans, policies, regulations, or by USFWS, CDFG, or NMFS;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources;
- Substantially degrade structural characteristics or processes of the aquatic ecosystem;
- Substantially reduce populations of fish species having economic or social value.

5.3.6 ENVIRONMENTAL IMPACTS

The environmental impact analysis presented below is based on determinations made in the Notice of Preparation (NOP) for issues that were determined to be potentially significant with mitigation incorporated, or for issues identified by reviewing agencies, organizations, or individuals commenting on the NOP that made a reasonable argument that the issue was potentially significant (see Responses to NOP, **Appendix 1.0**).

5.3.6.1 Have a substantial adverse effect, either directly or through habitat modification, on any species identified as endangered, rare, or threatened, as listed in Title 14 of the California Code of Regulations (Section 670.2 or 670.5) or Title 50 of the Code of Federal Regulations (Sections 17.11 or 17.12).

Impacts

Construction

Temporary activities associated with installation of the wells could include: access by construction equipment, and grading and vegetation removal in a relatively small area (approximately 2,500-square-feet) for each well (which will be used for the drilling rig, stockpiling, and other equipment parking).

The development and testing of each well may require the release of up to approximately 300,000 gallons of pumped water.. Releases of this water will be directed in such a way as to avoid sedimentation, erosion and maximize groundwater recharge. As this water will be discharged at least 150 feet from the active river channel and the water will percolate back to the underflow, impacts to surface water quality or quantity, and subsequent effects on fish in the River, are not expected. As the proposed well sites will be located outside of the active channel, and above the ordinary high water mark, these impacts are expected to be temporary. Additionally, standard Best Management Practices (BPMs) associated with the SWPPP will be implemented in compliance with City and state policies and ordinances. Therefore, impacts would be less than significant.

Operation

Proposed Master Plan Update

The implementation of the proposed Master Plan Update provides for a number of improvements as described in **Section 2.0, Project Description**. These improvements, with the exception of the proposed new wells and extraction of water from the underflow of the Santa Ynez River as discussed below, will have no impact on fisheries resources.

Proposed Wells and Water Treatment Facilities

The City's analysis of its future water demand has determined that the full buildout need is 1,980 acre-feet per year (afy) of water with a maximum diversion rate of up to 5 cfs. This amount is greater than the currently documented use since 1990 (see **Table 3.0-2**) and the maximum annual diversion determined by the SWRCB (see **Section 3.6**, **Existing Use and Baseline**) of 1,053 afy at an extraction rate of 1.85 cfs.

However, diversion of up to 1,980 afy with a maximum diversion rate of up to 5 cfs would not result in the potential to significantly impact listed special-status fish species because the hydrology modeling of Stetson Engineers[94] indicates that groundwater elevation levels and stream flow would remain similar to the existing levels (see **Table 5.1-4, Monthly Average Groundwater Level Elevation** and **Table 5.1-7 Median Monthly Flow of the Santa Ynez River,** in **Section 5.1**).

Operation of up to six new wells located in either proposed Well Sites A or B may have limited long-term impacts on groundwater resources in the proposed Additional Reach of Diversion (see **Figure 2.0-4**) immediately downstream of Alisal Bridge. There are no current monitoring requirements specific to the Avenue of the Flags reach (from Alisal Bridge to Lompoc Narrows). Groundwater extraction downstream of Alisal Bridge within the Additional Reach of Diversion has been evaluated in the overall water balance for the Cachuma Project and for Stetson Engineers Technical Memorandum No. 6.[95]

Groundwater in the alluvial aquifer is in direct hydraulic communication with the river's surface flow. As previously noted, the proposed wells would be located outside of the active river channel and downstream of the Alisal Bridge.

Impacts to *O. mykiss* upstream migration would be considered less than significant as the implementation of the proposed Master Plan Update will not significantly alter winter flows.

The proposed well site locations A and B are downstream of the designated critical management reach for *O. mykiss,* which means additional releases for fish would not be required in order to maintain the habitat and target flows upstream of the Alisal Bridge. However, during dry years it is anticipated that additional releases from the Cachuma Project would be required in order to satisfy the water right requirements of the "Above Narrows" basin if the groundwater levels decrease in response to pumping further downstream. Coordination with other pumpers upstream and downstream is needed to ensure that sufficient flow is maintained to support survival and recovery of the species to a "good condition" during drought events. The BO does not identify the reach downstream of Alisal Bridge to be suitable for habitat maintenance.

An analysis by Stetson Engineers[96] modeled the portion of the Santa Ynez River directly downstream from Alisal Bridge, under both normal and drought conditions, including the proposed Additional Reach

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94 Stetson Engineers. Technical Memorandum No. 6. Additional Alternative Analyses for City of Solvang's CEQA Environmental Document for Time Extension for Water Rights Permit 15878 – New Wells Downstream of Alisal Bridge (see **Appendix 5.1).**

95 Ibid.

96 Ibid. Technical Memorandum No. 6. Additional Alternative Analyses for City of Solvang's CEQA Environmental Document for Time Extension for Water Rights Permit 15878 – New Wells Downstream of Alisal Bridge (see **Appendix 5.1**).

of Diversion (Well Sites A and B; see **Figure 2.0-4**). This analysis included potential changes to groundwater resources and related effects on water releases under provisions of WR 89-18 required to satisfy existing water right demands as well as provide fish releases as required by the BO and FMP. The analysis was completed using a diversion of 2,400 afy to provide a conservative margin above the 1,980 afy sought by Solvang. Stetson's analysis determined that with the 2,400 afy diversions the surface water flows in this reach were on average about the same as the current baseline of 1,053 afy and an extraction rate of 1.85 cfs. An increase in Solvang's diversion to 1,980 afy at an extraction rate of up to 5 cfs would have similar or lesser effects on flows required to meet fish flow targets in the BO. Modeling indicates that implementation of the BO would increase average flows at the Alisal Bridge (which is the downstream limit of target flows for fish) and thereby increases flows downstream of the Bridge, reducing any potential impacts on surface flow compared to the baseline of 1,053 afy.

In addition, the hydrological model Stetson Engineers[97] used for water extraction of 2,400 afy indicates the water drawdown, when the Santa Ynez River experiences no river or other inflows in the area, would be localized within about 3,000 feet of the well site and would lower the groundwater level a maximum of 9 feet (see **Table 5.1-5, Calculated Drawdown North of the Proposed Well Fields in Section 5.1, Hydrology, Water Supply** and **Water Quality**). The 9 foot localized drawdown is within the historical groundwater level fluctuation. As such, the effects of local drawdown of groundwater levels from the proposed wells along the Santa Ynez River downstream of Alisal Bridge would not extend to the Lompoc Narrows.

The modeling completed by Stetson is not meant to be predictive, but to be used as an analytical tool for statistical and comparative purposes.[98] Therefore, because there are no stream gage monitoring points downstream of Alisal Bridge until the Lompoc Narrows, actual impacts to the local groundwater and surface water flows on *O. mykiss* habitat within the proposed Additional Reach of Diversion (see **Figure 2.0-4**) are unknown and should be monitored to confirm modeling predictions.

Increases in Solvang pumping will increase Cachuma Project water shortages during droughts due to increases in water rights and fish water releases, which are directly related to the level of dewatered storage in the Santa Ynez River alluvium from which Solvang would be pumping. Based on the Stetson analysis, pumping at 2,400 afy, impacts to water supply in critical drought periods would decrease to 10,120 acre-feet as compared to 10,300 acre-feet for the baseline (pumping at 1,053 afy) for the critical drought year. The cumulative shortage would decrease to 20,470 acre-feet when withdrawing 2,400 afy as

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97 Stetson Engineers. Technical Memorandum No. 6. Additional Alternative Analyses for City of Solvang's CEQA Environmental Document for Time Extension for Water Rights Permit 15878 – New Wells Downstream of Alisal Bridge (see **Appendix 5.1**).

98 Ibid. Technical Memorandum No. 1, Hydrologic Impact Analysis for City of Solvang's CEQA Environmental Document for a Time Extension for Water Right Permit 15878, April 2004.

compared 20,910 acre-feet for baseline conditions (1,053 afy) for the three year critical drought period. As such, downstream of Alisal Bride in Well Sites A and B completely mitigates the impacts to the Cachuma Project supply compared to baseline conditions.[99] As the City proposes to withdraw 1,980 afy and not the 2,400 afy used in the analysis, impacts would be similar or have less impact.

Analysis by Stetson[100] shows that the impact on the average groundwater elevations in the Santa Ynez, Buellton, and Santa Rita sub-basins under downstream pumping conditions of 2,400 afy (Alternative GW5 in the Stetson analysis), is similar to the impact of the baseline pumping condition of 1,053 afy (Alternative GW4 in the Stetson analysis). As shown, there are no changes in groundwater level elevations in the Santa Ynez Sub-basin when pumping downstream at the 2,400 afy when compared to the baseline conditions of 1,053 afy. During droughts, water levels in the Santa Ynez sub-basin are also similar when pumping downstream at 2,400 afy (Alternative GW5) or at the baseline of 1,053 afy (Alternative GW4). Declines one to two feet do occur downstream in the Buellton Sub-basin when pumping increases from the baseline conditions (1,053 afy) to 2,400afy.

Stetson shows the impacts to water rights releases as simulated by the Santa Ynez River Hydrologic Model (SYRHM) for hydrologic period 1918-1993 (76 years). The Above Narrows Account is dependent upon groundwater storage in the Above Narrows Riparian Aquifer because the account cannot be larger than the dewatered storage. As shown by Stetson, the analysis indicates that WR89-18 releases would be increased as a result of increased pumping by Solvang; the average annual release would increase from 5,819 under baseline conditions (pumping at 1,053 afy; Alternative GW4) to 6,002 afy when pumping at 2,400 afy (Alternative GW5).[101] As the 2,400 afy is greater than the proposed project at 1,980 afy, impacts would be similar or less, and would be less than significant.

The proposed Well Sites A and B are downstream of the designated critical management reach for *O. mykiss.* Therefore, reduction in water levels in that reach where A and B are located will not trigger additional releases for fish. In addition, reductions in groundwater levels in that reach will generally not require additional releases to maintain the habitat and target flows upstream of the Alisal Bridge. Impacts to *O. mykiss* upstream migration would be considered less than significant as the implementation of the proposed Master Plan Update will not significantly alter winter flows.

During dry years it is anticipated that additional releases from the Cachuma Project would be required in order to satisfy the water right requirements of the "Above Narrows" account if the groundwater levels

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99 Stetson Engineers. Technical Memorandum No. 6. Additional Alternative Analyses for City of Solvang's CEQA Environmental Document for Time Extension for Water Rights Permit 15878 – New Wells Downstream of Alisal Bridge, Table 17. (see **Appendix 5.1**)

100 Ibid.

101 Ibid.

decrease in response to pumping further downstream. This would be implemented through SYRWCD and COMB's operational compliance with the BO.[102] As explained above in **Section 5.3.3.2 State Regulations**, the City is obligated to comply with the BO. Continued coordination between the City with other pumpers upstream and downstream will occur to ensure that sufficient flow is maintained to support survival and recovery of the species to a "good condition" during drought events. Impacts to *O. mykiss* from increases in pumping from new wells along the proposed extended area of diversion would be less than significant.

Wells will use submersible pumps, noise from which is negligible, and far below that of the current background levels. Night lighting would not be installed on the wells, and maintenance and monitoring of the wells would be conducted during daylight hours, accessing the sites along existing dirt roads. These impacts are therefore considered less than significant.

No impacts to federally endangered Tidewater goby are anticipated as a result of the proposed Master Plan Update as they are not found in this reach.

Mitigation Measures

The following mitigation measures shall be implemented:

Construction

FIS-1 Prior to initiating construction of wells within the 100-year floodplain of the Santa Ynez River, refugia pools and the wetted width of channels downstream of the Alisal Bridge within the proposed Additional Reach of Diversion for water right Permit 15878 (Extended Reach) shall be identified and documented by a qualified biologist.

FIS-2 No new wells or pipelines shall be constructed within 150 feet of the high water mark of the Santa Ynez River**.**

FIS-3 A qualified biologist shall be retained during drilling and construction of wells in Well Sites A and B to monitor operations and ensure that construction impacts on fisheries resources are avoided, or minimized, and to conduct daily surveys documenting the condition of refugia pools and the wetted channels mapped as part of **Mitigation Measure FIS-1**, that may be impacted as a result of construction or well development and testing. Responsibilities of the construction monitor include the following:

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102 National Marine Fisheries Service. 2000. Biological Opinion for U.S. Bureau of Reclamation operation and maintenance of the Cachuma Project on the Santa Ynez River in Santa Barbara County, California September 11, 2000.

- Prior to the initiation of construction activities, conduct a meeting with the contractor(s) and other key construction personnel describing the importance of restricting work to designated areas. The construction monitor shall attend pre-construction meetings to ensure that timing or location of construction activities do not conflict with mitigation requirements.
- Prior to initiating construction activities, mark or flag any refugia pools and/or wetted channels within 150 feet of the construction area in the field with the contractor in accordance with the final approved construction plan.
- Supervise cordoning of wetted channels and refugia pools that lie within 150 feet of the construction areas (*e.g.*, with temporary fence posts and colored rope).
- Conduct a field review of the staking of well sites and pipelines designating the limits of all construction activity.
- Conduct daily site visits during construction to coordinate and monitor compliance.

FIS-4 Construction activities in Well Sites A and B shall be limited to the months of July through November during low flow conditions.

Operational

FIS-5 The Water Division of the Public Works Department of the City of Solvang, in coordination with other agencies involved with the management of the Santa Ynez River, will develop and implement an Operational Pumping Plan, including timing, rates of drawdown from each well, seasonal restrictions, and triggers to ensure that during critical drought periods dewatering associated with groundwater pumping does not adversely impact surface flows within the permitted Expanded Reach of Diversion.

Residual Impacts

Implementation of proposed **Mitigation Measures FIS-1** through **FIS-5** would reduce direct impacts to less than significant (Class II) resulting from construction and operation of the proposed new water wells. Indirect impacts related to site preparation and construction activities would also be reduced to less than significant (Class II).

5.3.6.2 Have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the USFWS, CDFG, or NMFS.

Impacts

There are no applicable local or regional plans that reference any candidate, sensitive or special-status fish species in the project area except for the *O. mykiss* as discussed in the *Final Southern Steelhead Recovery Plan*.[103]

As previously noted, the *Final Southern Steelhead Recovery Plan* identifies the Monte Arido Highlands Biographic Population Group (BPG) which includes the Santa Ynez River. The Plan list the Santa Ynez River as Core 1 population, which has a high priority for recovery.[104] Critical recovery actions identified for the Santa Ynez River include implementing operating criteria to:

- ensure the pattern and magnitude of water releases from Bradbury, Gibraltar, and Juncal dams provide the essential habitat functions to support the life history and habitat requirements of adult and juvenile steelhead;
- physically modify Bradbury, Gibraltar, Mono, and Juncal dams to allow natural rates of steelhead migration to upstream spawning and rearing habitats, and passage of smolts and kelts downstream to the estuary and ocean; and
- identify, protect, and, where necessary, restore estuarine and freshwater rearing habitats.

The provisions of WR 89-18 for the Cachuma Project mandates that water releases from Bradbury Dam be coordinated to maintain sustainable habitat and support recovery of steelhead populations. Increasing Solvang's maximum annual pumping by 927 afy above the baseline (1,053 afy with an extraction rate of 1.85 cfs) to 1,980 afy with a maximum diversion rate of up to 5 cfs would incrementally reduce groundwater storage in the Santa Ynez River underflow in the vicinity of the proposed new wells downstream of Alisal Bridge. This is unlikely to require Reclamation to increase water rights releases from Bradbury Dam to provide fish flows consistent with the Cachuma Project BO because the significant Solvang pumping will occur in the dry months. During that time, Alisal Bridge is the farthest downstream that fish flows are required by the BO. Because Solvang's pumping will dewater the

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103 National Marine Fisheries Service. *Southern California Steelhead Recovery Plan*. Public Review Draft Version. Southwest Regional Office, Long Beach, California. January 2012.

104 Ibid, Table 9-3.

groundwater storage, however, it could require additional releases of water rights water from the Above Narrows Account. These additional flows could have an incremental benefit for the steelhead, other fish species.

The Water Master Plan Update would not require any physical modifications to any upstream facilities inclsung Bradbury, Gibraltar, Mono, and Juncal dams. Also, the Water System Master Plan Update does not require or suggest any physical changes to estuarine and freshwater rearing habitats.

Finally, as previously noted, the management of flows in the Santa Ynez River and of the *O. mykiss* are subject to the BO.[105] As explained above in **Section 5.3.3.2 State Regulations**, the City is obligated to comply with the BO. Continued coordination between the City with other pumpers upstream and downstream will occur to ensure that sufficient flow is maintained to support survival and recovery of the species to a "good condition" during drought events. Impacts to *O. mykiss* from increases in pumping from new wells along the proposed extended area of diversion would be less than significant.

Therefore, the proposed project would not conflict with the Final Southern Steelhead Recovery Plan.

Construction

Construction activities, including the proposed well drilling and construction, would temporarily impact small areas (approximately 2,500 square feet) for each of the well sites, as well as require the clearing of vegetation in a path (approximately 25 to 30 feet wide) connecting the lateral pipelines from the wells to the main conveyance system. Depending on the final well site selection for individual wells in either Well Sites A or B, there could be impacts to slopes along the riverbank as well.

As the proposed well sites are located outside of the active channel, and above the ordinary high water mark, impacts to habitat along the river edge are expected to be temporary and less than significant. The City would implement standard BMPs associated with the SWPPP in compliance with City and SWRCB policies and ordinances. Implementation of BMPs and revegetation according to CDFG standards required of Section 1602 streambed alteration agreements will reduce these impacts to less than significant.

Construction activities, including the proposed well drilling and construction, would temporarily impact small areas for each of the well sites, as well as require the clearing of vegetation connecting the lateral pipelines from the wells to the main conveyance system. Depending on the final well site selection for

[105] National Marine Fisheries Service. 2000. Biological Opinion for U.S. Bureau of Reclamation operation and maintenance of the Cachuma Project on the Santa Ynez River in Santa Barbara County, California September 11, 2000.

individual wells in either Well Sites A or B, there could be impacts to slopes along the riverbank. Impacts would be potentially significant.

For wells located outside of the City's boundary in unincorporated Santa Barbara County, the City would be required to comply with Santa Barbara County Ordinance No. 3095 that establishes creek and river setback requirements to address flood hazards to structures and other development.[106] In general, development shall be set back a minimum of 50 feet from the top of bank of streams and creeks and 200 feet from the top of bank of the Santa Ynez River.

The proposed water treatment plant is located in the Alisal Commons open space area but would not impact fisheries resources during construction. Impacts from construction to non-listed special-status species would be less than significant.

Operation

Proposed Master Plan Update

As previously noted, the City's proposed increase in water diversion via groundwater wells to 1,980 afy with a maximum diversion rate of up to 5 cfs from the baseline of 1,053 cfs at an extraction rate of 1.85 cfs would not result in the potential to significantly impact non-listed special-status fish species. Impacts to the Arroyo chub (California Species of Special Concern) are anticipated to be less than significant, as these small fish are adapted to seasonally interrupted flow conditions and move into refugia habitat as flows decrease during warm months.

As previously discussed, surface water flow in the Santa Ynez River would remain similar to the baseline (see **Table 5.1-4,** and **Table 5.1-7** in **Section 5.1**).

As analyzed under **Impact Threshold 5.1.6.1, i**mpacts to *O. mykiss* during various life stages and critical habitat during periods of low flow and drought conditions would be less than significant.

Mitigation Measures

Mitigation Measures FIS-1 through **FIS-5** shall be implemented. No additional mitigation is required.

Residual Impacts

Implementation of proposed **Mitigation Measures FIS-1** through **FIS-5** would reduce direct and indirect impacts to less than significant (Class II).

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[106] Santa Barbara County Ordinance No. 3095, County Code 15B, Development Along Watercourses.

5.3.6.3 Substantially degrade the quality of the environment (CEQA Section 15065).

Impacts

Implementation of the various components of the Master Plan Update is not expected to result in a substantial degradation of the quality of the environment. Additionally, the proposed increase in water diversion to 1,980 afy with a maximum diversion rate of up to 5 cfs from the baseline of 1,053 cfs at 1.85 cfs via groundwater wells from the underflow of the Santa Ynez River would not result in a substantial degradation of the quality of the environment. Impacts would be less than significant.

Construction

Short term impacts associated with construction would be less than significant with the implementation of BMPs associated with the SWPPP in compliance with City and SWRCB policies and ordinances (see prior discussion under **Impact 5.3.6.1**).

Construction activities, including the proposed well drilling and construction, would temporarily impact small areas for each of the well sites, as well as require the clearing of vegetation to construct the lateral pipelines from the wells to the main conveyance system. Depending on the final well site selection for individual wells in either Well Sites A or B, there could be impacts to slopes along the riverbank as well. Impacts would be potentially significant.

The proposed water treatment plant is located in the Alisal Commons open space area but would not impact fisheries resources during construction. Impacts would be less than significant.

Operation

Proposed Master Plan Update

Implementation of the various components of the proposed Master Plan Update is not expected to result in a substantial degradation of the quality of the environment.

Proposed Wells and Water Treatment Facilities

As discussed under **Impact 5.3.6.1**, the project would not result in significant impacts associated with routine operation and maintenance of the proposed new wells, or with impacts associated with extraction of groundwater resources. Long-term impacts associated with maintenance operations would be less than significant as disturbances would not cause substantial degradation to the quality of the environment.

Mitigation Measures

Mitigation Measures FIS-1 through **FIS-5** shall be implemented.

Residual Impacts

Implementation of proposed **Mitigation Measures FIS-1** through **FIS-5** would reduce direct and indirect impacts related to less than significant (Class II)

5.3.6.4 Substantially reduce the habitat of a fish or wildlife species (CEQA Section 15065).

Impacts

As discussed under **Impact 5.3.6.1**, implementation of the Master Plan Update would not result in a substantial reduction of the habitat for a fish or wildlife species.

The proposed increase in water diversion to 1,980 afy of water with a maximum diversion rate of up to 5 cfs from the baseline of 1,053 afy and 1.85 cfs via groundwater wells from the underflow of the Santa Ynez River would not result in a substantial reduction in the habitat of a fish species. Impacts would be less than significant.

Construction

Construction of the proposed new wells could have the potential to impact the critically designated habitat for *O. mykiss*, and could temporarily disrupt the connectivity of fisheries habitat. However, as previously discussed, short term impacts associated with construction will be less than significant with the implementation of BMPs associated with the SWPPP in compliance with City and SWRCB policies and ordinances.

Implementation of the proposed Master Plan Update could result in temporarily impacts to small areas of land for each potential well sites, as well as require the clearing of vegetation connecting the lateral pipelines from the wells to the main conveyance system. Depending on the final well site selection, there could be impacts to slopes along the riverbank as well. These impacts are potentially significant.

Operation

As discussed under **Impact 5.3.6.1** above, long-term operation of the proposed new wells of 1,980 afy at an extraction rate of up to 5 cfs, is expected to result in fish flow operations on average at about the same level as the current baseline of 1,053 afy at an extraction rate of 1.85 cfs based on the modeled analysis by

Stetson Engineers.[107] Therefore, impacts would not substantially reduce the habitat of any fish species and are considered to be less than significant.

Mitigation Measures

Mitigation Measures FIS-1 through **FIS-5** shall be implemented.

Residual Impacts

Implementation of proposed **Mitigation Measures FIS-1** through **FIS-5** would reduce direct and indirect impacts to less than significant (Class II).

5.3.6.5 Cause a fish or wildlife population to drop below self-sustaining levels (CEQA Section 15065).

Impacts

As previously discussed under **Impact 5.3.6.1**, implementation of the various components of the proposed Master Plan Update, with the exception of the construction of the proposed wells, would not have the potential to cause a fish population to drop below self-sustaining levels. Impacts would be less than significant.

Construction

As discussed under **Impact 5.3.6.2**, drilling and construction of the proposed new wells could temporarily impact a small area for each well sites. This would include the clearing of vegetation around each well site and connecting the lateral pipelines from the new wells to the main conveyance system. Depending on the final well site selection, there could be impacts to slopes along the riverbank. These impacts are potentially significant.

Operation

As discussed under **Impact 5.3.6.1**, the City proposes to increase Santa Ynez River underflow diversion to 1,980 afy of water with a maximum diversion rate of up to 5 cfs, which is greater than the currently documented diversion amount of 1,053 afy at an extraction rate of 1.85 cfs. Long-term operation of the proposed new wells at 1,980 afy with a maximum extraction rate of up to 5 cfs is expected to result in fish flow operations, on average, similar to the current baseline of 1,053 afy at extraction rates of 1.85 cfs based

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107 Stetson Engineers. Technical Memorandum No. 6. Additional Alternative Analyses for City of Solvang's CEQA Environmental Document for Time Extension for Water Rights Permit 15878 – New Wells Downstream of Alisal Bridge. (**Appendix 5.1.**)

on the modeled analysis by Stetson Engineers.[108] As such, diversion of up to 1,980-afy would not cause the fish population to drop below self-sustaining levels. Impacts would be less than significant.

Mitigation Measures

Mitigation Measures FIS-1 through **FIS-5** shall be implemented.

Residual Impacts

Implementation of proposed **Mitigation Measures FIS-1** through **FIS-5** would reduce direct and indirect impacts to less than significant (Class II).

5.3.6.6 Substantially reduce the number or restrict the range of an endangered, rare, or threatened species (CEQA Section 15065).

Impacts

As previously discussed, with the exception of the construction of the proposed wells, implementation of the various components of the proposed Master Plan Update would not be expected to result in a substantial reduction in the number or restrict the range of an endangered, rare, or threatened fish species. Impacts would be less than significant.

Construction

As previously noted, drilling and constructing the proposed new wells would temporarily impact a small area for each potential well site, as well as require the clearing of vegetation to construct the lateral pipelines from the wells to the main conveyance system. Depending on the final well site selection, there could be impacts to slopes along the riverbank as well. These impacts are potentially significant.

Operation

The City proposes to increase water diversion to 1,980 afy with a maximum diversion rate of up to 5 cfs via groundwater wells from the underflow of the Santa Ynez River. Long-term operation of the proposed new wells is expected to result in average fish flow operations at similar levels to the current baseline of 1,053 afy at an extraction rate of 1.85 cfs based on the modeled analyses by Stetson Engineers. Because the conditions would be similar to the baseline, the diversion of 1,980-afy would not result in a substantial reduction in the number or restrict the range of an endangered, rare, or threatened fish species. A more

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108 Stetson Engineers. Technical Memorandum No. 6. Additional Alternative Analyses for City of Solvang's CEQA Environmental Document for Time Extension for Water Rights Permit 15878 – New Wells Downstream of Alisal Bridge. (**Appendix 5.1.**)

detailed analysis is provided under **Impact Threshold 5.3.6.1** above. Impacts would be less than significant.

Mitigation Measures

Mitigation Measures FIS-1 through **FIS-5** shall be implemented.

Residual Impacts

Implementation of proposed **Mitigation Measures FIS-1** through **FIS-5** would reduce direct and indirect impacts to less than significant (Class II).

5.3.6.7 Reduce the area or habitat value of critical habitat areas designated under FESA (Essential Fish Habitat).

Impacts

Implementation of the various components the proposed Master Plan Update, with the exception of the proposed wells, would not potentially result in a reduction of the area or habitat value of critical habitat areas designated under FESA (Essential Fish Habitat).

Construction

As previously discussed, the proposed Master Plan Update would temporarily impact a small area for each of the proposed new well sites as, and will require the clearing of vegetation connecting the lateral pipelines from the proposed new wells to the main conveyance system. Depending on the final well site selection, there could be impacts to slopes along the riverbank as well. These impacts are potentially significant.

Operation

The City Master Plan Update proposes to increase water diversion to 1,980 afy with a maximum diversion rate of up to 5 cfs. Long-term operation of the proposed new wells is expected to result in, on average, similar fish flow operations to the current baseline of 1,053 afy at an extraction rate of 1.85 cfs based on the modeled analysis by Stetson Engineers. As discussed in **Impact Threshold 5.3.6.1**, diversion of the 1,980-afy with a maximum diversion rate of 5 cfs of Santa Ynez River underflow would not result in a reduction of the area or habitat value of critical habitat areas designated under FESA. Impacts would be less than significant.

Long-term impacts associated with maintenance operations will be less than significant with the implementation of routine standard practices and BMPs.

Mitigation Measures

Mitigation Measures FIS-1 through **FIS-5** shall be implemented.

Residual Impacts

Implementation of proposed **Mitigation Measures FIS-1** through **FIS-5** would reduce direct and indirect impacts to less than significant (Class II).

5.3.6.8 Cause a substantial adverse effect on any riparian habitat or other sensitive natural communities identified in local or regional plans, policies, regulations, or by USFWS, CDFG, or NMFS.

Impacts

Implementation of the various components of the proposed Master Plan Update, except for construction of new wells along the Santa Ynez River, would not potentially result in a substantial adverse effect on any USFWS, CDFG, or NMFS locally or regionally identified riparian habitat or other sensitive natural communities. Impacts would be less than significant.

Construction

Short-term impacts are associated with construction of the proposed new wells and would be less than significant. However, as previously noted under **Impact 5.3.6.1**, construction of new wells along the Santa Ynez River would temporarily impact a small area for each of the future well sites, as well as require the clearing of vegetation to construct the lateral pipelines from the wells to the main conveyance system. Depending on the final well site selection, there also could be impacts to slopes along the riverbank as well. These impacts are potentially significant.

Operation

As is described in **Impact Threshold 5.3.6.1**, long-term operation of the proposed new wells to provide 1,980 afy at an extraction rate of up to 5 cfs is expected to result in average fish flow operations similar to the current baseline of 1,053 afy at an extraction rate of 185 cfs based on the modeled analysis by Stetson

Engineers.[109] As such, diversion of the 1,980-afy with a maximum diversion rate of up to 5 cfs would not result in an adverse effect on any USFWS, CDFG, or NMFS locally or regionally identified riparian habitat or other sensitive natural communities.

The extraction of groundwater underflow of the Santa Ynez River associated with the water pumping could cause local depressions in the groundwater levels. If the water levels were to drop below the root zone of the riparian vegetation for an extended period of time, these plants could become stressed and could eventually die. The long-term modeling of Stetson Engineers, as presented in **Table 5.1-4** and **Table 5.1-7** in **Section 5.1 Hydrology, Water Supply and Water Quality**, indicates that water flow levels would be similar to the baseline. Therefore, operational impacts to riparian vegetation regulated by the CDFG would be less than significant.

Operation of the proposed water treatment plant would not exert any additional impacts on riparian or sensitive vegetation types beyond those of construction. Impacts would be less than significant.

Long-term impacts associated with maintenance operations will be less than significant.

Mitigation Measures

Mitigation Measures FIS-1 through **FIS-5** shall be implemented.

Residual Impacts

Implementation of proposed **Mitigation Measures FIS-1** through **FIS-5** would reduce the direct and indirect impacts of constructing up to six new water wells along the Santa Ynez River downstream of Alisal Bridge, to less than significant (Class II).

5.3.6.9 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.

Impacts

Implementation of the various components of the proposed Master Plan Update, with the exception of the proposed wells along the Santa Ynez River, are not expected to result in a substantial impediment to

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109 Stetson Engineers. Technical Memorandum No. 6. Additional Alternative Analyses for City of Solvang's CEQA Environmental Document for Time Extension for Water Rights Permit 15878 – New Wells Downstream of Alisal Bridge. (**Appendix 5.1.**)

the movement of any native resident or migratory fish species or with established native resident or migratory wildlife corridors. Impacts will be less than significant.

Construction

As previously discussed (see **Impact 5.3.6.1**), drilling and construction of the proposed new wells would temporarily impact a small area for each potential well site as well as require the clearing of vegetation in a path connecting the lateral pipelines from the wells to the main conveyance system. Depending on the final well site locations, there could be impacts to slopes along the riverbank as well. These impacts are potentially significant.

Operation

The proposed City Master Plan Update would increase water diversion to 1,980 afy with a maximum diversion rate of up to 5 cfs. As is described in **Impact Threshold 5.3.6.1** above, long-term operation of the proposed new wells is expected to result in average fish flow operations similar to the current baseline of 1,053 afy at an extraction rate of 1.85 cfs based on the modeled analysis by Stetson Engineers.[110] Impacts would be less than significant.

Mitigation Measures

Mitigation Measures FIS-1 through **FIS-5** shall be implemented.

Residual Impacts

Implementation of proposed **Mitigation Measures FIS-1** through **FIS-5** would reduce direct and indirect impacts to less than significant (Class II) resulting from operation of new water wells.

5.3.6.10 Conflict with any local policies or ordinances protecting biological resources.

Impacts

Implementation of the various components of the proposed Master Plan Update would not be expected to be in conflict with local policies or ordinances protecting fisheries resources as the Solvang Conservation and Open Space Element Policy 4-a requires that all development proposals provide adequate mitigation measures for identified significant biological resources, including fisheries resources

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110 Stetson Engineers. Technical Memorandum No. 6. Additional Alternative Analyses for City of Solvang's CEQA Environmental Document for Time Extension for Water Rights Permit 15878 – New Wells Downstream of Alisal Bridge. (**Appendix 5.1.**)

such as *O. mykiss*. Further, Santa Barbara County's Santa Ynez Valley Community Plan includes Policy BIO-SYV-7 that states that Southern California steelhead trout is a federally listed endangered species that shall be protected..

As demonstrated in the prior analysis (see **Impact 5.3.6.1**), the proposed water diversion of the 1,980-afy with a maximum diversion rate of up to 5 cfs, a 927 afy increase above the established baseline of 1,053 afy and an extraction rate of 1.85 cfs, would not result in either surface or groundwater conditions that would conflict with local policies or ordinances protecting fisheries.

The implementation of the individual components of the proposed Master Plan Update would comply with all local policies and/or ordinances protecting biological resources. The proposed project would be required to obtain necessary permits from CDFG (1602 Streambed Alteration Agreement), Regional Water Quality Control Board (401 Permit), USACE (404 Permit). Compliance with these regulatory and trustee agency permits would result in less than significant impacts for compliance with state and federal statutes. Further, the regulatory and trustee agencies would protect fisheries resources through enforcement to insure implementation of all conditions in such required permits. Impacts would be less than significant.

Although not a local policy or ordinance, the City is obligated to comply with implementation of the BO for the Cachuma Project (see **Section 5.3.3.2 State Regulations** above). According to the Stetson Engineers analysis (see **Impact 5.3.6.1**),[111] locating the proposed new wells downstream of Alisal Bridge about 1.5 miles would mitigate potential impacts to *O. mykiss* because increased pumping downstream of Alisal Bridge would have less impact on river flows than compared to upstream pumping. The FMP has indicated that Alisal Bridge is the farthest downstream Santa Ynez River location from the Bradbury Dam in which the public trust *O. mykiss* has good to fair quality habitat conditions.[112] Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

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111 Stetson Engineers. Technical Memorandum No. 6. Additional Alternative Analyses for City of Solvang's CEQA Environmental Document for Time Extension for Water Rights Permit 15878 – New Wells Downstream of Alisal Bridge. 6.0 Summary and Conclusions. (see **Appendix 5.1**)

112 Santa Ynez River Technical Advisory Committee. 2000. Lower Santa Ynez River Fish Management Plan. Volume I. Page 2-54. Prepared for the Santa Ynez River Consensus Committee, Santa Barbara, California. Final Report. October 2, 2000.

Residual Impacts

Impacts would be less than significant (Class III).

5.3.6.11 Substantially degrade structural characteristics or processes of the aquatic ecosystem.

Impacts

Implementation of the various components of the proposed Master Plan Update, with the possible exception of the proposed wells along the Santa Ynez River, would not substantially degrade any structural characteristics or process of the aquatic system. Impacts will be less than significant.

Construction

Installation of proposed new wells along the Santa Ynez River as part of the proposed Master Plan Update has potential short-term and long-term impacts that could substantially degrade structural characteristics or processes of the aquatic system. Short-term impacts are associated with construction of the wells, while long-term impacts are associated with both maintenance operations and extraction of groundwater resources. Short-term impacts to riparian vegetation and the areas surrounding the wells associated with construction would be less than significant.

As previously discussed (see **Impact 5.3.6.1**), the installation of the proposed new wells would temporarily impact a small area for each potential well site, as well as require the clearing of vegetation to construct the lateral pipelines from the wells to the main conveyance system. Depending on the final well site selection, there also could be impacts to slopes along the riverbank. These impacts are less than significant with implementation of BMPs associated with the SWPPP in compliance with City and SWRCB policies and ordinances and revegetation meeting or exceeding permit requirements.

Operation

The proposed increase in diversion to 1,980 afy with a maximum diversion rate of up to 5 cfs from the Santa Ynez River underflow is discussed under **Impact Threshold 5.3.6.1** above. Long-term operation of the proposed new wells is expected to result, on average, in fish flows similar to the current baseline of 1,053 afy at an extraction rate of 1.85 cfs based on the modeled analysis by Stetson Engineers. Therefore, the diversion of 1,980-afy would not result in a substantial degradation of the structural characteristics or processes of the aquatic ecosystem. Impacts would be less than significant.

Mitigation Measures

Mitigation Measures FIS-1 through **FIS-5** shall be implemented.

Residual Impacts

Implementation of proposed **Mitigation Measures FIS-1** through **FIS-5** would reduce direct and indirect impacts to less than significant (Class II).

5.3.7 CUMULATIVE ANALYSIS

5.3.7.1 Cumulative Impacts

The proposed Master Plan Update would replace the existing Water System Master Plan to provide the City with an adequate and reliable water supply and infrastructure to meet future demand forecast in the City's General Plan at buildout. The previous discussion on project specific impacts (see **Impact 5.3.6.1**) associated with the implementation of the proposed Master Plan Update and the proposed water right Permit 15878 revisions concluded that impacts could be potentially significant but they can be reduced to less than significant with the required mitigation. The project contribution to cumulative impacts to fisheries resources could also be potentially significant.

Impacts associated with installation of new wells within the proposed well site location A and B are short-term and less than significant with mitigation, the impacts associated with long-term extraction of groundwater resources is less than significant because the riparian groundwater basin refills almost every winter.

Increasing Solvang's maximum annual pumping by 927 afy above the baseline (1,053 afy with an extraction rate of 1.85 cfs) to 1,980 afy with a maximum diversion rate of up to 5 cfs would incrementally reduce groundwater store in the Santa Ynez River underflow in the vicinity of the proposed new wells downstream of Alisal Bridge. This is likely to require Reclamation to increase water rights releases from Bradbury Dam to provide fish flows consistent with the Cachuma Project BO because the significant Solvang pumping will occur in the dry months; during that time, the BO requires fish flows downstream of Alisal Bridge. Because Solvang's pumping will dewater the groundwater storage, however, it could require additional releases of water rights water from the Above Narrows Account. These additional flows could have an incremental benefit for the steelhead, other fish species and riparian vegetation.

The City, Alisal Ranch and other water rights holders on the Santa Ynez river, and the Cachuma Project Contractors currently coordinate their water diversions and environmental restoration efforts. All parties recognize that exercising their individual rights without careful coordination would potentially impact

water available to each entity, as well as the flows required to support *O. mykiss*. Therefore, various agreements currently formalize some aspects of coordination to minimize impacts. Without the continued increases in coordination between the Santa Ynez River water right holders, water diversion downstream of the Bradbury Dam could result in significant impacts.

The BO that regulates the support and recovery of *O. mykiss* in the lower Santa Ynez River formally covers only the Cachuma Project. However, water rights holders on the Santa Ynez River have entered into an agreement with the Cachuma Project members to coordinate efforts to comply with requirements of the BO.[113]. A reconsultation with NMFS has recently been initiated and could result in identification of additional RPMs associated with flow management. Downstream of the Alisal Bridge, where Solvang proposes to install new wells to increase its diversions, the habitat is presently not as good as that found upstream of the bridge; however, further degradation of this reach would potentially incrementally reduce connectivity and further reduce habitat quality over time. Therefore, it is important that the proposed increased diversion of Santa Ynez River underflow, at worst, maintains conditions consistent with the current baseline. The proposed extraction of groundwater resources (even with the proposed new wells located below the Alisal Bridge flow target area) could require additional releases by the Cachuma Project to support groundwater recharge in the "Above Narrows" groundwater basin. Those additional flows will provide some mitigation for potential impacts of Solvang's increased pumping.

Potential impacts to steelhead migration, spawning and rearing during drought periods, and associated with continuing warming trends in Southern California as a consequence of global climate change are also of concern. The cumulative impact of additional City demands from the Santa Ynez River riparian groundwater basin would be managed as part of water rights releases to the above and below Narrows areas.

5.3.7.2 Cumulative Mitigation Measures

The cumulative impact of additional water right extractions would be managed as part of the downstream water rights releases. Participants in a regional coordinated water management effort may include Alisal Ranch, ID No. 1, the City of Solvang, and other water right holders along the Santa Ynez River and in the proximity of the Alisal Bridge, both upstream and downstream.

FIS-6 The City of Solvang shall continue to coordinate with Alisal Ranch and ID No. 1 on their water demands and diversion of water from the Santa Ynez River. This shall include

[113] National Marine Fisheries Service. 2000. *Biological Opinion*. U.S. Bureau of Reclamation Operation and Maintenance of the Cachuma Project on the Santa Ynez River in Santa Barbara County, California. September 11, 2000.

coordination with the Santa Ynez River Water Conservation District for water rights releases from Lake Cachuma.

FIS-7 The City shall update the Conservation Element of the City's General Plan to include goals and policies that address the City's contribution to cumulative effects related to extraction of groundwater resources throughout the designated critical habitat reach downstream from the Bradbury Dam and offer to participate in a regionally coordinated water management solution that protects *O. mykiss*.

Residual Cumulative Impacts

Impacts associated with the proposed Master Plan Update and the proposed water right Permit 15878 revisions would be less than significant through the application of the recommended cumulative **Mitigation Measure FIS-6** and **FIS-7** (Class II). Residual cumulative impacts associated with the construction and installation of the proposed new wells and lateral pipelines are less than significant (Class II) as a result of **Mitigation Measures FIS-1** to **FIS-4,** and the continued implementation of the RPM 1 (Terms & Conditions 1[1]) to maintain and monitor residual pool depth in Alisal and Refugio reaches during spill years and the first year after spill years, if steelhead are present.

Residual cumulative impacts associated with ongoing operation and maintenance of the proposed new wells can be reduced to less than significant by implementing a regional, coordinated water extraction plan that protects the public trust fisheries resources, as provided in the **Mitigation Measure FIS-6** (Class II).