UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

California Department of Water Resources
and the City of Los Angeles Project No. 2426-197

# NOTICE OF AVAILABILITY OF FINAL ENVIRONMENTAL ASSESSMENT

(June 12, 2008)

In accordance with the National Environmental Policy Act of 1969 and Federal Energy Regulatory Commission (Commission or FERC) regulations, 18 CFR Part 380, the Office of Energy Projects staff (staff) reviewed the application for amendment of project license for the California Aqueduct Project, located on Piru Creek in California and prepared an environmental assessment (EA) for the project. A draft EA was prepared and issued for public comment on March 1, 2007. In this final EA, staff analyzes the potential environmental effects of the proposed minimum flow modification and concludes that amending the license as proposed with staff-recommended additional measures would not constitute a major federal action significantly affecting the quality of the human environment.

A copy of the final EA is available for review at the Commission in the Public Reference Room, or it may be viewed on the Commission's web site at http://www.ferc.gov using the "e-Library" link. Enter the docket number P-2426-197 (excluding the last three digits in the docket number field) to access the document. For assistance, contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll-free at 1-866-208-3676, or for TTY, (202) 502-8659.

You also may register online at http://www.ferc.gov/docs-filing/esubscription.asp to be notified via email of new filings and issuances related to this or other pending projects. For assistance, contact FERC Online Support.

For further information, please contact Rebecca Martin by telephone at (202) 502-6012 or by e-mail at Rebecca.Martin@ferc.gov.

Kimberly D. Bose,
Secretary.

# FINAL
# ENVIRONMENTAL ASSESSMENT
# AMENDMENT TO LICENSE

California Aqueduct Project

FERC Project No. 2426-197
California

**Federal Energy Regulatory Commission**
**Office of Energy Projects**
**Division of Hydropower Administration and Compliance**
**888 First Street, NE**
**Washington, DC 20426**

**June 2008**

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## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| Advisory Council | Advisory Council on Historic Preservation |
| APE | area of potential effects |
| Aspen | Aspen Environmental Group |
| Cal-IPC | California Invasive Plant Council |
| CA/MX | California-Mexico Power Area |
| CDFA | California Department of Food and Agriculture |
| CDFG | California Department of Fish and Game |
| cfs | cubic feet per second |
| Commission | Federal Energy Regulatory Commission |
| CZMA | Coastal Zone Management Act |
| DO | dissolved oxygen |
| DWR | California Department of Water Resources |
| EA | environmental assessment |
| ESA | Endangered Species Act |
| ESU | evolutionarily significant unit |
| FERC | Federal Energy Regulatory Commission |
| Forest Service | U.S. Department of Agriculture, Forest Service |
| FPA | Federal Power Act |
| FWS | U.S. Fish and Wildlife Service |
| HPMP | Historic Properties Management Plan |
| Interior | U.S. Department of the Interior |
| licensees | California Department of Water Resources and the City of Los Angeles |
| LMP | Land Management Plan |
| mg/l | milligrams per liter |
| msl | mean sea level |
| National Register | National Register of Historic Places |
| NHPA | National Historic Preservation Act |
| NMFS | National Marine Fisheries Service |
| O&M | operation and maintenance |
| ORV | outstandingly remarkable value |
| RM | river mile |
| SHPO | State Historic Preservation Officer |
| SWRCB | California State Water Resources Control Board |
| TDS | total dissolved solids |
| United | United Water Conservation District |
| USGS | U.S. Geological Survey |
| WECC | Western Electricity Coordinating Council |

# FINAL ENVIRONMENTAL ASSESSMENT

**Federal Energy Regulatory Commission**
**Office of Energy Projects**
**Division of Hydropower Administration and Compliance**
**Washington, DC**

**California Aqueduct Project**

**FERC Project No. 2426-197**

## I. APPLICATION

On March 17, 2005, the California Department of Water Resources (DWR) and the City of Los Angeles (licensees) filed an application with the Federal Energy Regulatory Commission (Commission or FERC) for an amendment of license for the California Aqueduct Project. The project is located on the California Aqueduct in San Bernadino, Los Angeles, San Luis Obispo, Ventura, and Kern counties, California. The project is located within the Angeles and Los Padres National Forests. The area of the project affected by the amendment application is an 18-mile-long section of Piru Creek in Los Angeles and Ventura counties.

## II. PURPOSE AND NEED FOR ACTION

The project has been operating under the current license since 1978. On December 16, 1994, the U.S. Fish and Wildlife Service (FWS) listed the arroyo toad, which inhabits Piru Creek, as an endangered species. FWS expressed concern about the effects of the flow regime required by the project license on the arroyo toad. The licensees developed an operating schedule in consultation with FWS, the California Department of Fish and Game (CDFG), the U.S. Department of Agriculture, Forest Service (Forest Service), and other interested agencies and parties to address concerns for the arroyo toad and the recreational fishery. The licensees filed for a temporary waiver of the minimum flow requirements on February 10, 2005, and subsequently filed for a license amendment on March 17, 2005, to implement this new operating schedule to avoid an incidental take of the arroyo toad. The amendment requests that the Commission (1) revise the minimum flow schedule in article 52, and (2) modify the trout fishery requirements in exhibit S. The licensees are operating the project under temporary waiver of these two existing license requirements granted by the Commission on April 12, 2005, pending approval of a license amendment.[1]

In this final environmental assessment (EA), we assess the environmental effects of continuing to operate the project: (1) as proposed in the licensees' amendment

[1]Order approving Temporary Waiver of Minimum Flow Requirements of Article 52, 111 FERC ¶62,040.

application and (2) as currently licensed, which is the No-action Alternative. The primary issue that we address is providing suitable habitat for threatened and endangered species, and we also consider other issues such as aquatic and terrestrial habitat, cultural resources, and recreational use and access.

## III. PROJECT DESCRIPTION

Although the project license includes several developments, the licensees' amendment application pertains only to Pyramid Lake and Piru Creek between Pyramid dam and the high water mark of Lake Piru (project reach). Pyramid dam is a 408-foot-high earth and rockfill dam. Pyramid Lake covers about 1,300 acres and has 21 miles of shoreline. The development includes the 30-inch diameter, 38,500-foot-long Angeles Tunnel; six 13.5-foot-diameter and two 6.5-foot diameter-steel penstocks, each 2,400 feet long; and a powerhouse. Piru Creek is a tributary to the Santa Clara River, in northwestern Los Angeles and eastern Ventura counties in California (figure 1). The project reach is about 18 miles long and flows roughly north to south from Pyramid dam through steep mountainous terrain dropping from about 2,200 feet above mean sea level (msl) at the dam to about 1,100 feet msl at Lake Piru. Pyramid Lake is split by the jurisdictional boundary of the Angeles National Forest and the Los Padres National Forest, but this area is administered by the Angeles National Forest. Except for a few private in-holdings, the project reach along Piru Creek is located on public land administered by both the Angeles and Lost Padres National Forests.[2]

At the downstream end of the project reach, Piru Creek enters Piru Lake, which is a reservoir included in the Santa Felicia Project (FERC No. 2153). The licensees deliver water under a long-term contract for the California State Water Project[3] to this reservoir that is operated and maintained by the United Water Conservation District (United).

[2]Although public land from both forests is within the administrative boundaries affected by the Proposed Action, the official correspondence for this proceeding indicates the Los Padres National Forest is participating on behalf of both forests.

[3]The State Water Project is a large state-built water and power development and conveyance system. It includes facilities—pumping and power plants; reservoirs, lakes, and storage tanks; and canals, tunnels, and pipelines—that capture, store, and convey water generally from northern and central California to southern sections of the state.

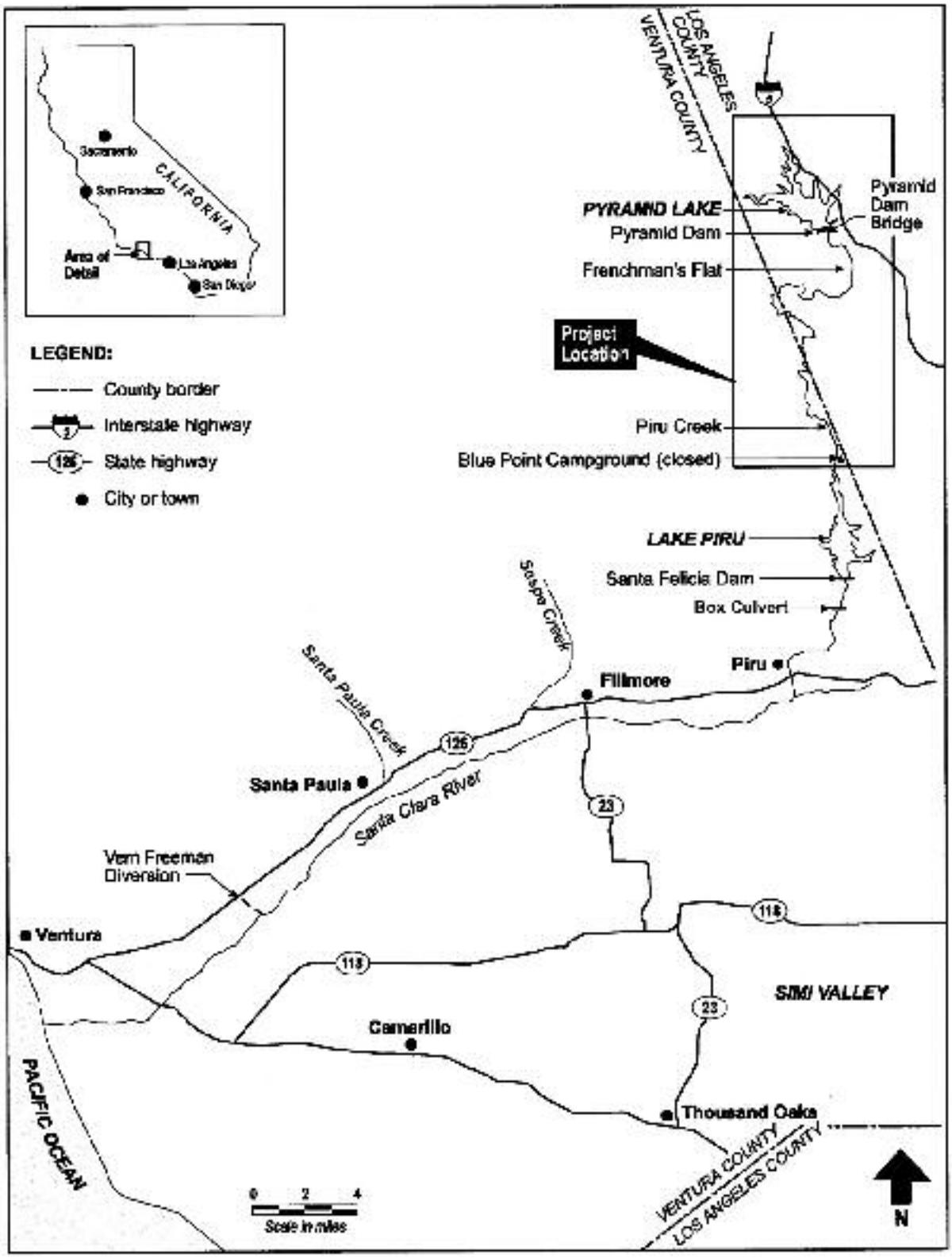



Figure 1. Pyramid Lake and the project reach downstream of Pyramid Lake for the California Aqueduct Project. (Source: DWR, 2005, as modified by staff)

# IV. PROPOSED ACTION AND NO-ACTION ALTERNATIVES

## A. PROPOSED ACTION

The Proposed Action would implement releases in the project reach that simulate the natural hydrology[4] of Piru Creek to the extent operationally feasible and consistent with safety considerations. The licensees' amendment application seeks to revise article 52 to read as follows.

- Stream releases from Pyramid dam into Piru Creek shall match natural surface inflow into Pyramid Lake to the extent operationally feasible and consistent with safety requirements as further described in the following guidelines:
  - Natural inflow to Pyramid Lake will be released into Piru Creek at a rate of up to about 18,000 cubic feet per second (cfs), which is the maximum safe, designed release from Pyramid dam. The exact maximum safe release depends on the lake surface water elevation at the time of the release.
  - Storm releases from Pyramid dam into Piru Creek may be held back at less than 18,000 cfs if higher releases are deemed a threat to life, safety, or property at Pyramid dam or downstream of the dam.
  - The licensees may elect to appropriate inflow to Pyramid Lake above the safe release flows under the provisions of its existing water rights.
  - Up to 3,150 acre-feet of State Water Project water would be delivered to United via Piru Creek (from Pyramid dam) between November 1 and the end of February of each water year. During this period, water deliveries could be made over a few days, ramping flows up and down to simulate the hydrograph of a typical storm even, or they may be released more gradually over a longer period.
  - Releases from Pyramid dam could be increased by up to 50 cfs for short periods to exercise the Pyramid dam radial gate and stream release valves, test emergency power sources for operating State Water Project facilities; conduct tests mandated by the Commission or other agencies; or meet other short-term operational or maintenance requirements. Except for unscheduled events (such as equipment malfunctions) or emergencies, no such increases would take place between March 15 and June 15. Testing would also be avoided to the extent possible between June 16 and July 31. Tests may be conducted at any time between August 1 and March 14, provided that flows do not increase by more than 50 cfs above current

[4] As determined by DWR's model for natural inflow into Pyramid Lake that uses current daily stream flow data from the gaging stations on upper Piru Creek and Cañada de los Alamos adjusted for additional inflows from several minor ungaged watersheds that drain into the reservoir.

base flows during the event and that the event does not last longer than 15 minutes. Scheduled tests requiring larger releases or lasting longer than 15 minutes would require prior notification to FWS with further consultation as determined necessary by FWS; unscheduled releases would require notification of FWS no later than 3 business days after the event, again with further consultation as determined necessary by FWS.

- The gaging station on upper Piru Creek (located north of Pyramid Lake) provides 24-hour averages; therefore, instantaneous peak stream releases may be attenuated. Unlike natural inflow hydrograph, which typically peaks sharply, the stream release hydrograph of middle Piru Creek maybe attenuated.
- A multiplier is used to account for those portions of Pyramid Lake watershed that are not tributaries of upper Piru Creek and Cañada de los Alamos upstream of their respective gaging stations. This may result in some deviations for individual storm events due to localized variations in storm water intensity.
- Because of operational constraints, the stream release hydrograph of middle Piru Creek would typically gage measured inflow. The valves at Pyramid dam can be adjusted for release flows of less than 3 cfs; however, the precise measurement of released flows less than 3 cfs may not be possible due to operational constraints of the dam's gaging instrumentation.

The licensees' amendment application also seeks to:

- replace the section of exhibit S[5] that addresses Piru Creek with the following text:

  "Catchable rainbow trout shall be stocked at Frenchman's Flat at a rate of 3,000 pounds annually and as compatible with natural stream flows and endangered species protection requirements; typically stocking will occur between November and May. In addition, up to 1,000 pounds of catchable trout may be stocked annually between Frenchman's Flat and Pyramid dam. The determination of whether to stock any part or all of the additional 1,000 pounds of trout, and the timing of any such stocking, shall be made annually and shall be based solely on the recommendations of the CDFG."

- change the due date for reporting trout stocking program to the Commission to December 31 of even-numbered years.

[5]See 89 FERC ¶62,066 (1999). The original exhibit S required stocking 4,000 pounds of catchable rainbow trout.

The licensees also identify three measures to address the potential effects of the changed flow regime:[6]

- **Prevention of Erosion Damage to Infrastructure**. The licensees would perform an engineering analysis to determine the potential for expected releases to damage Old Highway 99, Old Highway 99 bridges, utilities, and other infrastructure in or adjacent to the channel. The engineering analysis would be used as a basis for establishing procedures and guidelines for monitoring erosion at infrastructure during flood releases. The licensees would monitor erosion at key potential infrastructure damage areas during large flow releases and temporarily curtail releases if monitoring determines that the infrastructure is at risk. The licensees would subsequently install engineered erosion protection to prevent erosion damage to the areas determined to be at risk.
- **Development of flood warning signage**. The licensees would consult with the Forest Service and landowners to develop a warning system and place signage warning the public of dangerously high flows in Piru Creek.
- **Fish Stocking**. Stock some or all of the additional 1,000 pounds of trout allotted in Piru Creek each year as determined appropriate by CDFG fishery biologists. In addition to the 3,000 pounds of trout stocked annually in Piru Creek, some or all of the remaining 1,000 pounds of trout allotted may be stocked between the base of Pyramid dam and the weir upstream of Frenchman's Flat. Before the stocking season begins, the licensees would consult with CDFG fishery biologists to determine a suitable amount of trout, up to 1,000 pounds, that would be stocked upstream of the weir to maintain a catch-and-release trout population.

## B. NO-ACTION ALTERNATIVE

The Commission temporarily waived the existing minimum instream flow requirements in article 52 and exhibit S by order issued on April 12, 2005, and directed the licensees to operate the project consistent with the flow regime proposed in its amendment application. The Commission action waived the existing requirements but did not institute new minimum instream flow requirements. To analyze the potential effects of the proposed action, we consider that under the No-action Alternative the project would return to its operational scheme implemented from 1995 through 2004

[6]These measures are identified in the final environmental impact report the licensees submitted as part of exhibit E of their amendment application.

under the CDFG proposed operational schedule.[7] This schedule would require the licensee to provide steady flow releases from the Pyramid dam of 25 cfs from April 1 through August 31, decreasing by 1 cfs every 2 days between September 1 and October 9 to achieve and maintain a 5 cfs minimum flow from October 10 until the first winter storm. Beginning in mid-March, the licensees would gradually increase the releases to attain the 25-cfs minimum instream flow by April 1. The licensees would also be required to continue maintaining a year-round trout fishery between Pyramid dam and Frenchman's Flat, stocking and reporting on stocking, 4,000 pounds of catchable trout, annually.

## V. CONSULTATION AND COMPLIANCE

### A. COMMENTS AND INTERVENTIONS

The licensees completed an environmental review of the proposed flow regime under the California Environmental Quality Act. This review consisted of public scoping; studies and analysis; consultation with resource agencies and other interested parties; preparation of a draft environmental impact report, which was published on November 8, 2004, with a comment period ending January 7, 2005; and preparation of a final environmental impact report.

On June 8, 2005, the Commission issued a public notice that the application for amendment had been filed soliciting comments, motions to intervene, and protests with a comment period ending July 8, 2005. FWS and Cal Trout filed comments on July 11, 2005, and July 14, 2005, respectively. No interventions were filed.

Cal Trout stated that the licensees must file an application with the California State Water Resources Control Board (SWRCB) for a water quality certification and that implementation of the licensees' proposal could potentially have negative effects on federally endangered southern California steelhead, the anadromous form of *Oncorhynchus mykiss* (*O. mykiss*). By letter dated January 3, 2007, Cal Trout requested that SWRCB reject DWR's application for a water quality certification and provided copy of a final report on the population structure and ancestry of *O. mykiss* populations in South-Central California (Girman and Garza, 2006) in support of its view that rainbow trout (the resident form of *O. mykiss*) below DWR's Pyramid dam are genetically clustered to the federally listed Southern California steelhead.

FWS commented that it had not directed the licensees to simulate a natural flow regime into Piru Creek in its comments on the draft application for license amendment.

[7]The Order Modifying and Approving Amendment to Exhibit S, issued October 25, 1999, order 2426-144, acknowledged this operational schedule as a temporary measure until a permanent agreement could be reached with FWS and United. The order states that the license article 52 contains minimum releases which must be met until article 52 is amended. The licensee can provide supplemental flows in excess of those specified in article 52, but can never be less than those specified. (89 FERC ¶62,066)

However, the proposal to revise the flows should be viewed as a recommendation reached through consensus by several agencies and experts convened by FWS following an August 20, 2003, letter to DWR that indicated returning to natural flows would avoid take of the arroyo toad. These agencies and experts included FWS, CDFG, the Forest Service, United, and herpetologist Dr. Samuel Sweet. FWS supports the licensees' proposal to simulate natural flows in Piru Creek as that would help to restore a natural flow regime that maintains suitable arroyo toad habitat but does not rule out the consideration of other flow proposals.

The draft EA was issued for public comment on March 1, 2007. Comments on the draft EA were due on April 30, 2007. We include a summary of comments received and our responses to them in appendix A of this final EA. In addition to comments on the draft EA, motions to intervene out of time were filed by California Trout, Inc., the National Marine Fisheries Service, and Friends of the River. The late interventions were denied by the Commission but the issues are addressed in the appropriate sections of the final EA or in appendix A.

## B. STATUTORY REQUIREMENTS

### 1. Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or cause the destruction or adverse modification of the critical habitat of such species. The federally endangered arroyo toad (*Bufo californicus*), California condor (*Gynmogyps californianus*), least Bell's vireo (*Vireo bellii pusillus*), and southwestern willow flycatcher (*Empidonax traillii extimus*), and federally threatened California red-legged frog (*Rana aurora draytonii)* have been identified as federally listed species that may occur in the project area or action area. The draft EA acted as our biological assessment, assessing the effects on these federally listed species of the Proposed Action. We find that the Proposed Action may affect, but is not likely to adversely affect the arroyo toad and the critical habitat for the California red-legged frog. Additionally, we find that the project would have no effect on the California red-legged frog, least Bell's vireo, southwestern willow flycatcher, and the California condor. On June 4, 2007, we requested concurrence from FWS on our findings.

The federally endangered southern California steelhead and its designated critical habitat do not occur in the project or action areas because Santa Felicia dam blocks all upstream steelhead migration into the project reach (letter from Rodney R. McInnis, Regional Administrator, NMFS, Longbeach, CA to Kimberly D. Bose, Secretary, FERC, Washington, D.C. dated May 3, 2007). Therefore, the proposed project would have no effect on southern California steelhead or its designated critical habitat.

### 2. National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) requires that the Commission evaluate the potential effects on properties listed or eligible for listing in the National Register of Historic Places (National Register). Such properties listed or eligible for listing in the National Register are called historic properties. In this document we also use the term "cultural resources" for properties that have not been evaluated for eligibility for listing in the National Register. Cultural resources represent things, structures, places, or archaeological sites that can be either prehistoric or historic in origin. In most cases, cultural resources less than 50 years old are not considered historic. Section 106 also requires that the Commission seek concurrence with the State Historic Preservation Officer (SHPO) on any finding involving effects or no effects on historic properties, and allow the Advisory Council on Historic Preservation (Advisory Council) an opportunity to comment on any finding of effects on historic properties. If Native American (i.e., aboriginal) properties have been identified, section 106 also requires that the Commission consult with interested Indian tribes that might attach religious or cultural significance to such properties. In this case, the Commission must take into account whether any historic property could be affected by the proposed increased flows within the project's area of potential effects (APE), and allow the Advisory Council an opportunity to comment prior to issuance of any order for the project.

Commission staff determined that the Proposed Action is not an undertaking that has the potential to cause effects on historic properties. By letters dated August 1, 2006, and October 10, 2006, Commission staff consulted with the SHPO and Native American tribes.

### 3. Clean Water Act

Section 401 of the Clean Water Act (33 U.S.C. §1341) requires an applicant to obtain from the state a certification that project discharges will comply with applicable effluent limitations, or a waiver of certification. Without a 401 certificate, the project cannot be amended.

On January 23, 2006, DWR applied to SWRCB for water quality certification for the California Aqueduct Project as required by section 401 of the Clean Water Act. DWR withdrew and resubmitted its application on December 26, 2006. On December 11, 2007, DWR again withdrew and resubmitted its application. A water quality certification, denial, or waiver is due by December 11, 2008.

# VI. AFFECTED ENVIRONMENT

## A. WATER RESOURCES

The Santa Clara River, with a drainage area of more than 1,600 square miles, is one of the largest watersheds in southern California. Major tributaries to the Santa Clara River include Santa Paula Creek at river mile (RM) 17, Sespe Creek at RM 23, and Piru Creek at RM 30. During the dry summer season, flows in the main stem of the Santa Clara River are intermittent or non-existent depending on the location and the season's rainfall. Highly permeable sandy bed materials underlie most of the river bed except for a few areas where bedrock is found at a shallow depth below the surface. These areas of shallow bedrock areas result in rising groundwater conditions and cause almost perennial surface water flow in a few sections of the Santa Clara River.

### 1. Water Quantity

The Piru Creek watershed, which has a drainage area of 437 square miles, is bordered by the Sespe Creek watershed to the west and the Castaic Creek watershed to the east. Streamflow in this area, other than in areas highly influenced by reservoir releases and storage, is typical of southern California with minimal flow and sometimes dry conditions during much of the year, especially during the summer and early fall. High and flashy flow regimes are associated with runoff during the winter storms. Table 1 lists the U.S. Geological Survey (USGS) gages that provide data on inflow into Pyramid Lake and discharge into Piru Creek. Table 2 summarizes monthly discharge data for the key USGS gages upstream of Pyramid Lake and along Piru Creek near Frenchman's Flat. Figure 2 shows USGS gage locations and provides a schematic of flows into Pyramid Lake and Piru Creek within the larger Santa Clara River watershed.

Table 1. USGS gage summary. (Source: USGS, 2006)

| Gage No. | Gage Name | Period of Record | Drainage Area (square miles) | Elevation (NGVD 1929 datum) |
|---|---|---|---|---|
| 11109375 | Piru Creek below Buck Creek near Pyramid Lake | 10/1/76 to 9/30/78 and 10/1/88 to 9/30/03 | 198 | 2,700[a] |
| 11109395 | Cañada de Los Alamos above Pyramid Lake | 10/1/76 to 9/30/78 and 10/1/88 to 9/30/03 | 61.9 | 2,800[b] |
| 11109398 | West Branch California Aqueduct at William Warne Powerplant near Gorman | 10/1/95 to present | NA | 2,582 |
| 11109520 | Pyramid Lake near Gorman | 10/1/88 to present | 295 | |
| 11109525 | Piru Creek below Pyramid Lake near Gorman | 10/1/88 to present | 295 | 2,200 |

| Gage No. | Gage Name | Period of Record | Drainage Area (square miles) | Elevation (NGVD 1929 datum) |
|---|---|---|---|---|
| 11109550 | Piru Creek above Frenchman's Flat | 10/1/76 to 9/30/78 and most of 11/04 to 9/30/05 | 308 | 2,130 |
| 11109600 | Piru Creek above Lake Piru | 10/1/1955 to present | 372 | 1,058.55 |
| 11109800[b] | Piru Creek below Santa Felicia dam | 10/1/1955 to present | 425 | 858.8 |

Note: NGVD – National geodetic vertical datum

[a] Estimated by the USGS from a topographical map.

[b] Upstream of the spill channel confluence, does not measure spillage from Santa Felicia dam.

The headwaters of Piru Creek are within the Los Padres National Forest, and the creek flows in a general easterly direction until it reaches Pyramid Lake. The California Aqueduct Project, which started operation in 1973, impounds water for the California State Water Project and is located about 24 river miles upstream from the Santa Clara River. Pyramid Lake has a drainage area of 295 square miles, a surface area of 1,297 acres, and a maximum storage capability of 171,200 acre-feet. Primary sources of water for Pyramid Lake are upper Piru Creek, Cañada de Los Alamos, and the West Branch of the California Aqueduct from Castaic Lake as shown in figure 2. Both Pyramid and Castaic lakes are part of the State Water Project and are operated by DWR. Castaic Lake and dam started operation in 1970, and Castaic Creek flows into the Santa Clara River about 10 river miles upstream of the confluence of Piru Creek and the Santa Clara River.

Downstream of Pyramid dam, Piru Creek flows generally south for 15 miles before draining into Lake Piru. Releases from Pyramid dam have typically provided consistent flows to the project reach during the summer. Prior to an April 12, 2005, order,[8] which temporarily waived article 52 of the project license, the required releases downstream of Pyramid dam were the following:

1. From November 16 through April 30, release a minimum continuous flow of 5 cfs into Piru Creek.
2. From May 1 through November 15, release a minimum continuous flow of 10 cfs into Piru Creek.
3. To maintain the viability of the trout fishery, make the following releases on days when local ambient air temperatures reach the following thresholds:

[8] See 111 FERC ¶62,040.

- If the maximum air temperature in the project area is predicted to be between 86 and 90°F, increase the minimum continuous flow to 15 cfs between 10:00 a.m. and 6:00 p.m.
- If the maximum air temperature in the project area is predicted to range between 91 and 95°F, increase the minimum continuous flow to 20 cfs between 10:00 a.m. and 6:00 p.m.
- If the maximum air temperature in the project area is predicted to be at or above 96°F, increase the minimum continuous flow to 25 cfs between 10:00 a.m. and 6:00 p.m.

However, during the summers of 1992 and 1993, due to high natural inflow to Pyramid Lake, the licensees maintained a near constant release of 25 cfs from Pyramid dam. In 1994, CDFG requested a continuation of the 25 cfs release during the summer months to protect the trout fishery in the project reach.

Based on the April 12, 2005, order, the licensees now operate the project with a yearly flow regime that more closely mimics the natural, unregulated hydrograph, with some alteration to allow for the delivery of State Water Project water to United. No state water was delivered between calendar years 1994 and 1999; 2,200 acre-feet was delivered in 2000; 3,148 acre-feet was delivered in 2002; and 3,150 acre-feet was delivered in 2003. In calendar year 2002, deliveries began on July 16 and continued to November 9 and never exceeded 10 cfs. During calendar year 2003, deliveries started on May 21 with a 50-cfs release and continued at that rate until August 9 and then diminished gradually to zero by end of September. The flow records from the USGS gage on Piru Creek about 2 miles upstream of Lake Piru show that before the California Aqueduct Project and Pyramid dam were constructed in 1973, the project reach was sometimes dry during the summer (see table 2).

The licensees also have the right to store up to 55,000 acre-feet of local runoff in Pyramid Lake when Santa Felicia dam is spilling and there is continuous surface flow from Santa Felicia dam to the Pacific Ocean. The licensees state that the maximum safe release on daily and shorter intervals from Pyramid dam is about 18,000 cfs, and flood storage capacity in Pyramid Lake will allow this to normally be the 100-year outflow from Pyramid dam, even though the 100-year inflow is about three times larger (table 3).

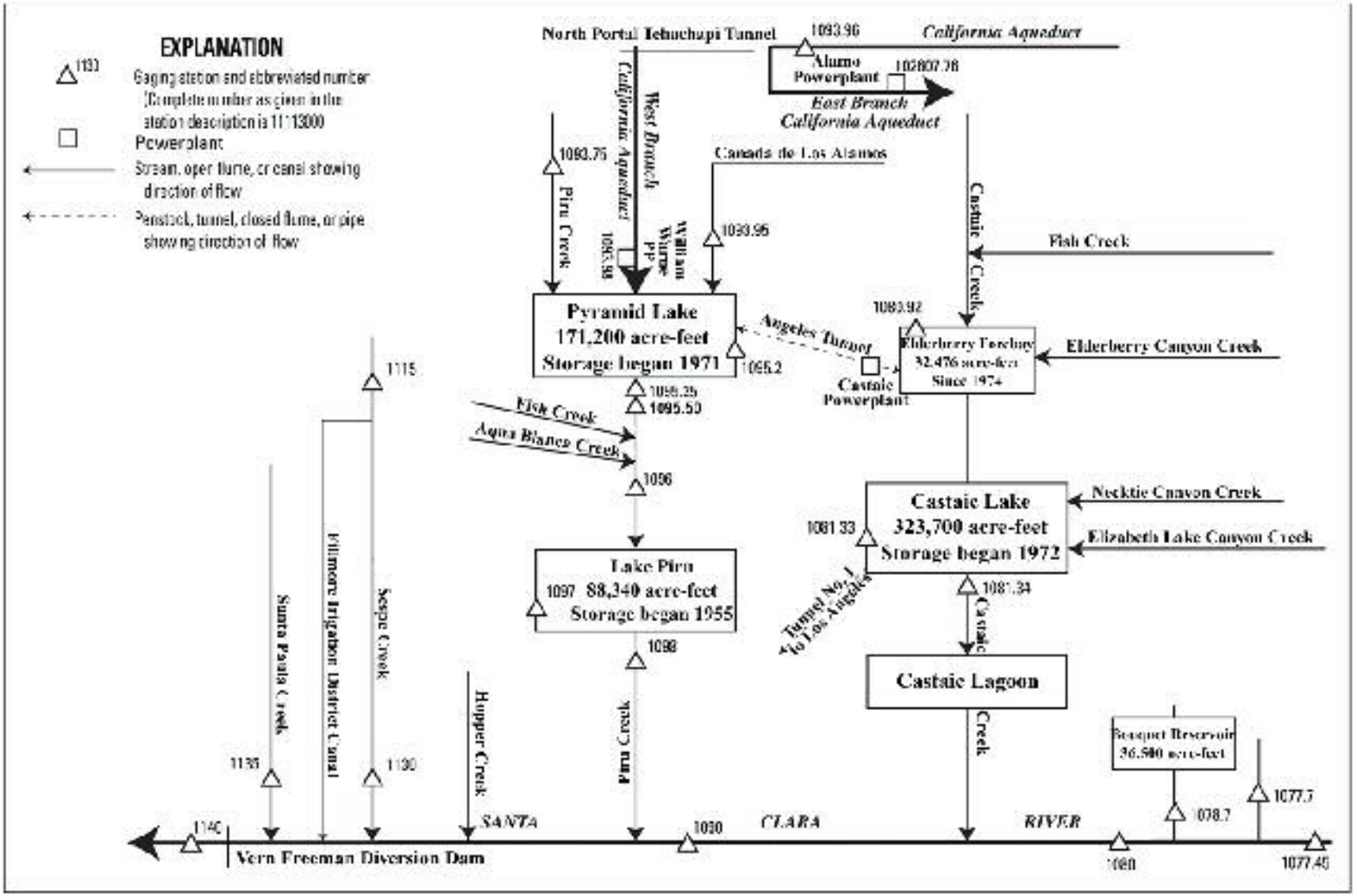



Figure 2. Santa Clara River watershed schematic. (Source: USGS, 2005, as modified by staff)

Table 2. Monthly discharge (cfs) statistics in the Pyramid Lake area. (Source: USGS, 2006, as modified by staff)

| Gage and Period of Record[a] | Oct. | Nov. | Dec. | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **USGS Gage No. 11109395, Cañada De Los Alamos above Pyramid Lake** | | | | | | | | | | | | |
| Mean | 2.4 | 2.8 | 5.5 | 4.9 | 12.1 | 7.2 | 3.4 | 2.8 | 2.2 | 2.0 | 1.9 | 2.1 |
| Median | 2.4 | 2.9 | 3.2 | 3.3 | 3.6 | 3.5 | 3.2 | 2.7 | 2.2 | 1.8 | 1.8 | 2.0 |
| Max. | 11 | 7.8 | 1,060 | 181 | 1,220 | 900 | 16 | 8.8 | 4.5 | 12 | 6 | 4 |
| Min. | 1.1 | 1.4 | 1.3 | 1.3 | 1.5 | 1.6 | 1.0 | 0.3 | 1.0 | 0.9 | 0.9 | 1.1 |
| 10% Exceedance | 3.2 | 3.6 | 3.8 | 4.9 | 7.3 | 6.3 | 4.6 | 3.8 | 3.0 | 2.8 | 2.7 | 2.9 |
| 90% Exceedance | 1.5 | 1.8 | 2.0 | 2.5 | 2.2 | 2.0 | 1.9 | 1.5 | 1.3 | 1.2 | 1.3 | 1.4 |
| **USGS Gage No. 11109375, Piru Creek below Buck Creek** | | | | | | | | | | | | |
| Mean | 5.8 | 7.4 | 17.7 | 70.1 | 203.9 | 167.3 | 84.5 | 45.9 | 18.5 | 8.8 | 5.2 | 5.4 |
| Median | 3.9 | 5.9 | 8.4 | 15.0 | 28.0 | 39.0 | 32.0 | 20.0 | 7.4 | 4.0 | 3.2 | 3.9 |
| Max. | 145 | 46 | 991 | 3,430 | 11,700 | 6,090 | 407 | 470 | 134 | 69 | 25 | 30 |
| Min. | 0.0 | 0.6 | 1.2 | 1.8 | 1.3 | 3.7 | 1.6 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10% Exceedance | 15.0 | 17.0 | 25.0 | 138.4 | 411.6 | 361.2 | 227.0 | 107.4 | 54.0 | 24.0 | 15.0 | 14.0 |
| 90% Exceedance | 0.7 | 1.6 | 2.2 | 4.6 | 5.5 | 8.7 | 5.8 | 3.4 | 1.3 | 0.0 | 0.0 | 0.0 |
| **Calculated Estimated Inflow to Pyramid Lake, Water Years 77–78 and 89-03[b]** | | | | | | | | | | | | |
| Mean | 9.2 | 11.5 | 26.3 | 87.5 | 250.5 | 204.2 | 102.8 | 56.8 | 24.0 | 12.3 | 8.1 | 8.4 |
| Median | 7.4 | 10.3 | 13.5 | 20.7 | 36.5 | 50.2 | 42.0 | 25.9 | 11.0 | 6.5 | 5.8 | 6.3 |
| Max. | 182 | 57.6 | 2,227 | 4142 | 14,247 | 8,070 | 483 | 559.0 | 161.2 | 90 | 32 | 37 |
| Min. | 1.3 | 2.2 | 3.6 | 4.6 | 0.0 | 7.8 | 4.4 | 3.1 | 1.5 | 0.9 | 1.1 | 1.1 |
| 10% Exceedance | 19.8 | 23.0 | 32.3 | 167.5 | 498.7 | 436.9 | 270.6 | 128.2 | 67.3 | 29.9 | 19.5 | 18.1 |
| 90% Exceedance | 2.5 | 4.0 | 5.1 | 8.4 | 9.8 | 13.0 | 8.8 | 5.8 | 3.1 | 1.5 | 1.4 | 1.5 |

| Gage and Period of Record[a] | Oct. | Nov. | Dec. | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **USGS Gage No. 11109525, Piru Creek below Pyramid Lake** | | | | | | | | | | | | |
| Mean | 20.2 | 21.6 | 23.2 | 94.6 | 158.9 | 102.3 | 42.8 | 35.7 | 28.0 | 26.8 | 24.4 | 22.7 |
| Median | 15.0 | 9.0 | 6.2 | 13.0 | 15.0 | 30.0 | 26.0 | 25.0 | 25.0 | 25.0 | 25.0 | 24.0 |
| Max. | 78 | 104 | 525 | 5,490 | 6,000 | 2,610 | 500 | 145 | 60 | 52 | 53 | 63 |
| Min. | 5.0 | 4.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 10.0 | 10.0 | 10.0 | 10.0 | 6.0 |
| 10% Exceedance | 48.0 | 80.0 | 55.0 | 123.6 | 200.2 | 250.0 | 90.0 | 92.6 | 50.0 | 40.0 | 35.0 | 35.0 |
| 90% Exceedance | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 6.1 | 6.0 | 11.0 | 15.0 | 18.0 | 14.0 | 11.0 |
| **USGS gage No. 11109600, Piru Creek above Lake Piru, Water Years 77, 78 and 89–03** | | | | | | | | | | | | |
| Mean | 20 | 21 | 35 | 174 | 355 | 203 | 80 | 54 | 36 | 29 | 24 | 22 |
| Median | 10 | 8 | 10 | 24 | 76 | 70 | 63 | 35 | 27 | 25 | 24 | 18 |
| Max. | 170 | 129 | 1,060 | 9,020 | 15,000 | 5,030 | 543 | 283 | 188 | 63 | 48 | 72 |
| Min. | 0 | 3 | 3 | 3 | 3 | 8 | 5 | 5 | 7 | 6 | 6 | 4 |
| 10% Exceedance | 53 | 76 | 72 | 331 | 747 | 460 | 180 | 118 | 65 | 48 | 38 | 33 |
| 90% Exceedance | 4 | 4 | 5 | 7 | 8 | 14 | 8 | 9 | 11 | 11 | 9 | 9 |
| **USGS gage no. 11109600, Piru Creek above Lake Piru, Water Years 56–73** | | | | | | | | | | | | |
| Mean | 2 | 50 | 54 | 99 | 225 | 107 | 97 | 32 | 13 | 5 | 2 | 2 |
| Median | 1 | 6 | 10 | 19 | 31 | 36 | 30 | 15 | 5 | 1 | 0 | 0 |
| Max. | 14 | 4,330 | 3,950 | 9,810 | 15,600 | 1,420 | 3,970 | 292 | 100 | 30 | 60 | 78 |
| Min. | 0 | 0 | 1 | 4 | 7 | 6 | 2 | 0 | 0 | 0 | 0 | 0 |
| 10% Exceedance | 6 | 30 | 83 | 124 | 331 | 293 | 207 | 89 | 41 | 16 | 9 | 6 |
| 90% Exceedance | 0 | 0 | 4 | 7 | 10 | 8 | 8 | 4 | 0 | 0 | 0 | 0 |

[a] The period of record for these gages is the period of record shown in table 1 unless otherwise noted.

[b] The estimated inflow was calculated by prorating the daily data from USGS Gage No. 11109375 by 1.1773 added to the daily data from USGS Gage No. 11109395.

Table 3. Piru Creek flood hydrology at Pyramid Lake for current conditions. (Source: DWR, 2005)

| Recurrence Interval (years) | Maximum Average Daily Discharge (cfs) | |
|---|---|---|
| | Upstream of (Into) Pyramid Lake | At Frenchman's Flat (Released from Pyramid Lake) |
| 2 | 658 | 414 |
| 5 | 3,370 | 1,920 |
| 10 | 7,770 | 4,220 |
| 20 | 15,400 | 8,000 |
| 50 | 32,700 | 16,300 |
| 100 | 53,800 | 18,000 |

Downstream of Pyramid dam, Piru Creek has an average gradient of about 70 feet per mile for the 15 mile distance to where water begins to impound in Lake Piru. According to the licensees, Piru Creek, near Frenchman's Flat, is relatively incised with floodplain terraces on either side with little out of channel flow during small hydrological events such as a 2-year flood event. Farther downstream, the channel becomes wider and braided in a few locations with more overbank flow during small flood events. Runoff from about 77 square miles of steeply sloping terrain flows into Piru Creek between Pyramid dam and the location of USGS Gage No. 11109600, Piru Creek above Lake Piru. The construction of Pyramid dam decreased the peak flows that enter Lake Piru (table 4), but substantial flows enter Piru Creek downstream of Pyramid dam during flood events.

Table 4. Flood recurrence intervals for USGS Gage No. 11109600, Piru Creek above Lake Piru. (Source: United, 2004)

| Recurrence Interval (years) | Flow Rate before Construction of Pyramid Dam (cfs) | Flow Rate after Construction of Pyramid Dam (cfs) |
|---|---|---|
| 2 | 2,301 | 1,511 |
| 5 | 7,901 | 5,899 |
| 10 | 14,990 | 11,981 |
| 25 | 29,574 | 25,440 |
| 50 | 45,787 | 41,320 |
| 100 | 67,756 | 63,859 |

### 2. Water Quality

Pyramid Lake serves as the delivery point for up to 3,150 acre-feet of State Water Project water, imported from the Sacramento-San Joaquin Delta. The imported water acts to dilute the naturally high levels of total dissolved solids (TDS) from local waters, especially during low stream flows in the summer months when the effects of this imported water on the water quality in Piru Creek vary according to the amount of state water that is delivered into Pyramid Lake.

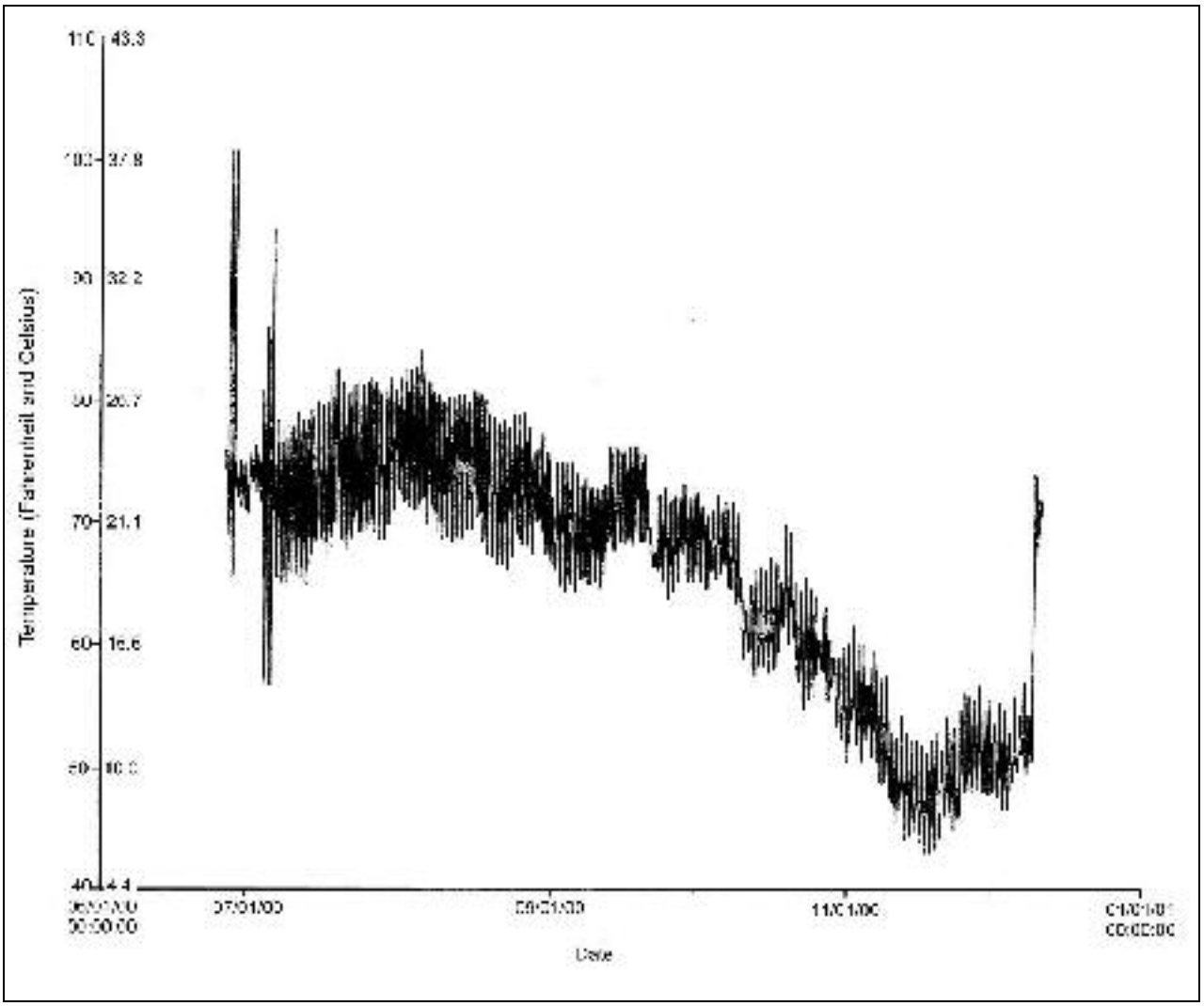
Beneficial uses for the Piru Creek watershed are identified in the *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (LARWQCB, 1995). The existing beneficial uses identified for Piru Creek are agricultural supply; industrial process supply; groundwater recharge; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; wildlife habitat; rare, threatened, or endangered species; and spawning, reproduction, and/or early development for fish. In addition, freshwater replenishment (uses of water for natural or artificial maintenance of surface water quantity or quality) is identified as an existing use for Piru Creek and as a potential use for Lake Piru. Wetland habitat is identified as an existing beneficial use for Lake Piru, but not for Piru Creek.

Table 5 shows state objectives for temperature, turbidity, dissolved oxygen (DO), pH, fecal coliform bacteria, and TDS. Piru Creek is listed on the SWRCB 2002 303(d) list (approved by the U.S. Environmental Protection Agency in July 2003) as water quality-limited for pH, and several reaches of the Santa Clara River are listed for chloride and for coliform bacteria. Data collected by a local landowner in 2000 (presented in United, 2002) indicate that water temperatures in Piru Creek upstream of Lake Piru were at their highest in late July and early August, when daily average water temperatures were usually in the range of 75 to 77°F, and instantaneous temperatures occasionally exceeded 80°F (figure 3).

Table 5. Water quality objectives for Piru Creek. (Source: LARWQCB, 1995)

| Parameter | Objective |
|---|---|
| Temperature | The natural receiving water temperature of all regional waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses. Alterations that are allowed must not increase water temperatures of waters designated as COLD or WARM more than 5°F above the natural temperature, and the temperature of WARM-designated waters shall not be raised above 80°F as a result of waste discharges. |

| Parameter | Objective |
|---|---|
| Turbidity | Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in natural turbidity attributed to controllable water quality factors shall not exceed the following limits: where natural turbidity is between 0 and 50 nephelometric turbidity unit (NTU), increases shall not exceed 20%; where natural turbidity is greater than 50 NTU, increases shall not exceed 10%. |
| Dissolved oxygen | The mean annual DO concentration of all waters shall be greater than 7 mg/l, and no single determination shall be less than 5.0 mg/l, except when natural conditions cause lesser concentrations. The DO content of all surface waters designated as both COLD and spawning, reproduction, and/or early development shall not be depressed below 7 mg/l as a result of waste discharges. |
| pH | The pH of inland surface waters shall not be depressed below 6.5 or raised above 8.5 as a result of waste discharges, and ambient pH levels shall not be changed more than 0.5 unit from natural conditions as a result of waste discharge. |
| Fecal coliform bacteria | In fresh waters designated for water contact recreation, the geometric mean *E. coli* density shall not exceed 126/100 mL and the fecal coliform density shall not exceed 200/100 mL. For single samples, *E. coli* density shall not exceed 235/100 mL, and fecal coliform density shall not exceed 400/100 mL. |
| Total dissolved solids | 800 mg/l. Constituent limits: 400 mg/l sulfate, 60 mg/l chloride, 1.0 mg/l Boron, 5 mg/l nitrogen (nitrate plus nitrite), and 5 mg/l sodium adsorption ratio. |




Note: For the July 1, 2000, to September 5, 2000, period shown above, the flow at USGS Gage No. 11109600, Piru Creek above Lake Piru, was consistently in the 24 to 27 cfs range.

Figure 3. Hourly water temperatures measured in Piru Creek upstream of Lake Piru (RM 13.1, 0.5 mile downstream of Agua Blanca Creek). (Source: United, 2002)

Between 2003 and 2004, measured pH levels in the project area generally complied with the Basin Plan objectives. An exception was noted when a pH of 9.00 was measured at Blue Point Campground (upstream of Lake Piru) on July 23, 2003 (table 6). There is no evidence that this elevated pH level in Lake Piru is related to project operation.

Table 6. In-situ measurements of temperature, DO, pH, and TDS. (Source: United, 2004)

| Sample Date | Parameter | Piru Creek at Blue Point Camp |
|---|---|---|
| July 23, 2003 | pH | 9.00[a] |
| | Temperature °C (°F) | 25.2 (77.4) |
| | DO (mg/l) | 8.54 |
| | TDS (mg/l) | 246 |
| October 21, 2003 | pH | 7.87 |
| | Temperature °C (°F) | 21.6 (70.9) |
| | DO (mg/l) | 9.94 |
| | TDS (mg/l) | 336 |
| January 30, 2004 | pH | 7.33 |
| | Temperature °C (°F) | 11.6 (52.9) |
| | DO (mg/l) | 8.73 |
| | TDS (mg/l) | 375 |

[a] Value exceeded the Basin Plan objectives.

### 3. Piru Creek Geomorphology

Soils and their geomorphic expression on the landscape within the Piru Creek watershed are a result of geologic environment and climate. Much of the watershed is undergoing relatively rapid erosion partly because the Transverse Mountain Ranges are geologically young and rapidly uplifting. However, because the Mediterranean climate produces hot dry summers with mild wet winters that are highly variable (average annual precipitation is about 20 inches per year), eroded material cannot be totally transported by the precipitation and existing flow regimes. As a result, deposited alluvium forms alluvial fans and basins. Alluvium deposited in canyon/gorge reaches holds runoff and creates areas of "perched" groundwater,[9] which supports riparian areas, an important habitat for sensitive terrestrial and aquatic species.

Major soil formations in the project area include Cortina stony sandy loam, Metz loamy sand, Mocho clay loam, and Anacapa sandy loam. These soil formations are predominantly derived from sedimentary parent rock and are typically found on valley floors and alluvial fans with slopes ranging from 2 to 15 percent. Coarse sand and gravel alluvium occurs throughout the Piru Basin and extends to a depth of about 60 to 80 feet

[9] An area of localized groundwater lying above the regional groundwater table for at least part of the year.

below ground surface. Permeability is typically rapid to moderately rapid with slow surface runoff, and the erosion hazard rating is moderate to high.

Aquatic and riparian ecological conditions are strongly driven by geomorphic form and function (Kondolf, 2000; Bjornn and Reiser, 1991). Many coastal streams in southern California (generally the area south of San Luis Obispo County) are intermittent where surface flow does not exist during all parts of the year. This is largely driven by climate and the extreme seasonality of flows. This seasonality and the fact that climate is regularly influenced by El Niño and La Niña cycles lead to a predominance of flows with little geomorphic restructuring capability. Conversely, flows capable of doing substantial geomorphic work (i.e., producing channel migration and transporting larger caliber sediment) are infrequent and, therefore, geomorphically and biologically important. For example, Hill and McConaughy (1988, as cited by BOR, 2003) conclude that, for a 10-year period on the Ventura River (in the adjacent Ventura River drainage), 92 percent of the total sediment transported in the river occurred during five storms averaging 10 days each. For the 45 years between 1930 and 1975, more than half of the total suspended sediment yield for the Santa Clara River Basin came in just 2 years, 1941 and 1969 (Brownlie and Taylor, 1981). In many southern California stream systems, infrequent storms determine sediment movement. In response, channels may experience cyclic periods of filling and entrenching as well as vegetation encroachment and removal. In general, it is these infrequent events that build habitat and set the stage for ecological processes.

The winter of 2004–2005 was quite wet in southern California, and Pyramid dam spilled more than 1,000 cfs during and after two heavy rain events for a total of about 9 days. Peak flows were more than 5,000 cfs at USGS Gage No. 11109525, Piru Creek below Pyramid dam, and 40,000 cfs at USGS Gage No. 11109600, Piru Creek above Lake Piru. During a site visit to the Santa Felicia Project, staff observations of the Piru Creek channel at Blue Point Campground during the May 2005 site visit were markedly different from the conditions described in the Santa Felicia license application[10]; however, none of the channel changes appeared out of the ordinary based on the general paradigm of southern California as streams previously described. In general, we observed that the Piru Creek channel is now wider and coarser, and substantial areas of emergent wetland and riparian vegetation have been removed by floodwaters.

Sediment supply to the project reach is derived from sources downstream of Pyramid dam. The primary sources of sediment supply to the project reach are (1) in-channel sources associated with channel incision and lateral migration, (2) bank erosion, (3) sediment delivered by tributaries and small drainages downstream of Pyramid dam, and (4) direct input by surface erosional processes.

[10]The study indicates that geomorphology fieldwork was completed in June 2004.

According to DWR (2005),

> "The channel bed and banks of the project reach are comprised primarily of coarse sands, cobbles, and boulders. The upper Frenchman's Flat, is dominated by cobbles (2.5 to 10 inches in diameter; approximately 15 percent of the material), gravel (0.08 to 2.5 inches in diameter; approximately 75 percent of the material), and coarse sand (0.02 to 0.08 inch in diameter; approximately 9 percent of the material). These sediment sizes make up approximately 98.9 percent of the bed material. The adjacent overbank terrace is similar in composition but with sands and fine sands accounting for approximately 15 percent of the material. In the lower Frenchman's Flat area, the bed and banks are slightly finer, being dominated by very coarse sand in the channel bed and medium to coarse sand in the terrace. Cobbles, gravel, and coarse sand make up approximately 90 percent of the bed material in the Bluepoint Campground area. The rest is sand and fine sand. The terraces adjacent to the main channel in these areas are slightly finer but still dominated by cobbles, gravel, and coarse sand."

The sediment supply in Piru Creek is altered because Pyramid Lake, which was completed in 1973 (first filled in 1975), acts as a sediment trap. USGS reservoir sedimentation data collected in 1975 (presented in Brownlie and Taylor, 1981) indicate that, in its first 20 years, Lake Piru accumulated 10,200 acre-feet of sediment (about10 percent of the reservoir capacity). United indicated that, in 1995, 12 percent (about 12,000 acre-feet) of the reservoir capacity was filled with sediment (providing the current estimate of 88,000 acre-feet of available water storage). On an average annual basis for the 20 years between 1975 and 1995, as compared to 1955 to 1975, Pyramid Lake seems to capture a substantial amount of sediment from the upper watershed.

Sediment deposition within Lake Piru has formed an expansive delta at the upstream end of the lake, with the delta front extending to roughly Devil's Canyon, and sediment deposition has adversely influenced past operations. In 1977, a 40-foot-tall elevated intake tower, which has an intake elevation of 932.6 feet (USGS), was installed and grouted to the original intake sill. United constructed this intake tower because sediment deposition on the original intake sill became problematic.

## B. TERRESTRIAL RESOURCES

### 1. Vegetation

Plant and wildlife species in the project area are typical of the transverse ranges of southern California and are adapted to a Mediterranean climate with cool, wet winters and hot, dry summers. The climate and stream flow conditions provide for a variety of plant communities. The project reach supports a variety of riparian plant communities primarily dominated by dense stands of willows and cottonwoods. As a result of creek morphology and historical scouring, localized stands of vegetation dominated by one species of willow also occur, including early successional stages of sand bar willow and isolated communities of arroyo willow. Other common riparian trees and shrubs

occasionally found along the project reach include white alder, elderberry, and western sycamore. Cattails, sedges, and rushes dominate the lower banks of the project reach and have colonized many instream sandbars and benches. Concrete-lined channels, rock riprap, and concrete weirs occur at several locations downstream of Pyramid dam, and a concrete Arizona crossing bisects Piru Creek at the Blue Point Campground near river mile 17.

The uplands surrounding the project reach are equally diverse. In some areas, oaks occur in adjacent upland habitat; in other areas, sage scrub and chaparral communities dominate. Where sharp changes in topography occur and the creek narrows, chaparral communities consisting of chamise, ceanothus, black and purple sage, and scrub oak abut the creek. Other common species include mountain-mahogany, white sage, and hollyleaf cherry. Low-growing shrubs and herbaceous plants, including buckwheats and yucca, dominate slopes in rocky, loose, or exposed areas. Blazing star and chalk live-forever are occasionally present in rocky crevices on exposed and rocky slopes. In some areas, the project reach flows through narrow rock-strewn gorges that are mostly barren of vegetation. Farther from the creek channel, disturbed non-native grasslands that are subject to grazing occur. Pine forests dominated by Jeffrey pines are located on some of the surrounding peaks.

The Aspen Environmental Group (Aspen) used aerial photographs and field reconnaissance to identify plant communities in or near Piru Creek in 2003 and 2004, including southern willow scrub, riparian scrub, southern cottonwood riparian forest, mulefat scrub, alluvial scrub, southern sycamore alder riparian woodland, southern coast live oak riparian forest, marsh, coastal sage scrub, chaparral, non-native grassland, oak woodland, and disturbed areas.

a. Special Status Plants:

The licensees conducted a record search using the California Natural Diversity Database for special status plant species. Subsequently, vegetation community surveys were conducted along sections of Piru Creek above Frenchman's Flat and in the vicinity of Blue Point Campground (Aspen, 2004, 2003; DWR, 2003) and all plant species observed were recorded. Table 7 lists federally and state listed species, Forest Service "Sensitive Plant" species, and plants identified as Sensitive List 1B by the California Native Plant Society that may occur in or near the project area. Although several species have potential habitat in the project area, none were observed during vegetation surveys. Federally listed plant species are not discussed further because there are no known occurrences of any of these species, and they were not observed during 2002 or 2003 plant surveys.

Table 7. Endangered, threatened, and sensitive plant species with the potential to occur in the vicinity of the project reach. (Source: DWR, 2005)

| Common Name (Scientific Name) | Status | Habitat Association in Proposed Project Region | Known or Potential Occurrence in Project Area |
|---|---|---|---|
| Forest camp sandwort (*Arenaria macradenia* var. *kuschei*) | FE | Habitat and elevation range unknown. Flowers June and July | Not observed during botanical surveys of the project area (2002 and 2003). |
| Braunton's milk-vetch (*Astragalus brauntonii*) | FE, SE, CNPS 1B | Chaparral, coastal scrub, valley floor grasslands, closed-cone conifer forest, recent burns or disturbed area, carbonate soils, <1,500 feet in elevation | Not observed during botanical surveys. Suitable habitat occurs in the project area. Four metapopulations are known to occur in Ventura, Los Angeles and Orange counties. |
| Crested milk-vetch (*Astragalus bicristatus*) | FSS | Open, rocky areas in pine forest, elevation 5,500–8,200 feet msl | This species is not known to occur in the project area. Not observed during the 2002 and 2003 botanical surveys. |
| San Antonio milk-vetch (*Astragalus lentiginosus* var. *Antonius*) | FSS, CNPS 1B | Lower montane conifer forest, upper montane conifer forest, elevation 5,000–8,500 feet msl | This species is not known to occur in the project area. Not observed during the 2002 and 2003 surveys. |
| Ventura marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*) | FE, FSS | Marshes and swamps; presumed extinct in California | Suitable habitat does not occur in the project area. |
| Nevin's barberry (*Berberis nevinii*) | FE, SE, FSS, CNPS 1B | Sandy to gravelly soils, washes, chaparral, sage scrub. Flowers March and April, elevation below 2,100 feet msl | Suitable habitat does occur in the project area, but the species was not found during surveys conducted in 2002 and 2003. |
| Three-leaved brodiaea (*Brodiaea filifolia*) | FE, SE, FSS, CNPS 1B | Grassland, vernal pools, elevation 200–1,000 feet | Not observed during botanical surveys. Suitable habitat may occur in the project area. |
| Palmer's mariposa lily (*Calochortus palmeri* var. *palmeri*) | FSS, CNPS 1B | Chaparral, elevation 4,000–6,500 feet | Suitable habitat does occur in the project area, but the species was not found during botanical surveys conducted in 2002 and 2003. |
| Plummer's mariposa lily (*Calochortus plummarae*) | FSS, CNPS 1B | Dry rock, chaparral, yellow pine forest at elevations below 5,500 feet | Suitable habitat occurs in the project area. Not observed during the 2002 or 2003 botanical surveys of the project area. |

| Common Name (Scientific Name) | Status | Habitat Association in Proposed Project Region | Known or Potential Occurrence in Project Area |
|---|---|---|---|
| Alkali marsh mariposa lily (*Calochortus striatus*) | FSS, CNPS 1B | Alkaline meadows, moist creosote-bush scrub, elevation 2,600–4,500 feet | Suitable habitat does not occur in the project area. |
| Pygmy poppy (*Canbya candida*) | FSS, CNPS 1B | Sandy areas. Flowers March–June, elevation 2,000–4,000 feet msl | Not observed during the 2002 and 2003 botanical surveys of the project area. |
| Mt. Gleason Indian paintbrush (*Castilleja gleasonii* [=*Castillleja pruinosa*]) | FSS, CNPS 1B | Dry, open serpentine or forest edge, elevation 1,600–6,500 feet msl | May occur in the project area. Not observed during the 2002 and 2003 botanical surveys. |
| Peirson' spring beauty (*Claytonia lanceolata* var. *peirsonii*) | FSS, CNPS 1B | Gravelly soils, woodlands, meadows, elevation 3,500–8,500 feet | Suitable habitat does not occur in the project area. |
| Slender-homed spineflower (*Dodecahema* [=*Centrostegia leptoceras*]) | FE, FSS, CNPS 1B | Coastal scrub, alluvial sands between 650–2,300 feet msl | Suitable habitat may occur in the project area. |
| Many-stemmed dudleya (*Dudley multicaulis*) | FSS, CNPS 1B | Coastal Plain, heavy soils often containing clay, below 2,000 feet msl | Suitable habitat may occur in the project area, but none observed during botanical surveys of the project area (2002 and 2003). |
| Southern alpine buckwheat (*Eriogonum kennedyi* var. *alpigenum*) | FSS, CNPS 1B | Subalpine conifer forest, alpine boulder and rock field, dry granitic and gravel substrates, elevation 8,500–11,500 feet msl | Suitable habitat does not occur in the project area. |
| Johnston's buckwheat (*Eriogonum microthecum* var. *johnstonii*) | FSS, CNPS 1B | Subalpine conifer forest, upper montane conifer forest, rocky substrates, elevation 8,500–9,500 feet msl | Suitable habitat does not occur in the project area. |
| Pine green-gentian (*Frasera neglecta* [=*Swertia neglecta*]) | FSS | Lower mountain conifer forest, piñyon juniper woodland, elevation 4,600–8,200 feet msl | Suitable habitat does not occur in the project area. |

| Common Name (Scientific Name) | Status | Habitat Association in Proposed Project Region | Known or Potential Occurrence in Project Area |
|---|---|---|---|
| San Gabriel bedstraw (*Galium grande*) | FSS, CNPS 1B | Open broad-leafed forest; chaparral. Flowers January–July, elevation 1,500–5,000 feet msl | Potential habitat exists in the region, but this species is known only from a few occurrences, most thought to be in Los Angeles County near the San Gabriel Mountains. |
| Lemon lily (Lilium *parryi*) | FSS, CNPS 1B | Meadows, streams in montane coniferous forest, elevation 4,300–8,500 feet msl | Suitable habitat does not occur in the project area. Not observed during the 2002 or 2003 botanical surveys of the project area. |
| San Gabriel linanthus (*Linanthus concinnus*) | FSS | Lower montane conifer forest, upper montane conifer forest, dry rocky slopes, elevation 5,600–9,200 feet msl | Suitable habitat does occur in the project area; however, no plants were identified during the 2003 botanical surveys. |
| Hall's monardella (*Monardella macarantha* ssp. *Halli*) | FSS, CNPS 1B | Chaparral, woodland forest. Flowers June–August, elevation 2,000–6,500 feet msl | Suitable habitat may occur. Not observed during the 2002 and 2003 botanical surveys of the project area. |
| Rock monardella (*Monardella viridis* ssp. *Saxicola*) | FE, FSS | Montane, chaparral, conifer forest. Flowers June–September, elevation 1,600–5,900 feet msl | Suitable habitat may occur. Not observed during the 2002 and 2003 botanical surveys of the project area. |
| Baja navarretia (*Navarretia peninsularis*) | FSS, CNPS 1B | Lower montane conifer forest, mesic, areas in open forest, elevation 4,900–7,500 feet msl | Suitable habitat does not occur in the project area. |
| Short-joint beaver tail (*Opuntia basilaris* var. *brachyclada*) | FSS, CNPS 1B | Chaparral, elevation 4,000–5,900 feet msl | Suitable habitat does not occur in the project area. |
| California orcutt grass (*Orcuttia californica*) | FE, SE, CNPS 1B | Vernal pools | Suitable habitat does not occur in the project area. |
| Howell's broomrape (*Orobanche valida* ssp. *Valida*) | FSS, CNPS 1B | Chaparral, pinyon juniper woodland, dry, rocky slopes, at elevation 4,500–6,500 feet msl | Suitable habitat does not occur in the project area. |
| Lyon's pentachaeta (*Pentachaeta lyonii*) | FE, CNPS 1B | Chaparral (openings), valley floor grasslands | Not observed during botanical surveys. Suitable habitat may occur in the project area. |

| Common Name (Scientific Name) | Status | Habitat Association in Proposed Project Region | Known or Potential Occurrence in Project Area |
|---|---|---|---|
| Gambell's watercress (*Rorippa gambellii*) | FE, FSS, CNPS 1B | Marshes, streambanks, lake margins. Flowers April–June. Generally below elevation 4,500 feet msl | May occur in project area, but not observed during the 2002 and 2003 botanical surveys of the project area. |

Notes: CNPS 1B – Plants identified as rare or endangered in California and elsewhere
FE – Federally endangered species
FT – Federally threatened species
FSS – Forest Service sensitive species
SE – State endangered species

### 2. Wildlife

The riparian communities along the project reach support a diverse assemblage of wildlife and provide access to water, shade, and protection from predators. The diverse riparian and adjacent upland communities provide foraging, nesting, and breeding habitat for a number of resident and migratory species. The licensees conducted protocol-level sensitive bird surveys and reconnaissance-level wildlife surveys in 2003 and 2004 and identified more than 150 vertebrate species at locations throughout the project area. In addition, the Forest Service conducted bird surveys along the project reach as part of least Bell's vireo (a federally endangered species) studies and identified more than 110 bird species.

Bird species common to the project reach include American crow, Anna's hummingbird, mourning dove, turkey vulture, western scrub jay, and California towhee. Shore birds, including green heron, snowy egret, American bittern, and black-crowned night heron, have also been observed foraging in the project reach. Mallard, American coot, and killdeer were also observed in the creek. Other species identified within the project area include red-tailed hawk, California quail, warbling vireo, and phainopepla.

Common mammals identified in the project reach include raccoon, California ground squirrel, brush rabbit, striped skunk, coyote, and mule deer. In addition, the area is used by wide-ranging carnivores, including black bear, bobcat, and mountain lion. Ringtail and gray fox may also occur. Small mammals expected to occur in the project area include such species as dusky-footed wood rats, voles, and deer mice. The abundance of small mammals in the project area serves as an important prey base for raptors and large mammals.

A variety of amphibians and reptile species are known or expected to occur along Piru Creek. Amphibians identified along the project reach include arroyo toad, Pacific treefrog, western toad, bullfrog, and California treefrog. Reptiles present include species such as the western fence lizard, southern alligator lizard, side blotched lizard, and gopher snake. Although not observed during surveys, king snake and western rattlesnake are expected to occur along the project reach. Southwestern pond turtle and the two-

striped garter snake, both state and federal species of special concern, were also observed at several locations along the project reach.

a. Sensitive Wildlife:

Special status species include those listed as state or federally threatened or endangered, species proposed for listing, species of special concern, and other species that have been identified by FWS, Forest Service, or CDFG as unique or rare. Twelve sensitive wildlife species have the potential to occur in the project area and are either closely associated with the project reach or could be affected by changes in flow in Piru Creek. Of these, arroyo toad, California red-legged frog, California condor, least Bell's vireo, and southwestern willow flycatcher are all federally listed species, and, as such, they are discussed in section VI.B.3, *Threatened and Endangered Species*. Table 8 lists the remaining sensitive wildlife species that have the potential to occur in the project reach area.

Table 8. Known or potentially occurring sensitive wildlife in the project reach. (Source: DWR, 2005)

| **Common Name (Scientific Name)** | **Status** | **Habitat Type** | **Known or Potential Occurrence in the Project Area** |
|---|---|---|---|
| Southwestern pond turtle (*Clemmys marmorata pallida*) | FSC, FSS, CSC, BLMS | Aquatic-riverine, ponds, lakes with suitable basking areas | Known to occur along the project reach. Pond turtles identified at several locations downstream of Pyramid dam. Suitable habitat occurs at many locations along the project reach. |
| Two-striped garter snake (*Thamnophis hammondii*) | FSS, CSC, BLMS | Occur in perennial and intermittent streams that have rocky beds and are bordered by willow thickets or other dense vegetation. | Known to occur along the project reach. This species was identified below the concrete weir and above Blue Point Campground during reconnaissance surveys conducted in 2004. |
| Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) | SE, FWSMC | Floodplain riparian forests below 1,500 feet. Prefers nesting habitat consisting of cottonwood | Although potential suitable habitat occurs in the project area, the present known range does not include the project area, and it has not been recently recorded in the |

| Common Name (Scientific Name) | Status | Habitat Type | Known or Potential Occurrence in the Project Area |
|---|---|---|---|
| | | willow riparian forest. | region. Surveys conducted above Frenchman's Flat in 2002 did not detect this species along the project reach. |
| Yellow warbler (*Dendrocia petechia Brewsteri*) | CSC, FWSMC | Riparian habitats | Known to occur along the project reach. Surveys conducted in 2002 and 2004 observed this species in riparian vegetation along the project reach. |
| Great blue heron (*Ardea Herodias)* | CDFS | Aquatic, riverine, lakes, ponds. Roosts and nests colonially in large trees. | Potential habitat occurs in the project area. Surveys conducted in 2002 repeatedly observed this species along the project reach. However, no rookery was found near the project area. |
| Great egret (*Ardea alba*) | CDFS | Aquatic, riverine, lakes, ponds. Roosts and nests colonially in large trees. | Potential habitat occurs in the project area. Surveys conducted in 2002 observed this species along the project reach. However, no rookery was found near the project area. |

Notes: BLMS – BLM sensitive species
CDFS – California Department of Forestry Service sensitive species
CSC – California species of special of special concern
FSC – Federal species of special concern
FWSMC – FWS-protected migratory species
FSS – Forest Service sensitive species
SE – State endangered species

### 3. Threatened and Endangered Species

a. Arroyo Toad:

The arroyo toad is a federally listed endangered amphibian and a California species of special concern. Habitat requirements for the arroyo toad include shallow,

gravelly overflow pools adjacent to sandy terraces, with low current velocity and sparse emergent vegetation. Final designation of critical habitat by FWS does not include Piru Creek. The nearest critical habitat for the arroyo toad is Sespe Creek, about 5 miles from the project (50 CFR Part 17). The FWS recovery plan, issued in July 1999, includes Piru Creek, both downstream of Pyramid Lake and Lake Piru, in the Northern Recovery Unit.

Pools relatively free of silt are required for larvae to feed, and stabilized sandbars with capillary fed moisture are essential for the survival of newly transformed juveniles during the summer. Adult and subadult toads estivate during summer and winter months, emerging to feed and hydrate. Burrow locations are usually located in dry or slightly damp fine sand and often in the canopy edge of willow or cottonwood. The major food source consists of ants and other small invertebrates. Predators on both aquatic and terrestrial life stages of arroyo toads include native and exotic species. Bullfrogs and non-native fish are especially effective predators. Introduced predators are now well established within the project area, and the dominant amphibian is the bullfrog, an exotic species.

Arroyo toads are known to occur along Piru Creek between Blue Point Campground and the gorge area downstream of Frenchman's Flat (RM 4 to 18). Currently, no arroyo toads occur in the area between Pyramid dam and Frenchman's Flat (RM 0 to 4). Surveys conducted for the licensees in 1998 and 1999 in this section of Piru Creek did not detect the presence of arroyo toads. Additionally, habitat conditions for this species were not favorable and would not be expected to support populations of arroyo toad (Hovore et al., 1999, as cited in DWR, 2005). Arroyo toad males were heard between RM 13 and 16 during the spring of 2004 and 13 egg clutches were found during surveys conducted in April and May 2004 by United's biologists above Blue Point Campground (RM 16) (personal communication, N. Sandburg, Biologist, United, Santa Paula, CA, with C. Huntley, Biologist, Aspen, Agoura Hills, CA, in May 2004, as cited in DWR, 2005).

Arrryo toad surveys were conducted in 2005 to monitor the first year DWR released winter flows from Pyramid dam as part of the simulated natural flow regime (Sandburg, 2006). In 2005, high winter flood flows occurred, removing entrenched channels, heavy silts, and dense vegetation. Surveys located at least 145 arroyo toad egg clutches in middle Piru Creek from April through July, compared to 13 located in 2004.

b. California Red-legged Frog:

The California red-legged frog is a federally listed threatened amphibian and a California species of special concern. It is typically associated with deep, still, or slow-moving water and dense, shrubby or emergent vegetation. It can occur in a variety of aquatic, riparian, and upland habitats, including ephemeral ponds, intermittent streams, seasonal wetlands, springs, seeps, permanent ponds, perennial creeks, human-made aquatic features, marshes, riparian corridors, blackberry thickets, non-native annual grasses, oak savannas, and reservoirs. Although California red-legged frogs can use

terrestrial habitats and ephemeral streams, it requires water that persists for at least 4 to 8 months during the breeding/tadpole season for successful reproduction.

Potential habitat for California red-legged frogs occurs at select locations of the project reach where suitable deep-water pools and emergent vegetation have developed. This species is known to have occurred historically on sections of the creek and has been documented at Agua Blanca Creek, a tributary of the project reach. Larvae were observed during 2005 arroyo toad monitoring in a 7-foot deep canyon pool about 0.5 mile north of the confluence of Aqua Blanca Creek (Sandburg, 2006). Like the arroyo toad, introduced predators such as the bullfrog limit the habitat potential for California red-legged frogs in the project reach.

c. California Condor:

The California condor is a federally and state-listed endangered species. Portions of the project area are within the designated critical habitat for the California condor, which covers parts of Ventura County.

Condors require vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude for nesting, roosting, and foraging. The species formerly occurred more widely throughout the southwest and also fed along beaches and large rivers along the Pacific coast. However, its range, since reintroduction to the wild in 1992 has been restricted to chaparral, coniferous forests, and oak savannah habitats in southern and central California and parts of Arizona. Traditional nest and roosting sites are located in cavities in cliffs, in large rock outcrops, or in large trees and are often maintained near feeding sites. Foraging occurs mostly in grasslands or in oak savannahs and can extend more than 100 miles from the roost or nest. California condors are opportunistic scavengers, feeding only on the carcasses of dead animals, including deer, cattle, and marine mammals such as whales and seals (FWS, 2006). Condors are currently present in watersheds adjacent to the project watersheds. Condors are known to occur in Los Padres National Forest and may occasionally forage along the project reach; however, condors are not dependent upon project waters for any life history needs.

d. Least Bell's Vireo:

Least Bell's vireo, a subspecies of Bell's vireo, is a federally and state-listed endangered species. This species is typically associated with riparian communities. Habitat requirements consist of well-developed overstory and understory, with low density of aquatic and herbaceous cover. The understory typically includes dense shrub thickets, consisting of willow or mulefat. The least Bell's vireo is an insectivore, preying upon a wide variety of insects including beetles, grasshoppers, moths, and especially caterpillars (FWS, 1998).

This migratory bird is native to southern California and Baja Mexico and is known to occur along the Santa Clara River, about 4 miles upstream of the confluence with Piru Creek. In recent years, the population of least Bell's vireo on the Santa Clara River has

grown from about 30 pairs in 1992 to more than 100 pairs in 2001. This population increase has been attributed primarily to control of the nest parasitizing brown-headed cowbird, habitat recovery, and focused habitat restoration. Although critical habitat has been designated for least Bell's vireo, the project area is not located within a critical habitat area. The nearest area designated as critical habitat is a segment of the Santa Clara River from about 2 miles east of the town of Piru, and upstream to Castaic Junction, near Interstate 5.

Although the extensive riparian habitat now present in the project area could be potential least Bell's vireo breeding habitat, no least Bell's vireo are expected to occur in the project boundary because the project reach has not historically supported populations of this species. The licensees conducted protocol-level surveys above Frenchman's Flat and did not locate least Bell's vireo in the project reach (Aspen, 2004, as cited in DWR, 2005). One pair of vireos may have been sighted near Blue Point Campground by Forest Service biologists in 2002; however, the species has not been recorded nesting in the area since that time.

e. Southwestern Willow Flycatcher:

The southwestern willow flycatcher is federally and state-listed as endangered and is a Region 5 Forest Service sensitive species. This bird breeds in several southwestern states and in northwestern Mexico, nesting in lowland riparian habitats of deserts and along the southern California and northern Mexico coast. Ideal habitat for the southwestern willow flycatcher includes dense riparian habitats along rivers, streams, or other wetlands. Preferred habitat for flycatchers is dominated by dense willow stands and may include an overstory of cottonwood, *Tamarix* sp., or other larger trees. Breeding habitats are less than 20 yards from water or have very saturated soil. Flycatchers are generalist insectivores, feeding upon wasps, bees, flies, beetles, butterflys/moths, etc. (FWS, 2002).

The nearest FWS-designated critical habitat for this species occurs along the Santa Ana River in Los Angeles County, about 100 miles from the project. The California Natural Diversity Data Base contains no documented occurrences of this species within the project vicinity; however, non-breeding flycatchers were observed in the project reach in 2003 and 2004, and one possible nesting pair was identified near Blue Point Campground by Forest Service biologists in 2002 (Aspen, 2004, as cited in DWR, 2005).

## C. AQUATIC RESOURCES

### 1. Aquatic Habitat

The Santa Clara River watershed is one of the few remaining drainages in southern California that continues to support populations of the southern California evolutionary significant unit (ESU) of endangered steelhead (letter from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to Dr. Eva Begley, Chief, License and Regulatory Compliance Section, DWR, Sacramento, CA, dated January 11, 2005). The

Piru Creek subwatershed comprises approximately one-third of the Santa Clara River watershed. NMFS states that Piru Creek historically contained important spawning and rearing habitat that was accessible to steelhead entering the Santa Clara River prior to initiation of the Vern Freeman diversion on the Santa Clara River (letter from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to Dr. Eva Begley, Chief, License and Regulatory Compliance Section, DWR, Sacramento, CA, dated January 11, 2005). United presents contrary evidence that Piru Creek did not have a natural, historic run of steelhead and that natural groundwater percolation caused a decrease in the surface flow, resulting in a frequent barrier to fish migration on the Santa Clara River prior to the confluence of Piru Creek (letter from J. Dickenson, Engineering Department Manager, United, Santa Paula, CA, to K.D. Bose, Secretary, FERC, Washington, DC, dated April 30, 2007). Currently, Santa Felicia dam on Piru Creek precludes all upstream fish passage. The dams and their operations have also resulted in the spread of non-native, aquatic predators, such as bullfrogs, largemouth and smallmouth bass, green sunfish, and catfish that prey on native fishes.

Prior to the initiation of the Vern Freeman diversion (non-project) on the Santa Clara River, the Santa Clara River System supported an annual run of anadromous steelhead estimated at 9,000 adult fish per year (letter from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to J.M. Dickenson, Engineering Department Manager, United, Santa Paula, CA, dated December 20, 2004). NMFS contends that these adults ascended all the major tributaries, including Piru Creek, of the Santa Clara River System, where their principal spawning and rearing tributaries are located. United disagrees with these statements and provides evidence to support its conclusion that Piru Creek did not support a historical anadromous steelhead population (letter from J. Dickenson, Engineering Department Manager, United, Santa Paula, CA, to K.D. Bose, Secretary, FERC, Washington, DC, dated April 30, 2007).

According to Moore (1980) (cited in letter from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to J.M. Dickenson, Engineering Department Manager, United, Santa Paula, CA, dated December 20, 2004), the mainstem of Piru Creek contains about 25 miles of steelhead spawning and rearing habitat, which constituted approximately 28 percent of the total historical habitat in the Santa Clara River system (Moore 1980). NMFS also contends (based on Moore, 1980) there is an additional 50 miles of tributary habitat in Fish and Aqua Blanca creeks, at least half of which historically provided additional seasonal steelhead spawning and rearing habitat. Since the completion of the Santa Felicia dam, only the lower 5 miles of Piru Creek are accessible to migrating adult steelhead. United disagrees with these figures on the basis that there is no documentation to support the conclusion that Piru Creek ever supported an anadromous steelhead run; Moore's estimates were based on high water years and during artificially high releases from both Pyramid and Santa Felicia dams; and temporal and spatial variations in rainfall do not allow comparisons between watersheds (e.g., Sespe Creek has an average annual discharge nearly 2.5 times greater than Piru Creek and only half the drainage area) (letter from J. Dickenson, Engineering Department

Manager, United, Santa Paula, CA, to K.D. Bose, Secretary, FERC, Washington, DC, dated April 30, 2007).

Piru Creek continues to contribute important flows through the lower reaches of the Santa Clara River that are necessary for steelhead to access other spawning and rearing tributaries in the watershed, such as Santa Paula, Hopper, Sespe, and lower Piru creeks (letter from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to J.M. Dickenson, Engineering Department Manager, United, Santa Paula, CA, dated December 20, 2004). In a letter dated April 30, 2007, United notes that surface water percolates to the subsurface between the Santa Clara River and the mouth of Piru Creek, creating a frequent migration barrier. It is probable that some of this water resurfaces and contributes to surface water flow downstream, albeit less than the amount contributed by Sespe Creek.

The minimum instream flows specified in article 52 and the 1995 CDFG agreement that were implemented from 1995 through 2004 (prior to the temporary waiver) require steady flow releases of 25 cfs from April 1 to August 31 downstream of Pyramid dam to protect and enhance fisheries, aquatic resources, and resident rainbow trout.

Other riparian, flow, and channel morphology changes associated with the Pyramid dam facilities and operations that affect fisheries and aquatic habitat are discussed in sections VI.A, *Water Resources*, and VI.B, *Terrestrial Resources*, above.

**2. Fish Use**

a. Fish Assemblages:

**Historic Fish Assemblages**

According to NMFS, Piru Creek had a historic population of resident rainbow trout and a natural winter run of steelhead, the anadromous form of *O. mykiss* (letter from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to Dr. Eva Begley, Chief, License and Regulatory Compliance Section, DWR, Sacramento, CA, dated January 11, 2005). The steelhead run in the Santa Clara River subbasin has been estimated at 9,000 adult fish per year. United (letter dated April 30, 2007) provides contradictory evidence that there was only a small population of resident rainbow trout with low natural reproduction, and no anadromous steelhead in Piru Creek historically, despite CDFG efforts to establish an anadromous run. Either way, adult steelhead have been unable to access the project area since the construction of United's Vern Freeman diversion on the Santa Clara River and in 1955 the Santa Felicia dam on Piru Creek. Since construction, Vern Freeman diversion has been equipped with fish passage facilities that provide documented steelhead passage. The project area still supports resident rainbow trout that may be capable of producing anadromous steelhead smolts (see section VI.C.3, *Aquatic Resources, Threatened and Endangered Species*).

Native Santa Ana sucker (*Catostomus santaanae*) and Santa Ana speckled dace (*Rhinichtys osculus*) were also part of the historical Piru Creek assemblage (Moyle, 2002;

Deinstadt et al., 1990, as cited in DWR, 2005). Neither of these species was found in 1987 (CDFG survey data).

The unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), a native, non-game fish that occurs in the upper Santa Clara River, upstream of the confluence with Piru Creek, may have been part of the historical assemblage in the project area (DWR, 2005). This species is believed to be extirpated from the project area (DWR, 2005). The partially armored threespine stickleback (*Gasterosteus aculeatus*) is found throughout the watershed, including the project area.

The arroyo chub (*Gila orcutti*) and the Owens sucker (*C. fumeiventris*) are native fishes that were historically introduced to Piru Creek (Moyle, 2002). There is no known extant population of arroyo chub in Piru Creek.

**Current Fish Assemblages**

Surveys conducted by CDFG in 1987 did not find any native fishes except rainbow/steelhead and prickly sculpin (*Cottus asper*) in the project area (DWR, 2005).

Project area creel surveys in 2004 found native rainbow trout and invasive, predatory species such as bluegill (*Lepomis macrochirus*), green sunfish (*L. cyanellus*), largemouth bass (*Micropterus salmoides*), and catfish (*Ictalurus* spp.) that have been introduced as game fish (DWR, 2005).

b. Fish Species:

**Arroyo Chub**

The arroyo chub is a California species of special concern and a Forest Service sensitive species that historically occurred in the project area. Arroyo chub is native to the Los Angeles, San Gabriel, San Luis Rey, Santa Ana, and Santa Margarita rivers and to Malibu and San Juan creeks. Although the arroyo chub has been extirpated from much of its native range, it has been successfully introduced into the Santa Clara River watershed.

No known extant population exists in the project area. Historical flow regulation, water diversion, trout stocking, and large numbers of exotic aquatic predators have likely extirpated this species from the project area (DWR, 2005).

**Santa Ana Speckled Dace**

Preliminary DNA analysis seems to confirm that the Santa Ana speckled dace found in southern California is distinctive, but the subspecies has not been described (Moyle, 2002). CDFG reports that the Santa Ana speckled dace was introduced into the Santa Clara River, and the introduction apparently failed (CDFG, 2006).

**Partially Armored Threespine Stickleback**

The partially armored threespine stickleback is a subspecies of the threespine stickleback that occurs throughout the Santa Clara River watershed, including the project

area. Partially armored sticklebacks are common, and comprised more than 90 percent of the fish that United collected during its population surveys on Piru Creek downstream of Santa Felicia dam.

The unarmored threespine stickleback is a federally and state-listed endangered species and a Forest Service sensitive species. This subspecies occurs only in the upper Santa Clara River watershed, well upstream of its confluence with Piru Creek. No known population of unarmored threespine stickleback exists in the project area.

**Santa Ana and Owens Suckers**

Santa Ana and Owens suckers occur throughout the Santa Clara River watershed. Santa Ana suckers, Owens suckers, and hybrids of the two species are common throughout Piru Creek. The Santa Ana sucker is federally listed as a threatened species in the Los Angeles, San Gabriel, and Santa Ana rivers. The Santa Ana suckers that occur in the Santa Clara River watershed are an introduced population, and they are not part of the federally listed population.

**Largemouth Bass**

Largemouth bass are abundant in Lake Piru and Pyramid Lake and support recreational fisheries in these water bodies. Although largemouth bass occur primarily in lakes, ponds, and reservoirs, fish from populations in both lakes occasionally migrate upstream of these impoundments on Piru Creek and pass downstream into the tailwaters of both reservoirs.

**3. Threatened and Endangered Fishes**

a. Southern California Steelhead:

**ESA Status**

Southern California steelhead was federally listed as an endangered species on March 19, 1998; the endangered status was reaffirmed on January 5, 2006 (50 CFR Parts 223 and 224). The ESU includes all naturally spawned anadromous southern California steelhead populations downstream of natural and human-made impassable barriers.

The historical steelhead run for four of the major river systems within the range of the southern California steelhead ESU is estimated to have been between 32,000 and 46,000 adults (50 CFR Part 226). Recent run size for the same four systems has been estimated to be fewer than 500 total adults. Therefore, the southern California steelhead ESU is at extremely high risk of extinction, and there are no artificially propagated stocks of steelhead to mitigate the risk of extinction (50 CFR Part 226).

A final critical habitat designation for southern California steelhead was published on September 2, 2005, with an effective date of January 2, 2006 (50 CFR Part 226). The project reach is not part of the designated critical habitat; the nearest critical habitat is located downstream of Santa Felicia dam.

**Life History**

Southern California steelhead have variable and flexible life history patterns. The two basic patterns are migratory and resident; both types often exist in the same population but dominance of one or the other is usually a defining trait of the population (Moyle, 2002). The migratory steelhead are either anadromous sea-run, lake-run, or within-river migrators (Moyle, 2002). Steelhead smolts out-migrate to summer rearing habitat or the ocean on high, spring flows.

Southern California steelhead are winter-run stock, and water years are highly variable in southern California. Upstream spawning migrations are triggered when winter rains breached the sandbars at the mouths of coastal tributaries (Moyle, 2002). Spawning migration can occur from December through March, with the peak occurring in January and February. Resident rainbow trout and anadromous steelhead (collectively, *O. mykiss*) are not reproductively isolated, and there is gene flow between the two life forms of this species. Some anadromous steelhead return to the ocean after spawning and may return to spawn in subsequent years (Moyle, 2002).

DWR (2005) reports that anadromous steelhead are believed to be extirpated from the project area and states, "It is unclear whether the potential for anadromous behavior is truly a genetic adaptation or simply an opportunistic behavior. It seems any stock of rainbow trout is capable of migrating, or at least adapting to seawater, if the proper conditions or opportunity arise."

The southern California *O. mykiss* exhibits a highly "plastic" life history that is adapted to the variable climatic and hydrologic conditions and variable, environmental events found in southern California coastal streams, including resident and anadromous life history strategies, high fecundity, and migratory "straying" into new habitats. *O. mykiss* populations may exhibit strong, weak, or no anadromous behavior traits, and populations cut off from the ocean by natural or anthropogenic conditions have continued to produce anadromous smolts (letter from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to Dr. Eva Begley, Chief, License and Regulatory Compliance Section, DWR, Sacramento, CA, dated January 11, 2005).

Prior to dam construction, natural percolation created a frequent migration barrier between Santa Clara River and the mouth of Piru Creek, and access to Piru Creek would only occur for "short durations in the wettest seasons of the wettest years" (letter from J. Dickenson, Engineering Department Manager, United, Santa Paula, CA, to K.D. Bose, Secretary, FERC, Washington, DC, dated April 30, 2007). The completion of Piru and Pyramid reservoirs in 1955 and 1973, respectively, completely eliminated access to Piru Creek and its tributaries upstream of the reservoirs. NMFS suggests that the current resident rainbow trout population is likely dominated by *O. mykiss* descended from steelhead isolated above the dams, and the progeny of anadromous steelhead may persist as residualized populations, particularly in the tributaries that have been less affected by the construction of the two reservoirs (letters from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to Dr. Eva Begley, Chief, License and

Regulatory Compliance Section, DWR, Sacramento, CA, dated January 11, 2005, and K.D. Bose, Secretary, FERC, Washington, DC, dated May 3, 2007). Currently, the wild rainbow trout in the tributaries exhibit an adfluvial life history pattern; the juveniles rear in the tributaries then emigrate to the reservoirs, instead of the ocean. The adults mature in the reservoirs before returning to the tributaries to spawn.

United (letter dated April 30, 2007) presents evidence that there was no historical pre-stocking or pre-dam run of steelhead in Piru Creek and that resident rainbow trout were often absent during stream surveys. Historic Forest Service maps indicate trout could be caught in the upper reaches of the Piru Creek watershed; no fishing potential is indicated for the mainstem of Piru Creek, Aqua Blanca Creek, and Fish Creek. Stream survey notes often indicate no trout/fish observed, no natural propagation, insufficient cover, flow too low during dry periods, and summer stream temperatures too high in Piru and Aqua Blanca creeks (CDFG Piru Creek Stream Surveys cited in letter from J. Dickenson, Engineering Department Manager, United, Santa Paula, CA, to K.D. Bose, Secretary, FERC, Washington, DC, dated April 30, 2007). Historically, resident trout may have migrated to the headwaters of accessible tributary streams to avoid high mainstem water temperatures during periods of low flow. Current knowledge that wild rainbow trout in the tributaries exhibit an adfluvial life history pattern; the juveniles rear in the tributaries then emigrate to the reservoirs, instead of the ocean; and adults mature in the reservoirs before returning to the tributaries to spawn supports this conclusion. The flow releases below Pyramid dam have created habitat that supports a year-round, naturally reproducing population of resident rainbow trout between the dam and the concrete weir.

**Genetics**

The Southern California steelhead ESU has unique genetic characteristics and high genetic diversity (Moyle, 2002). The high genetic diversity of southern California steelhead suggests a population that developed from fish that survived the Pleistocene in a Baja California refuge and recently stocked fish from northern California, which may explain “the remarkable capacity of this ESU to persist in seemingly unfavorable environments” (Moyle, 2002).

The licensees report that genetic studies of steelhead from the project area indicate the extant population is not related to native steelhead and is related to hatchery rainbow trout (DWR, 2005). Piru Creek watershed was stocked with fry or fingerlings classified as rainbow trout and steelhead from anadromous stocks between 1915 and 1938 (letter from J. Dickenson, Engineering Department Manager, United, Santa Paula, CA, to K.D. Bose, Secretary, FERC, Washington, DC, dated April 30, 2007). United estimates a minimum of 152,000 *O. mykiss* fry and fingerlings were stocked prior to 1939; the beginning of catchable-size trout stocking. United presents documentation that there is no historical evidence for a pre-stocking or pre-dam run of steelhead in Piru Creek, except for a single anecdotal report. United believes the percolative barrier between

Santa Clara River and the mouth of Piru Creek and highly variable water years were significant factors in CDFG's failure to establish an anadromous run.

Recent genetic work done at the NMFS Southwest Region Science Center (Girman and Garza, 2006) indicates the *O. mykiss* populations in the project area are closely related to other Santa Clara River watershed populations that have access to the ocean, and are not related to rainbow trout reared in the CDFG Filmore hatchery (letters from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to Dr. Eva Begley, Chief, License and Regulatory Compliance Section, DWR, Sacramento, CA, dated January 11, 2005 and K.D. Bose, Secretary, FERC, Washington, DC, dated May 3, 2007). The stocking data provided by United indicates this would be the case due to a similar history of *O. mykiss* stocking throughout the Santa Clara River Basin, and it is probable that the progeny of stocked *O. mykiss* have become established as a significant genetic component of the naturally reproducing rainbow trout in the watershed.

**Santa Clara River Migration Barriers**

Dams and diversions blocked the migration of steelhead to most of the Santa Clara River watershed, although access to upstream habitat has been improved in recent years. From the 1950s through 1990, United's Vern Freeman diversion on the Santa Clara River at RM 12 often blocked the upstream migration of adult steelhead and entrained emigrating steelhead smolts. During this period, steelhead were able to migrate upstream only during periods when the earthen diversion had been washed out by high flows. Between 1955 and 1984, the diversion washed out 84 times, ranging from 0 to 8 times per year, and provided an average 13.7 days per year when upstream passage was possible (ENTRIX, 1999). In 1989, the diversion was replaced with a permanent concrete structure equipped with modern fish passage facilities and intake screens that began operating in March 1991. These facilities have had very limited use by steelhead.

Both the fish ladder and the intake screens at the Vern Freeman diversion have trapping facilities that can be used to monitor and collect migrating steelhead. The number of smolts collected in the downstream migrant trap has generally increased since monitoring began in 1994. The total size of the smolt migration in most years is unknown, however, because smolts may pass directly over the diversion dam when spills occur. In addition, the downstream migrant trap is currently operated only when surface flow is not continuous between the diversion and the ocean (ENTRIX, 1999). Anadromous steelhead and lamprey that are collected in the trap are transported to the lagoon at the mouth of the Santa Clara River to allow them to complete their migration to the ocean, while resident species are released upstream of the diversion.

Nine adult steelhead have been observed at the Vern Freeman diversion since the fish ladder began operating in 1991. Between 1994 and 1997, four adult steelhead were collected in the upstream migrant trap during the migration season (one fish in both 1994 and 1995; two fish in 1996). All four fish were collected during March. Operation of the upstream migrant trap has been discontinued due to problems with siltation, but a video monitoring system has been installed to count upstream migrants.

Kelley (2004) reported that one fish was seen in the bay area at the diversion[11] in April 1999, two fish were observed in the fish ladder in March 2000, and another two fish were seen using the ladder in April 2001. Most of the historical steelhead spawning and rearing habitat in the Santa Clara River Basin occurred in Santa Paula, Sespe, and Piru creeks.

**Tributary Habitat**

Santa Paula Creek, which enters the Santa Clara River 4.5 miles upstream of the Vern Freeman diversion, historically provided 11 miles of spawning and rearing habitat for steelhead. The Santa Paula Water Works diversion dam (Harvey dam), which was constructed prior to 1910 at RM 3.8, was equipped with a fish ladder in 1939. The ladder became ineffective after the river channel was altered by floods in 1969–1970, but the ladder was rebuilt in 2000 (NMFS, 2005b).

Sespe Creek is the next major upstream tributary, entering the Santa Clara River near RM 22 (see figure 1). This tributary historically provided 53 miles of habitat for rainbow trout and steelhead, and today it provides about 89 percent of the spawning and rearing habitat available to this species. The stream is unregulated and supports an abundant population of resident rainbow trout. Blecker et al. (1997, as cited by Kelley, 2004) estimate that the spawning and rearing habitat in Sespe Creek could support a run of 9,472 adult steelhead. Most of the habitat in Sespe Creek was protected through its designation as a federal Wild and Scenic River in 1992.

Piru Creek, which enters the Santa Clara River near RM 30, historically provided more than 25 miles of spawning and rearing habitat for steelhead according to Moore, 1980 (cited in letter from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to J.M. Dickenson, Engineering Department Manager, United, Santa Paula, CA, dated December 20, 2004). As previously stated, United disagrees with these statements and provides evidence to support its conclusion that Piru Creek did not support a historical anadromous steelhead population (letter dated April 30, 2007). Results from surveys conducted in 1946 and 1949 found no trout in Piru Creek downstream of Frenchman's Flat (about 2 miles downstream of the current site of Pyramid dam). Low summer flows, high water temperatures, and siltation have been cited as problems in the suitability of Piru Creek downstream of Frenchman's Flat as salmonid habitat (United, 2004).

Several potential obstacles prevent the migration of steelhead on Piru Creek (figure 1). Two earthen diversions between Santa Felicia dam and the Santa Clara River, including United's Piru diversion, preclude upstream migration and may entrain out-migrating smolts at lower flows. These diversions wash out during high flows and probably do not impede migration at higher flows. Another potential barrier to upstream

[11]Kelley (2004) reported that this fish was "seen in the bay area at Vern Freeman," which probably refers to the forebay, upstream of the diversion dam.

migration is a box culvert bridge located at about RM 4.5. Santa Felicia dam and Pyramid dam are complete barriers to upstream migration.

Shortly after Pyramid dam was constructed on Piru Creek in 1973, surveys indicated that, even with a relatively cool tailwater temperature of 50°F, afternoon water temperatures were still reaching 75 to 80°F within 3 miles downstream of the dam (FERC, 2005). Minimum flows downstream of Pyramid dam have been modified several times to enhance the tailwater trout fishery that extends to Frenchman's Flat, and, more recently, to protect the arroyo toad.

Two main tributaries, Agua Blanca and Fish creeks, enter Piru Creek between Pyramid Lake and Lake Piru. These creeks provide habitat for rainbow trout and potential habitat for steelhead. Habitat surveys conducted by the Forest Service in the late 1970s indicate that Agua Blanca Creek contains 16 miles of salmonid habitat, and Fish Creek contains 1.25 miles of salmonid habitat (United, 2004, as cited in FERC, 2005).

Since Santa Felicia dam was constructed, a minimum flow of 5 cfs has been maintained that may create potential steelhead habitat within the first mile downstream of the dam; the water temperatures in this section appear to be suitable for salmonid rearing (FERC, 2005). However, there are no current reports of steelhead or rainbow trout in Piru Creek downstream of Santa Felicia dam.

**Ventura River Watershed**

The Ventura River, which enters the Pacific Ocean about 5 miles to the north of the mouth of the Santa Clara River, also contains potential steelhead habitat. Access to this habitat was improved when a fish passage facility was installed at the Robles diversion in 2004, which may aid rebuilding of local steelhead populations. Steelhead returning to the Ventura River may stray into the Santa Clara River watershed, and vice versa.

**Rainbow Trout Fishery**

The Commission requires the licensees to maintain a year-round rainbow trout fishery in Piru Creek between Pyramid dam and Frenchman's Flat as part of the project license. The water released into Piru Creek from Pyramid dam supports "catch-and-release" and "put-and-take" rainbow trout fisheries. The catch-and-release fishery is located in a 2-mile section of tailwater between Pyramid dam and a concrete weir that is an upstream migration barrier. This segment of Piru Creek supports a naturally reproducing population of resident rainbow trout that CDFG does not stock.

Exhibit S of the project license requires that the licensees stock 4,000 pounds of trout in the project area annually. Because CDFG fisheries biologists believe that 4,000 pounds of trout would exceed the carrying capacity of the creek at Frenchman's Flat, only 3,000 pounds of trout have been stocked each year (DWR, 2005).

CDFG releases 3,000 pounds of hatchery-reared rainbow trout for a put-and-take fishery near Frenchman's Flat, downstream of Pyramid dam (see figure 1) between November and May. During the summer and fall, water temperatures are too high to support the put-and-take fishery in the Frenchman's Flat area, and no externally marked (i.e., fin-clipped for identification) hatchery trout are caught during these months (DWR, 2005).

When trout are stocked, two to three times more trout are caught in the catch-and-release area than at Frenchman's Flat (DWR, 2005). The trout caught in the catch-and-release area are likely to be caught multiple times, as opposed to downstream areas where a fish is likely to be caught only once (DWR, 2005). Heavy poaching with gill nets and other methods has been observed in the catch-and-release area, removing numerous fish from above the weir. Despite this poaching, the creel census surveys indicate that the best fishing in the project reach is in the catch-and-release area (DWR, 2005).

## D. RECREATIONAL RESOURCES

### 1. Recreational Setting

The project is located on lands administered by the Angeles and Los Padres National Forests. The Angeles National Forest encompasses more than 650,000 acres of land; the Los Padres National Forest includes about 1.75 million acres of land. Recreational opportunities in the forests include camping, picnicking, fishing, hunting, target shooting, off-highway vehicle use, all water sports (e.g., whitewater and flatwater boating, swimming, wading, and tubing), wilderness use, winter sports at the highest elevations, hiking, biking, and equestrian use (DWR, 2005). During the summer and fall dry season, portions of the Angeles National Forest may close due to fire hazards or actual wildfires. In the past, Piru Creek has been closed anywhere from 3 to 6 weeks during the fire season due to fire hazards.

Recreational activities along the project reach include camping, picnicking, hiking, fishing, rafting, kayaking, and water play. Piru Creek, including the project reach, is designated as a Study River[12] under the National Wild and Scenic River System and the 2.75 miles of the project reach from 0.25 mile downstream of Pyramid dam to Osito Canyon is designated as a Recreational River by the California Wild Heritage Act of 2002, Section 201 Designation of Wild and Scenic Rivers (DWR, 2005).

[12]This river is under Congressional study for designation to the Wild and Scenic River System. It is currently under the full protection of the Wild and Scenic Rivers Act pursuant to section 7(b) of the Act. The segment of Piru River on the Angeles National Forest that starts 300 feet below Pyramid dam and continues downstream to the Sespe Wilderness boundary contains geological values determined to be outstandingly remarkable, including scenic tilted layers of sedimentary rocks as well as faults and rock formations with features crucial to the understanding of geological formation on the west coast of North America (Forest Service, 2005a).

Recreational activities along the project reach occur year-round with the most use occurring in the spring and summer seasons. The project reach is easily accessible (about 40 miles) from the Los Angeles metropolitan area.

The area of the project reach with the highest visitation is Frenchman's Flat, which sometimes receives more than a thousand visitors in a single weekend (DWR, 2005). DWR (2005) reports conflicts between anglers and swimmers, and weekday users commonly complain about litter and refuse that the weekend users leave behind (DWR, 2005). The Forest Service requires a user fee for access to this area. There is an old road that is closed for vehicular traffic, however, it is open for walking, bicycling, and angling and extends from the parking area at Frenchmen's Flat to the Pyramid dam bridge. Lands upstream from the Pyramid dam bridge to Pyramid dam are closed to the public for safety reasons.

Naturally reproducing rainbow trout and non-native smallmouth bass, largemouth bass, and blue gill are found in Piru Creek downstream of the Pyramid dam bridge (DWR, 2005). Fishing for bass and bluegill is common in lakes such as Pyramid Lake, Lake Piru, and Castaic Lake.

Pursuant to article 52 of the project license, the licensees are required to provide the flows necessary to maintain a year-round trout fishery between Pyramid dam and Frenchman's Flat. Wild rainbow trout reproduce naturally in a 2-mile section between Pyramid dam and a concrete weir located at Frenchman's Flat that is an upstream migration barrier (see figure 1). This area is designated as a catch-and-release fishery to protect wild rainbow trout, and is not stocked (see section VI, *Aquatic Resources*, 3.b., *Rainbow Trout Fishery*).

As noted above, the licensees release 3,000 pounds of hatchery-raised trout downstream of the weir at Frenchman's Flat for a put-and-take fishery between November and May. There are other trout fishing streams in the area, such as Sespe Creek to the west, where native, naturally reproducing trout are found; however, a sizable portion of Sespe Creek is closed to fishing, and some of the upper watershed is only catch-and-release. Some self-sustaining trout populations also are found in some of the tributaries to Piru Creek, but access is difficult, and the number of fish is limited. Other nearby, self-sustaining trout populations include Lytle Creek near San Bernardino and other small streams at higher elevations.

The licensees conducted creel surveys from October 2003 through September 2004.[13] The total number of anglers counted using the project reach during April 2004 (221 total counted) was the highest ever recorded and was 67 percent higher than the use recorded in March 2004. Based on the creel surveys, most of the anglers in the project reach were fly fishermen. Upstream of Frenchman's Flat, the weekend angling use is

[13]Four weekday and four weekend dates were randomly chosen each month for surveying.

about two times higher than weekday use. Angler use at Frenchman's Flat is only slightly higher on weekends.

About 54 percent of the anglers interviewed were satisfied with the size of the fish caught; 47 percent of anglers indicated they were satisfied with the number of fish caught. Angler satisfaction was relatively high, ranging from 62 to 96 percent. Average angler satisfaction was 78 percent. Anglers fishing in the catch-and-release area generally enjoyed their experience more than anglers seeking fish for consumption in the put-and-take area. The anglers who caught fish for consumption were rarely satisfied with the number or size of the fish taken, and consistently requested that the CDFG stock larger trout (DWR, 2005).

Pursuant to the licensees' latest Licensed Hydropower Development Recreation Report (FERC Form 80)[14] for the Pyramid lake development filed with the Commission on April 22, 2003, the development receives about 364 recreation days[15] annually. The licensees also recorded a peak weekend average of 16 recreation days.

Whitewater boating opportunities are available on the project reach. According to the American Whitewater web site, Piru Creek between Pyramid dam and Piru Lake is an 18.5-mile-long class IV whitewater boating run, best suited for kayaking (American Whitewater, 2006). American Whitewater recommends starting this boating run at Frenchman's Flat and ending it at the Piru Lake boat ramp. American Whitewater reports that flows are suitable for a few days immediately during and after large, winter rain storms, or for longer periods during very wet winters. The minimum boatable flow is about 300 cfs (American Whitewater, 2006). Based on the flow records from 1989 to 2003, about 29 days were suitable[16] for boating during the 14-year period. No whitewater boaters were observed during the 2003–2004 creel census surveys, but anglers and DWR personnel have reported occasional sightings (DWR, 2005).

### 2. Applicable Recreational Guidelines in Forests' Land Management Plans

National Forest System lands near the project are managed under the Angeles and Los Padres National Forest Land Management Plans (LMPs) dated September 2005. The national forest land managed pursuant to these LMPs is divided into a series of geographical units called Places. Each Place has been defined with its own landscape

[14]The Commission's Form 80 must be submitted by licensees of all projects except those specifically exempted (18 CFR 8.11(c)) once every 6 years. The last Form 80 submission was April 2003, and the licensees will be required to file their next one by April 1, 2009, for data collected during the calendar year 2008.

[15]A recreation day is defined as a visit by a person to a development for recreational purposes during any portion of a 24-hour period.

[16]For the purposes of this document, a suitable boating day is defined as a flow of 400 to 1,100 cfs as measured at both the upstream and downstream end of the project reach for at least 8 hours.

character which has been described as an overall visual and cultural impression of landscape attributes, the physical appearance and cultural context of a landscape that gives it an identity and "sense of place." Each Place has a theme, setting, desired condition, and program emphasis.

The Angeles National Forest LMP recognizes the project reach as I-5 Corridor Place. Management emphasis in the I-5 Corridor Place is expected to focus on an urban and forest infrastructure that is sustainable, sympathetic to the natural setting and integrity, and mitigates effects on species of management concern and their habitat, as well as heritage resources. Community protection needs, boundary management, and protection of open space in the urban interface will be recognized as a growing emphasis due to the increasing development along the national forest border. Forest health (in terms of water quality and water needs) will be managed to provide for forest ecosystem needs and instream flows necessary to support surface and subsurface resources. Management emphasis will be on water-based recreation opportunities at Pyramid Lake and Frenchman's Flat. Carrying capacity levels for Pyramid Lake and Frenchman's Flat will be developed. Working with the appropriate agencies and partners, the backcountry route to the Los Padres National Forest will be completed. The National Forest will focus open space protection of boundary management in anticipation of adjacent development. Finally, the National Forest is active in regional planning efforts to establish wildlife linkages connecting the Castaic Mountains to the Los Padres National Forest and Tehachapi Mountains. Uses and activities are managed to provide opportunities for establishment of regional wildlife linkages in the I-5 Corridor Place. Protection and enhancement of threatened, endangered, proposed, candidate, and sensitive species will be emphasized in all activities. Exotic species eradication will be emphasized (Forest Service, 2005a).

Pursuant to the Los Padres National Forest LMP, the Hungry Valley/Mutau Place includes Pyramid Lake and the forest lands to the north to include the higher elevations. This area is the headwaters for Piru Creek. The general management emphasis within the Hungry Valley/Mutau Place includes an increase in recreational opportunities while striving to maintain the primitive feel afforded by this Place. In addition, there is a general emphasis within this Place to increase management presence to curb vandalism and other inappropriate uses. Management emphasis within the Hungry Valley/Mutau Place, specifically in regards to the upper Piru Creek Corridor, includes the preservation of the wild and scenic river qualities and sensitive riparian habitats. Existing designated off-highway vehicle trails and crossings within the Scenic River Corridor may continue, but new off-highway vehicle routes will not be developed within the River Corridor (Forest Service, 2005b).

Pursuant to the Los Padres National Forest LMP, the Ojai-Piru Front Country Place includes the area of Lake Piru. Management focus is expected to continue on reducing risk from wildland fire, improving trail access to national forest lands, maintaining scenic quality, improving recreation facilities, domestic water, oil and gas, and increasing public environmental education; establishing community defense zones;

continuing to reduce conflicts between recreationists, private landowners, and sensitive species; and minimizing illegal activities (e.g., marijuana cultivation). Management focus also includes acquiring land to improve public trail access, to promote ecological stability, and to reduce or eliminate use conflicts. The Los Padres National Forest LMP also states the Forest Service would continue to work with United to complete a land exchange that resolves land ownership problems at Lake Piru (Forest Service, 2005b).

Generally, the LMPs guide Forest Service staff when occupied or suitable habitat for a threatened, endangered, proposed, candidate, or sensitive species is present on an ongoing or proposed project site, to consider species guidance documents to develop project-specific or activity-specific design criteria. This guidance is intended to provide a range of possible conservation measures that may be selectively applied during site-specific planning to avoid, minimize, or mitigate negative long-term effects on threatened, endangered, proposed, candidate, or sensitive species and habitat. The LMPs also require fish passage instream flows associated with dams and impoundments where fish passage will enhance or restore native or selected nonnative fish distribution and not cause adverse effects on other native species. The LMPs also guide Forest Service staff to manage habitat to move listed species toward recovery and de-listing and to prevent listing of proposed and sensitive species (Forest Service, 2005a, 2005b).

## E. LAND USE AND AESTHETIC RESOURCES

### 1. Aesthetic Resources

The project reach is visible from limited areas such as from Old Highway 99 and other nearby roads, Frenchman's Flat, and some hiking trails. The project reach is relatively steep and undeveloped with dense chaparral vegetation; consequently, it is rarely seen by the public. Piru Gorge and Osito Canyon, which are steep and have no roaded access, provide physical barriers making public access to the northern portion of the project reach difficult. The southern portion of the project reach (16 miles below Pyramid dam) between the Whitaker Ranch and Blue Point Campground (temporarily closed to camping) has a landscape of flatter proportions where the creek winds through grass and scrub vegetation. Visitors can view this lower portion of the project reach from Piru Canyon Road which parallels Piru Creek above Piru Lake.

### 2. Land Use

a. Public Lands:

The project reach is located mainly on public lands administered by the Angeles National Forest. As shown in figure 4, Piru Creek enters the Los Padres National Forest downstream of Pyramid dam. About 3 miles downstream of the dam, Piru Creek enters

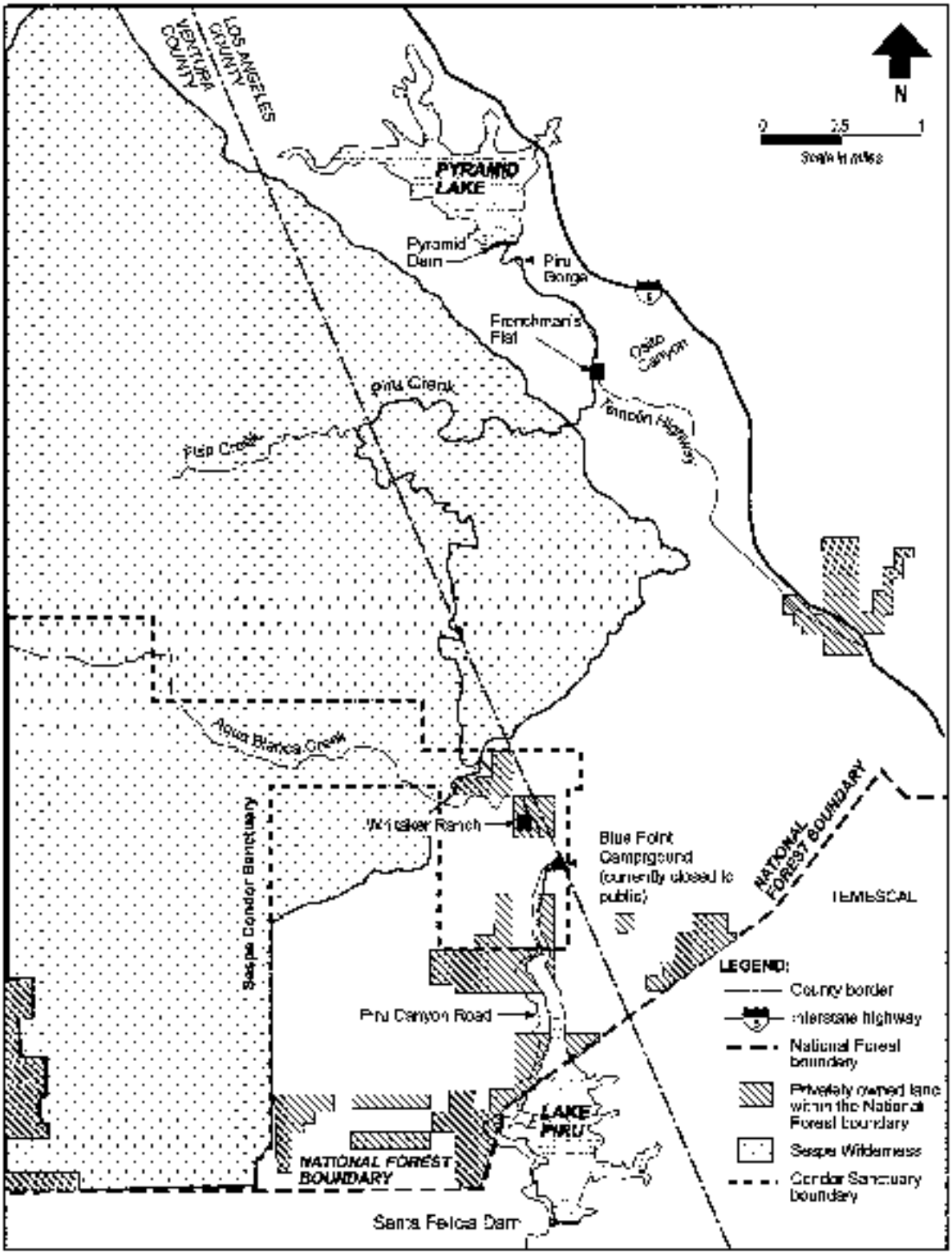



Figure 4. California Aqueduct Project—project reach downstream of Pyramid dam (including landownership and specially designated areas). (Source: DWR, 2005, as modified by staff)

the Sespe Wilderness.[17] Piru Creek leaves the wilderness area about 16 miles downstream of Pyramid dam, re-entering public lands managed by the Forest Service. Land use policies and guidelines for the public lands in the vicinity of the project are included in the National Forest LMPs for the Angeles and Los Padres National Forests dated September 2005.

b. Private Lands:

A few privately owned parcels of land lie within the lower-most 2 miles of the project reach. Any development within these in-holdings is subject to specific conditions and standards within the land use element of the General Plans and zoning codes of Los Angeles and Ventura counties. The County of Ventura's General Plan specifies the preservation of natural resources including areas required for the preservation of plant and animal life for areas zoned as Open Space. The County of Los Angeles General Plan guidelines include providing low intensity outdoor recreation in areas of scenic and ecological value compatible with protection of these natural resources.

## F. CULTURAL RESOURCES

The APE for this undertaking is Piru Creek between Pyramid dam and Lake Piru. Lake Piru is located about 18 miles downstream of Pyramid dam and is formed by Santa Felicia dam, which is owned and operated by United. We also include all lands from the creek bed to an elevation of 1,250 feet msl at the northern end of Lake Piru and to an elevation of 2,250 feet msl at the base of Pyramid dam.[18]

The licensees commissioned a study to assess the potential effects of the proposed amendment on archaeological and paleontological resources. The following tasks were completed:

- Archaeological Records Check;
- Historic Background Research;
- Native American Consultation;
- Paleontological Overview;
- Field Survey; and
- Analysis.

[17]National Forest System lands congressionally designated as a wilderness area.

[18]The change in elevation (1,000 feet from north to south) equates to an average of 50 feet above the existing streambed. When conditions in the creek meet the 100 year flood conditions with 18,000 cfs from the dam and inflow from the tributaries to middle Piru Creek, the water could potentially flow 20 feet above the existing streambed under the proposed flow regime. Therefore, the 50-foot APE encompasses the APE.

As a result of the investigations listed above, no historic properties listed in the National Register have been identified to date within the APE. The APE was visually surveyed by two qualified archaeological surveyors between April 11 and April 28, 2004. No new evidence of prehistoric or historic resources was found within the APE. In addition, no apparent surface evidence of prehistoric remains within the APE has been identified. The proposed project area is considered sensitive for paleontological resources. The results of the 2004 investigations can be found in the *Final Cultural Resources Investigations and Paleontological Overview for the Simulation of Natural Flows in Middle Piru Creek Project, Los Angeles and Ventura counties, California* (McKenna et al., 2004).

Near the southern portion of the APE, the Whitaker homestead (dated 1896) was identified on the Cobblestone Mountain Quadrangle as being adjacent to middle Piru Creek and accessed by a dirt road leading from the Blue Point Campground to Kester Camp. The Whitaker homestead is west and outside of the APE. However, historically a road leading to the property fell within the APE and is mapped as such on the current USGS quadrangle. During the April 2004 survey the archaeologists found no evidence of the road. The surveyors determined that past flooding in the area over the past few decades has washed away all indications of the old road. No standing structures were reported for the areas of Whitaker homestead that fall within the boundaries of the predicted water surface elevations that would result from the proposed amendment's maximum stream release of 18,000 cfs.

Article 407 of the project license requires the licensees, before starting any land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in this license, to consult with the SHPO and San Bernardino County, conduct a cultural resources survey, and develop for Commission approval a historic properties management plan (HPMP) to avoid or mitigate effects on any significant archaeological or historic sites identified during the survey.[19] Article 407 also states that if the licensees discover any previously unidentified archaeological or historic sites during the course of constructing or developing project works or other facilities at the project, the licensees shall stop all land-clearing and land-disturbing activities in the vicinity of the find and consult with the SHPO and San Bernardino County and file an HPMP to avoid or mitigate effects on significant resources.

## VII. ENVIRONMENTAL EFFECTS

### A. PROPOSED ACTION

#### 1. Water Resources

Project-related flows in the project reach can affect the flow regime, water quality, channel morphology, water delivery to United, and have environmental effects on other

[19]See 51 FERC ¶62,090 (1990).

resources including terrestrial, aquatic, and recreational resources. In this section, we analyze the effects of the proposed changes of the project operation on water resources, including the effects on the changes in the delivery of State Water Project water to United and the proposed testing of the radial gates at Pyramid dam.

a. Low and High Flow Conditions:

The licensees' Proposed Action involves releasing the natural inflow to Pyramid Lake to the project reach. The licensees propose to estimate the daily releases from Pyramid Lake from two USGS gages upstream of Pyramid Lake: Gage No. 11109375, Piru Creek below Buck Creek near Pyramid Lake and Gage No. 11109395 Canada de Los Alamos above Pyramid Lake. The licensees also propose a proration factor to account for the 12 percent of drainage area to Pyramid Lake, which is not included in these two gages. The effects of this action involve the most substantial change in the operational scheme during the low flow months of July through October and during the flash flood events that normally occur during the winter and early spring.

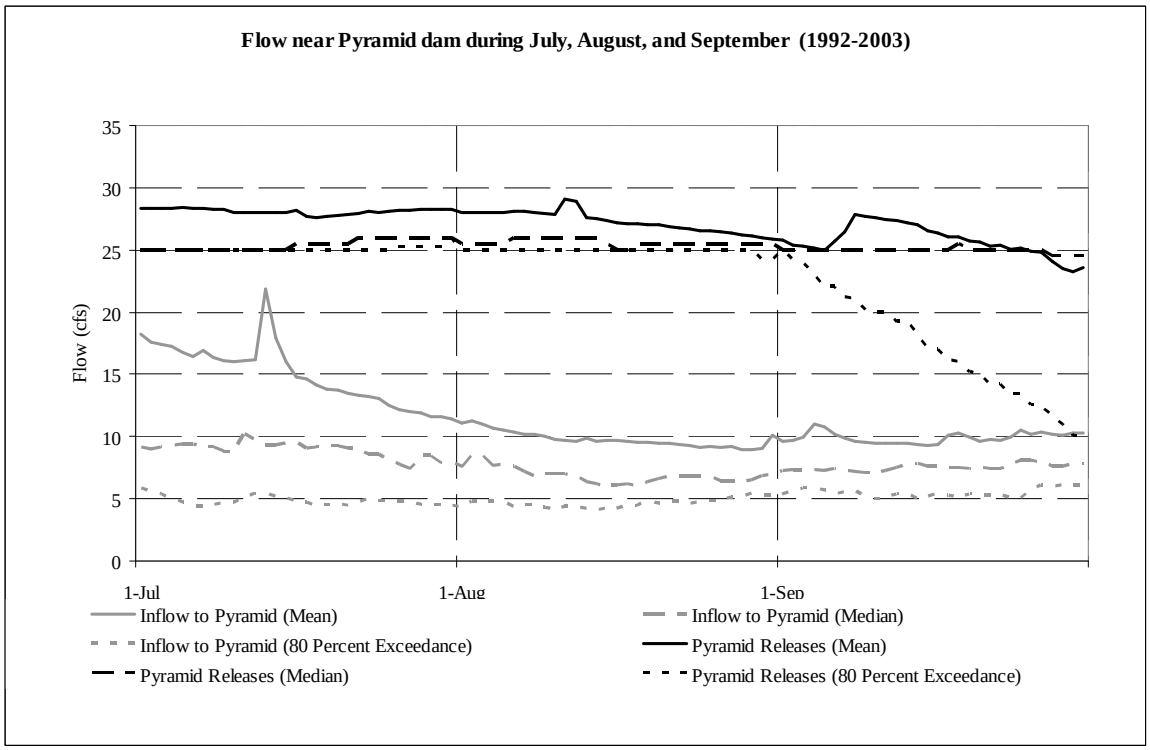
Article 52 specifies a continuous release 25 cfs from Pyramid dam between April 1 and August 31 to maintain a year-round trout fishery between Pyramid dam and Frenchman's Flat. Under the Proposed Action, water would be released from Pyramid dam into the project reach at approximately (based on operational constraints[20]) the same rate as the natural inflow into Pyramid Lake. Figure 5 shows a graph of the flows released into the project reach and the natural inflow into Pyramid Lake from 1992 to 2003 in the months of July through September, normally the driest and warmest months.

Accretion of flows in the project reach as measured by the daily difference between USGS Gage No. 11109525 (Piru Creek Below Pyramid Lake) and USGS Gage No. 11109600 (Piru Creek above Lake Piru) is normally very small, for Piru Creek loses water to groundwater, evaporation, vegetational uptake, or other sinks during July, August, and September, but larger in the winter and spring ( table 9).

The proposed flow regime would normally result in much lower flows, close to the median flows listed in table 9 than what would exist under the flows specified in article 52, especially during the summer and early fall of dry years. During this time period, flows within the project reach would be expected to become intermittent in some areas similar to what existed prior to the construction of Pyramid dam as shown in table 2 (USGS Gage No. 11109600, Piru Creek above Lake Piru Water Years 56–73) and as the inflow to Pyramid dam shown in figure 5.

[20]DWR states that the valves at Pyramid dam can be adjusted for releases less than 3 cfs, but precise measurement of flows less than 3 cfs may not be possible due to operational constraints of the dam's gaging instrumentation.

During high flow periods, the licensees propose to release water from Pyramid dam in a manner that is similar to the timing and magnitude of the inflow to Pyramid Lake up to a maximum safe release of approximately 18,000 cfs through the valves and radial gate. The licensees state that storm releases may be held back at less than 18,000 cfs if higher releases are deemed a threat to life, safety, or property at Pyramid dam or downstream areas. Table 10 provides the existing and proposed flood flows in the project area.




Note: Inflow to Pyramid Lake was calculated as: prorating USGS gage no 11109375 Piru Creek below Buck Creek near Pyramid Lake by 1.1773 and adding USGS gage no. 11109395 Cañada de Los Alamos above Pyramid Lake.

Figure 5. Flow near Pyramid dam during July, August, and September. (Source: USGS, 2006, as modified by staff)

Table 9. Project reach flow accretion. (Source: USGS, 2006, as modified by staff)

| | Monthly Accretion (cfs) | |
|---|---|---|
| **Month** | **Mean** | **Median** |
| October | 1.7 | 0.8 |
| November | 3.4 | 1.9 |
| December | 11.4 | 5.6 |
| January | 86.6 | 9.3 |
| February | 211.0 | 36.1 |
| March | 107.0 | 26.0 |
| April | 42.5 | 21.7 |
| May | 20.5 | 9.8 |
| June | 8.1 | 1.5 |
| July | 3.7 | –0.6 |
| August | 0.9 | –1.2 |
| September | –0.6 | 0.7 |

Note: Calculated as the difference on a daily basis between USGS Gage No. 11109600, Piru Creek above Lake Piru, and USGS Gage No. 11109525, Piru Creek below Pyramid dam, for water years 1992 through 2003.

Table 10. Peak flow discharges. (Source: DWR, 2004)

| | Existing Maximum Average Daily Discharge (cfs) | | Proposed Maximum Average Daily Discharge (cfs) | |
|---|---|---|---|---|
| **Flood Return Period (years)** | **Into Pyramid Lake** | **At Frenchman's Flat** | **At Frenchman's Flat** | **Blue Point Campground** |
| 100 | 53,800 | 18,000 | 18,000 | 22,680 |
| 50 | 32,700 | 16,300 | 18,000 | 22,680 |
| 20 | 15,400 | 8,000 | 15,400 | 19,404 |
| 10 | 7,770 | 4,220 | 7,770 | 9,790 |
| 5 | 3,370 | 1,920 | 3,370 | 4,246 |
| 2 | 658 | 414 | 658 | 829 |

NMFS recommends that the licensees upgrade the stream gages that record stream flow into Pyramid Lake, USGS Gage No. 11109395, Cañada de Los Alamos above

Pyramid Lake, and USGS Gage No. 11109375, Piru Creek below Buck Creek near Pyramid Lake, to allow for real-time information readings that the licensees could use to determine the releases from Pyramid dam (letter from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to Dr. Eva Begley, Chief, License and Regulatory Compliance Section, DWR, Sacramento, CA, dated January 11, 2005). FWS recommends that the licensees attempt to match the natural inflow peak to Pyramid Lake as closely as possible without a time lag to avoid a bimodal stream flow peak in the project reach, which would result in a lesser peak flow with lower scouring power (letter from R. Farris, Acting Division Chief, FWS, Ventura, CA, to S.L. Kashiwada, Chief, Division of Operations and Maintenance, DWR, Sacramento, CA, filed March 3, 2005).

The licensees state that, because of arroyo toad issues, USGS Gage No. 11109375 is now only accessible by foot, and it is not feasible to convert this gage into a real-time gage location. The licensees also state that operating Pyramid dam to release flows downstream, on an hourly or less basis, to almost exactly match the inflow to Lake Pyramid is not feasible due to operational and logistical constraints and that the proposed operation could result in a time lag and decrease in rate of release as compared to the inflow. The licensees state that Pyramid dam is a remotely operated system and discharges are normally adjusted on a daily basis or maybe a few time a day during a storm event. The licensees also state that attempting to match inflow on a 15 minute interval would require continuous staff presence at the control valves or would require a new operational system. The rapid change in flows during the winter is in great contrast to the slowly changing flows during low flow periods such as July through October.

Table 11 summarizes recent average daily flows near Pyramid dam and the average daily and peak flows and farther downstream near the Blue Point Campground.

Table 11 shows that the flow in the project reach is greatly influenced by tributaries which enter Piru Creek downstream of Pyramid dam, resulting in a very flashy flow regime even for the 1996 to 2005 period. This influence of the tributaries is most substantial in the middle and lower sections of the project reach.

b. Water Delivery to United and Testing of Radial Gates:

Under the Proposed Action, the licensees would deliver state water to United at Lake Piru between November 1 and the end of February. United supports this measure because it would have more limited adverse effects on the arroyo toad and less water would be lost to evaporation and vegetational uptake during the summer months when the water has been typically released (letter from D.L. Wisehart, General Manager, United, to Dr. E. Begley, Chief, License and Regulatory Compliance Section, DWR, Sacramento, CA, dated January 6, 2005). United also recommends, however, that because of the potential variation in future water delivery needs, the Proposed Action be amended to include limited flexibility to allow improved delivery scenarios following approval by FWS and the Commission. The licensees developed this recommended

timing change in close coordination with FWS. FWS recommends that the water deliveries be made either in association with a natural runoff event or to mirror a natural hydrological event.

Table 11. Historical peak flow discharges. (Source: USGS, 2006)

| | USGS Gage No. 11109600, Piru Creek above Lake Piru | | | USGS Gage No. 11109525, Piru Creek below Pyramid dam | |
|---|---|---|---|---|---|
| Water Year | Date | Average Daily Flow (cfs) | Peak Flow (cfs) | Date | Average Daily Flow (cfs) |
| 1996 | 2/20/1996 | 550 | 800 | 2/21/1996 | 502 |
| 1997 | 12/22/1996 | 298 | 619 | 1/28/1997 | 200 |
| 1998 | 2/23/1998 | 15,000 | 38,000 | 2/23/1998 | 6,000 |
| 1999 | 11/28/1998 | 129 | 165 | 11/25/1998 | 104 |
| 2000 | 2/23/2000 | 456 | 1,170 | 3/5/2000 | 200 |
| 2001 | 3/5/2001 | 5,030 | 10,100 | 3/6/2001 | 2,610 |
| 2002 | 11/24/2001 | 18 | 50 | 7/28/2002 | 36 |
| 2003 | 2/12/2003 | 243 | 641 | 4/15/2003 | 188 |
| 2004 | 2/26/2004 | 926 | 2,030 | 2/26/2004 | 864 |
| 2005 | 1/10/2005 | 6,520[a] | 40,000 | 1/10/2005 | 5,490 |

[a] 9,020 cfs on January 11, 2005.

The licensees also propose to perform periodic testing of the radial gates at Pyramid dam and state that water releases would be no more than 50 cfs for 15 minutes. This amount of flow over a short period would cause a brief spike in the flow immediately downstream of the dam. However, within a short distance along the project reach, this spike of water released from Pyramid dam would quickly attenuate due to channel routing effects and would quickly decrease in magnitude downstream of the dam.

c. Stream Morphology:

Initial construction of Pyramid dam altered the sediment transport regime in the project reach, effectively intercepting almost all downstream sediment transport, especially sand and larger particles such as gravel. In general, the current sediment transport regime is characterized by a sediment deficit downstream of the dam, with downstream sediment inputs coming from bed and bank erosion, tributary inputs, and occasionally the eroding toe of debris flows. The controlled releases from Pyramid dam also have altered the channel morphology by limiting the flow releases to values less than occurred before the dam construction. This control limits the magnitude of yearly high flow events and the larger flood events that play the key roles in sediment transport and

channel morphology. The less common and smaller in magnitude high flow events since the construction of Pyramid dam have altered the natural stream morphology processes and have resulted in vegetated encroachment on the channel and the lack of sand bars and gravel areas near Piru Creek, especially in the upper sections of the project reach and results in a smaller volume of sediment transport to Lake Piru. In the Frenchman's Flat area within the upper portion of the project reach, more flow has been confined to the channel resulting in a coarsening of the stream bed. Farther downstream in the project reach, near the Blue Point Campground, the floodplain is wider with a higher percentage of sand and gravel in the channel and floodplain.

The licensees propose to release on a daily average basis the inflow to Pyramid Lake to return more natural conditions to the project reach to benefit the arroyo toad as requested by FWS. The proposed plan also involves mitigation measures for possible effects on increased erosion on man-made structures downstream of Pyramid dam.

A landowner, Rex Pray, stated in the public meeting held on December 16, 2004, in Santa Clarita, California, that he is concerned about the increased flows creating additional erosion and damage to the stream crossings along Piru Creek that he maintains to access his land along the project reach upstream of the Blue Point Campground. Under the Proposed Action, the access roads to private land would be subjected to higher peak flows, which could restrict access during large flood events. The licensees' proposed measure to consult with the Forest Service and private landowners to develop a warning system and place signage would minimize the effects on private landowners; however, access could still occasionally be blocked.

Table 12 provides the depth of flow in the channel and the width of the floodplain at two key locations within the project reach. Comparison of the depths and widths in table 12 indicate that changes would be most noticeable in the smaller flood events such as the 2-, 5-, 10-, and 20-year floods and very limited in the 50- and 100-year flood conditions.

Table 12. Flood plain extent under existing and proposed conditions. (Source: DWR, 2004)

| | **Existing Conditions** | | **Proposed Conditions** | |
|---|---|---|---|---|
| **Flood Return Period (years)** | **Maximum Flow Depth (feet)** | **Top Width (feet)** | **Maximum Flow Depth (feet)** | **Top Width (feet)** |
| **Frenchman's Flat Area** | | | | |
| 100 | 13.2 | 342 | 13.2 | 342 |
| 50 | 12.7 | 333 | 13.2 | 342 |
| 20 | 9.8 | 251 | 12.5 | 329 |
| 10 | 7.8 | 205 | 9.7 | 249 |

| Flood Return Period (years) | Existing Conditions | | Proposed Conditions | |
|---|---|---|---|---|
| | Maximum Flow Depth (feet) | Top Width (feet) | Maximum Flow Depth (feet) | Top Width (feet) |
| 5 | 5.8 | 123 | 7.2 | 190 |
| 2 | 3.1 | 61 | 3.8 | 71 |
| **Blue Point Campground Area** | | | | |
| 100 | 12.1 | 432 | 12.1 | 432 |
| 50 | 11.6 | 427 | 12.1 | 432 |
| 20 | 8.7 | 378 | 11.3 | 425 |
| 10 | 6.8 | 314 | 8.6 | 376 |
| 5 | 5.0 | 224 | 6.2 | 293 |
| 2 | 2.6 | 99 | 3.2 | 125 |

The licensees' proposed operating regime would result in higher flows during storm events that would increase erosion and sediment movement and scouring along the project reach. Higher flood flows would result in increased channel and overbank velocities (table 13). The licensees' proposed infrastructure monitoring would detect harmful effects from erosion and allow the licensees to take any necessary corrective action to protect infrastructure.

Table 13. Channel and overbank velocities in existing and proposed conditions. (Source: DWR, 2004)

| Flood Return Period (years) | Existing Velocity Conditions | | | Proposed Velocity Conditions | | |
|---|---|---|---|---|---|---|
| | Channel (feet/sec) | Left Overbank (feet/sec) | Right Overbank (feet/sec) | Channel (feet/sec) | Left Overbank (feet/sec) | Right Overbank (feet/sec) |
| **Frenchman's Flat Area** | | | | | | |
| 100 | 12.9 | 7.3 | 5.2 | 12.9 | 7.3 | 5.2 |
| 50 | 12.6 | 6.9 | 5.0 | 12.9 | 7.3 | 5.2 |
| 20 | 10.2 | 5.2 | 3.6 | 12.4 | 6.7 | 4.9 |
| 10 | 8.4 | 3.6 | 2.4 | 10.1 | 5.1 | 3.5 |
| 5 | 6.6 | 2.4 | 1.3 | 7.9 | 3.0 | 2.1 |
| 2 | 4.0 | 0.3 | 0.4 | 4.7 | 1.0 | 0.6 |

| Flood Return Period (years) | Existing Velocity Conditions | | | Proposed Velocity Conditions | | |
|---|---|---|---|---|---|---|
| | Channel (feet/sec) | Left Overbank (feet/sec) | Right Overbank (feet/sec) | Channel (feet/sec) | Left Overbank (feet/sec) | Right Overbank (feet/sec) |
| **Blue Point Campground Area** | | | | | | |
| 100 | 14.6 | 5.3 | 7.1 | 14.6 | 5.3 | 7.1 |
| 50 | 14.2 | 5.1 | 6.8 | 14.6 | 5.3 | 7.1 |
| 20 | 11.5 | 3.9 | 4.9 | 13.9 | 5.0 | 6.6 |
| 10 | 9.5 | 3.0 | 3.6 | 11.4 | 3.8 | 4.8 |
| 5 | 7.5 | 2.1 | 2.5 | 8.9 | 2.8 | 3.3 |
| 2 | 4.5 | 1.1 | 1.4 | 5.2 | 1.4 | 1.9 |

Proposed changes in the project operation regime to closely mimic the inflow to Lake Pyramid, as operationally feasible, would result in higher peak flows, a larger floodplain, and greater geomorphic changes within the project reach during storm and flood events smaller than the 50-year event. The resulting changes would include scouring of the channel, banks, and pools on a more regular basis. We discuss the effects on terrestrial and aquatic resources in sections VI.B.2, *Terrestrial Resources*, and VI.C.3, *Aquatic Resources*.

d. Water Quality:

The proposed operating plan would involve a return to more natural stream flow regime to the project reach. The lower flows especially during June through September, the warmest and driest part of the year, would enhance warming of the water in the stream and lower dissolved oxygen levels. Added total dissolved sediment levels during flood events are possible, but due to high levels of sediment inflow from tributaries throughout the reach, this effect is expected to be very minor under most circumstances.

Although it is certain that implementing the licensees' proposed natural flow regime is likely to increase dry-season water temperatures in the project reach as compared to current levels, water temperatures are likely to be equal to or slightly lower than those that would be experienced under natural conditions without the project. Thermal stratification, which is common in reservoirs such as Pyramid Lake, would cause the discharge water to be cooler than the natural inflow to Pyramid Lake during the warmest parts of the year. The Water Quality Control Plan states that the natural receiving water temperatures of all regional waters shall not be altered unless it can be demonstrated that such alteration in temperature does not adversely affect beneficial uses. Because water temperatures are not expected to exceed those that occurred under natural conditions, the state standards are unlikely to be exceeded. Therefore, any effects on the designated beneficial uses would be limited.

### 2. Terrestrial Resources

a. Riparian Habitat and Sensitive Riparian Wildlife Species:

The operating regime specified in article 52 has resulted in well-developed riparian vegetation and marsh along the project reach because of the presence of year-round flow and the decrease in scouring flooding events. Changing the project instream flow requirements to be more consistent with the natural inflow to Pyramid Lake could potentially alter the existing riparian habitat and subsequently affect the habitat of sensitive wildlife species using this habitat, including southwestern willow flycatcher, least Bell's vireo, great blue heron, great egret, and yellow warbler. The southwestern willow flycatcher and least Bell's vireo are discussed separately below because they are federally listed species.

Instituting a more natural flow regime in the project reach would create a more variable flow regime whereby there would be an increase in the frequency and magnitude of high flow events in the project reach, which would increase scouring and aid in sediment transport. Additionally, it would result in lower summer flows, with occasional periods when there would be no flow in the channel. The decrease in summer flows would likely decrease the amount of emergent marsh vegetation, reducing the amount of foraging habitat for great blue heron and great egret. However, even during times when there is no flowing water in the project reach, deep pools of water would remain, providing foraging habitat for the heron and egret.

In the project reach, the cottonwood community has few juvenile trees, indicating a lack of cottonwood recruitment. Year-round flows and a lack of regular scouring events have resulted in a dense understory, preventing the establishment of cottonwood seedlings which need access to bare soil and sunlight. The increase in scouring and decrease in summer flows would, however, be likely to return riparian habitat to more natural conditions, including aiding in cottonwood recruitment. The Proposed Action would likely mean a decrease, to some extent, in the dense riparian vegetation that has developed under the operating regime specified in article 52. Although the Proposed Action would be beneficial to cottonwood recruitment, habitat for avian species that use dense, thick riparian habitat for nesting and cover, such as the yellow warbler, would decrease but would not be eliminated. An increase in the number of large scouring flows could cause the loss of extensive amounts of riparian habitat and yellow warbler nesting habitat. We note, however, that this is an effect that occurs on unregulated streams in California, and as such, we consider this effect a part of the natural riparian cycle.

b. Sensitive Reptiles:

The operating regime, as specified under article 52, requires the release of water from Pyramid dam into Piru Creek throughout the year, which has provided conditions favorable to the establishment of exotic predators such as bullfrogs throughout the reach. These predators prey on juvenile southwestern pond turtles and two-striped garter snakes, both sensitive wildlife species that occur in the project reach. Additionally, this operating

regime has resulted in deep incised channels with undercut banks and swift water, both of which are unfavorable conditions for the southwestern pond turtle that prefers slow moving, warm pools and basking sites.

The licensees propose to release water into Piru Creek from Pyramid dam in a manner that is similar to the natural inflow into Pyramid Lake, provide water to United between November 1 and the end of February of each water year, and limit water releases for periodic testing of Pyramid dam's radial gates to 50 cfs and for no more than 15 minutes in duration. FWS, the Forest Service, and the CDFG support this proposal. The CDFG, however, recommends that the licensees conduct southwestern pond turtle surveys for the population number and age-class composition prior to and during implementation of the proposed measure to determine the benefits or detriments of the measure (letter from C.F. Raysbrook, Regional Manager, CDFG, San Diego, CA, to Dr. E. Begley, Chief, License and Regulatory Compliance Section, DWR, Sacramento, CA, dated December 29, 2004). The licensees, in their response to this comment letter states that they agree that obtaining additional information regarding the population dynamics of this species might potentially provide useful scientific information; therefore, they would continue to work with the CDFG to assess the feasibility and methodology of the studies recommended by the CDFG.

Exotic predators, such as bullfrogs, thrive under conditions that provide permanent flow and marsh vegetation. Instituting a more natural flow regime would likely reduce the population of these predators by removing marsh vegetation, flushing bullfrog tadpoles downstream during winter storm events, and killing bullfrog tadpoles by desiccation during periods when there is low or no flow in the project reach. Reducing the predator population would be beneficial to juvenile turtles and two-striped garter snakes.

The southwestern pond turtle is a mainly aquatic turtle that generally requires still or slow-moving water. Southwestern pond turtles thrive in areas with aerial and aquatic basking sites and hatchlings require shallow water habitat with relatively dense submergent or short emergent vegetation in which to forage. Because the pond turtle requires still or slow moving pool habitat that is deep enough to fully submerge, reducing the flow into the project reach could result in more isolated pools and areas that have slow moving water, thereby increasing potential habitat and basking sites. The CDFG, in its December 29, 2004, letter, states its concerns that these isolated pools would get heavy recreational use, resulting in the predation of turtles. Although the licensees, in their response to this comment letter, state that recreational uses are likely to concentrate in areas where southwestern pond turtles do not appear to occur, the recreational response to the proposed operating regime is unknown at this time. Because the effect of human predation and recreation on southwestern pond turtles is unknown, monitoring for southwestern pond turtles, as recommended by the CDFG, would provide information regarding the need to manage any harmful recreational use that may occur.

Similar to the effects on the southwestern pond turtle, the proposed operating regime would result in favorable conditions for the two-striped garter snake. Exotic predators would be reduced, and less-incised stream channels, seasonal pools for summering, and upland mounds would be developed by increased scouring frequency. Because two-striped garter snakes do not require standing water for survival, they would not be confined to pools and therefore would not likely be affected by recreational use. As such, the proposed project would be beneficial to the two-striped garter snake.

c. Arroyo Toad:

The operating regime specified under article 52 has resulted in adverse conditions for the arroyo toad. Sustained summer flows and attenuated winter storm flows in the project reach have caused the unauthorized take of the arroyo toad and the deterioration of its habitat. The instream flow requirements have resulted in an increase in riparian vegetation and wetlands present on sand and gravel bars which would normally be used by arroyo toads. Artificial high flows occurring during the arroyo toad breeding season (March until the emergence of juvenile toads in May through June) can wash out arroyo toad eggs and tadpoles. Additionally, providing a continuous flow in the project reach has created favorable conditions for exotic predators such as bullfrogs that prey on the arroyo toad.

The Proposed Action would result in greater volumes of water passing through the project reach during the “rainy season” (which typically extends from November through April). From May through October, generally considered the “dry season,” the volume and rate of flows into the project reach would diminish incrementally in response to progressively smaller volumes of natural surface water flows entering Pyramid Lake. During the dry season it is possible that at times there would be no surface water flow in the project reach.

FWS, the Forest Service, and the CDFG support the licensees’ proposed measures (letters from D.K. Noda, Field Supervisor, Ventura Fish and Wildlife Office, FWS, Ventura, CA, to the Commission, dated July 11, 2005; G.D. Brown, Forest Supervisor, Los Padres National Forest, Goleta, CA, to the Commission, dated March 3, 2005; and C.F. Raysbrook, Regional Manager, CDFG, San Diego, CA, to Dr. E. Begley, Chief, License and Regulatory Compliance Section, DWR, Sacramento, CA, dated December 29, 2004, respectively). The CDFG, however, recommends the licensees conduct a long-term monitoring program to document the response of arroyo toad and other special status species populations as the result of the Proposed Action and discuss further mechanisms to facilitate sediment supply into the system if long-term management activities at Pyramid dam are expected to degrade habitat. FWS (letter from P. Henson, Assistant Manager, FWS, Sacramento, CA, to K.D. Bose, Secretary, Commission, Washington, DC, dated May 10, 2007) recommends arroyo toad monitoring occur for 10 or more years to reflect a typical range of annual climatic fluctuations.

The current 25-cfs release of water downstream of Pyramid dam from April 1 through August 31 has resulted in abundant riparian and emergent vegetation growth and increased water velocities, which are not preferred arroyo toad habitat conditions. In contrast, arroyo toads prefer open riparian habitats with elevated terraces and minimal water velocity. They deposit their eggs in shallow pools with substrates of sand or small gravels with velocities below 0.2 cfs (Sandburg, 2004). They prefer streams that typically experience periodic flooding that scours vegetation and replenishes fine sediments (50 CFR Part 17). Additionally, releasing continuous flows in the summer could potentially adversely affect tadpole and juvenile toads because they prevent access to calm edge waters and can wash tadpoles downstream.

Under the proposed flow regime, stream flows would decline through the summer months and provide low-velocity pools and access to moist sandy terraces. Under the proposed action, spring and summer storms would increase stream flow and could strand tadpoles in isolated pools when flows recede, or desiccate toad egg masses if they are laid above the normal baseflow due to prolonged high water levels. However, spring-summer storm flows would be brief and unlikely to adversely affect the long-term health of the Piru Creek population of Arroyo toad because the toad is adapted to flows within the range of natural conditions. In addition, more frequent flood events would benefit arroyo toads by increasing fluvial geomorphic processes such as providing the scouring needed to reduce riparian and emergent vegetation, increasing stream terraces and sandbars, and redistributing sediments.

Arroyo toad surveys conducted in 2005, the first year of DWR simulating natural flows including winter flow releases, located 145 egg clutches in middle Piru Creek from Lake Piru north to Ruby Canyon (Sandburg, 2006). The release of the high winter flood flows into middle Piru Creek flushed exotic predators and heavy silts and removed dense riparian vegetation and entrenched channels from the project reach, providing optimum arroyo toad habitat. Although 2005 summer flows were higher than normal, the report found that the combination of high winter flood flows being released along with the cessation of augmented summer flows is likely to be needed to maintain optimum habitat conditions. Following an extreme winter flood event in 1998, the channel became entrenched again and vegetation encroached the channel quickly under augmented summer flows of 25 cfs, erasing the habitat benefits of the winter flood event by 2002 (Sandburg, 2006). To maintain the benefits of winter storm events, as observed in 2005, simulated natural flows would also need to occur in the remainder of the year to prevent channels from quickly becoming entrenched and encroached by vegetation.

Pyramid dam blocks the natural transport of sediment to the project reach, which is important in the development of sandy bars, terraces, and breeding pools used by arroyo toads. Sediment loads from the upstream reaches of the project reach and secondary sources, such as Agua Blanca Creek, provide the fine sediments needed by the arroyo toad in middle and lower portions of the project reach. The upper portions of the project reach, however, would lose sediment at higher rates because the more frequent higher flows in this area would move sediment downstream. Because the arroyo toad

does not occur from Pyramid dam to Frenchman's Flat (RM 0 to RM 4), the increased loss of sediment in this area would not affect the toad. Monitoring the arroyo toad population in the project reach, as recommended by the CDFG and FWS, would allow the early detection of potential adverse affects on arroyo toads from the loss of sediment in portions of the system, either because the toads have become established in the upstream portions of project reach, or the loss of sediment extends farther downstream than anticipated.

The permanent pools and emergent vegetation created by the continuous summer flow release also provide habitat for exotic predators, such as the bullfrog. Bullfrogs are a significant threat to arroyo toads. Reducing the flow in the project reach, as proposed, would likely reduce bullfrog habitat in the project reach. Additionally, an increase in the frequency and magnitude of winter flows has the potential to flush bullfrog tadpoles downstream without adversely affecting arroyo toads. Bullfrog tadpoles take up to 2 years to undergo metamorphosis compared to arroyo toads, which undergo metamorphosis 65 to 85 days after hatching, resulting in the emergence of juvenile toads in early May through June (Sandburg, 2004). In the winter, arroyo toads move to adjacent upland habitat to estivate and therefore would not be affected by high flows resulting from winter storms. Because of this, the scheduled Table A water deliveries to United would also not affect the arroyo toad. This delivery would occur between November 1 and February 28 of each water year when the toads inhabit upland areas away from the flowing water.

The periodic release of water to test the radial gates on Pyramid dam could result in the release of up to 50 cfs of water into Piru Creek between June 16 and July 31. Juvenile toads emerge in early May through June. If this amount of water were to occur in areas of arroyo toad tadpoles or eggs, they could be flushed downstream and die. Because arroyo toads do not currently occur in Piru Creek in the stretch immediately downstream of Pyramid dam and these releases would have a short duration (15 minutes or less), the resulting flow from testing the gates would unlikely be measurable downstream where arroyo toads occur. In addition, releases would be avoided whenever possible during this time, further lessening potential effects on arroyo toads.

d. California Red-legged Frog:

The federally threatened California red-legged frog was not known to occur in the project area prior to larvae being located in one pool approximately 0.5 miles north of Agua Blanca Creek in 2005. Additional populations are known to occur in Agua Blanca Creek, a tributary to Piru Creek located 16.5 miles downstream of Pyramid dam. Piru Creek upstream of Lake Piru has been designated by FWS as critical habitat. Aquatic predators such as bullfrogs are plentiful, therefore, greatly reducing the potential for California red-legged frog to become plentiful in the project area.

As with the arroyo toad, operating the project under the minimum instream flow requirements in article 52 has created habitat for aquatic exotic predators of the

California red-legged frog, such as the bullfrog. Unlike the arroyo toad, however, this steady release of water potentially created appropriate habitat characteristics for California red-legged frog by allowing emergent vegetation to develop. The California red-legged frog's preferred breeding habitat is characterized by water at least a meter deep with riparian or aquatic vegetation, such as willow and cattails, which can serve as cover from terrestrial predators (Sandburg, 2004).

Although the licensees' proposal would likely result in flow releases into the project reach that would reduce natural predators, as discussed above, it also has the potential to create conditions that are less favorable for growth of aquatic and riparian vegetation. Because the California red-legged frog requires aquatic vegetation, the proposed flows, during portions of the year, could potentially adversely affect California red-legged frog habitat. Additionally, during periods of low flow in the summer, as the creek bed dries, it would limit California red-legged frog habitat. However, this proposed minimum flow also would be likely to enhance habitat conditions because benefits of the expected reduction in the aquatic predator populations would more than compensate for the habitat loss associated with the decrease in aquatic vegetation.

California red-legged frog larvae were located during arroyo toad monitoring in 2005. This monitoring (Sandburg, 2006) found that bullfrog populations in middle Piru Creek appeared to be greatly reduced by the high winter flood flows that year. The reduction in predator populations may have been a factor in allowing California red-legged frog breeding to occur within middle Piru Creek. The Proposed Action is likely to result in the continued reduction of bullfrog populations within middle Piru Creek, enhancing California red-legged frog habitat. The threats identified for this critical habitat unit (VEN-3) include alteration of aquatic and upland habitat by unauthorized off-road vehicle use, conversion of native habitat by introduced invasive plant species, and predation by nonnative species (71 FR 19243-19346). The Proposed Action would benefit the designated critical habitat by reducing predation by nonnative species. As a result, the Proposed Action would be not likely to adversely affect the designated critical habitat.

Large winter storm floods occur during California red-legged frog breeding season. California red-legged frogs breed in coastal California from November through late April and undergo metamorphosis 4 to 5 months after eggs are laid (Sandburg, 2004). These floods could potentially wash away egg masses and larvae, if California red-legged frogs exist in the project boundary. However, we note that this is an effect that California red-legged frogs experience in streams in California whether or not they are regulated, and, as such, we consider this is a natural effect on the California red-legged frog. Delivery of state water to United would also have the potential to scour egg masses and wash away larvae, but because this flow would occur during the time when storms typically occur, the effects on the California red-legged frog would be the same. Similarly, releases for testing Pyramid dam's radial gates would not affect the California red-legged frog because the short duration of these releases (15 minutes or less) would not likely be measurable very far downstream of the dam. Although California red-

legged frog larvae were located in one pool within the project boundary in 2005, it is unknown if a population has become established. Monitoring for the frog would determine whether or not the project area supports a California red-legged frog population, and if so, monitor its response to the proposed flow regime. Because an established annual breeding population has not been documented, the Proposed Action would have no effect on the California red-legged frog.

e. California Condor:

The federally endangered California condor is present in the Sespe Condor Sanctuary, which overlaps the southern end of the project boundary, and condors have been observed flying near the project reach. Because condors' foraging range can extend more than 100 miles from their roosts or nests, it is possible that they could forage or roost in the project area, although no activity has been recorded and condors are not dependent upon any water-based habitat. The proposed project would not affect the availability or quality of condor foraging habitat or prey availability, and the project has no effect on the California condor.

f. Southwestern Willow Flycatcher:

The federally endangered southwestern willow flycatcher is not known to nest in the project area; however, suitable habitat occurs in sections of the project reach, and it has been sighted at several locations downstream of Pyramid dam. Changing the minimum instream flow requirements would likely decrease, to some extent, the dense riparian vegetation that has developed under the operating regime specified in article 52. As such, southwestern willow flycatcher nesting habitat (dense willow, cottonwood, and scrub riparian habitat) would decrease, but would not be eliminated. An increase in large scouring flood events could cause the loss of extensive amounts of riparian habitat and southwestern willow flycatcher nesting habitat. However, we note that this is an effect that southwestern willow flycatchers experience in streams in California whether or not they are regulated, and, as such, we consider this is a natural effect. Because southwestern willow flycatchers are generalists they prey on a wide variety of insect species, changing the flow regime would not affect flycatcher prey availability. Because they are not known to nest in the project boundary, the Proposed Action would have no effect on southwestern willow flycatchers.

g. Least Bell's Vireo:

The federally endangered least Bell's vireo is not known to nest in the project area; however, non-nesting birds have been identified in the lower portion of the project reach. Similar to the southwestern willow flycatcher, the least Bell's vireo nests in dense riparian habitat with an understory of willow, mule fat, and other scrub vegetation and feeds on a wide variety of insects. Because of their similar habitat and prey requirements and occurrence in the project area, the licensees' proposed measures and their effects on

least Bell's vireo would be the same as those already discussed for the southwestern willow flycatcher.

### 3. Aquatic Resources

Under current license requirements, a continuous flow of 25-cfs flow is released from Pyramid dam between April 1 and August 31 to maintain a year-round trout fishery between Pyramid dam and Frenchman's Flat.

Under the Proposed Action, water would be released into Piru Creek at the same rate as natural inflow into Pyramid Lake. The periodic releases associated with testing of the radial gates and United's water deliveries would be within the range of natural stream flows and would not constitute abnormal flows (DWR, 2005).

NMFS recommends confining the radial gate testing to late summer or early fall when the likelihood of adverse effects on *O. mykiss* spawning and early life stages would be reduced, developing specific provisions to prevent stranding of fish, and implementation of an agency-approved monitoring plan to validate the effectiveness of these actions in minimizing adverse effects on fish (letter from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to K.D. Bose, Secretary, FERC, Washington, DC, dated May 3, 2007).

Historical USGS stream gage data indicate that during dry years, inflows into Pyramid Lake are minimal and would provide less than 10 cfs of water for the project reach. Historic data also indicate that Pyramid Lake periodically receives no inflow, and prior to construction of Pyramid dam, little if any stream flow was recorded between July and October in the lower reaches of Piru Creek upstream of Lake Piru (DWR, 2005). Under the proposed flow regime, sections of Piru Creek downstream of Pyramid dam would go dry and perennial water would be limited to deep pools and reaches during dry years. Additionally, summer and fall water temperatures would increase and the magnitude of winter storm flow releases would increase up to 18,000 cfs. In general, the Proposed Action would create flow regimes similar to the seasonal and stochastic events that influenced the evolution of the native fish life histories in southern California streams, including the resident and migratory strategies of steelhead.

Implementing the licensees' Proposed Action would directly and indirectly affect both native and non-native fishes. Overall, the institution of more diversified flows (e.g., higher peak flows and lower base flows) rather than continuous flows would benefit native fish populations and reduce populations of non-native, aquatic predators. Therefore, the proposed flows would improve the fluvial geomorphic processes that maintain aquatic habitat and would be beneficial for rainbow trout (letter from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to Dr. Eva Begley, Chief, License and Regulatory Compliance Section, DWR, Sacramento, CA, dated January 11, 2005) and other native fishes. The Proposed Action would also create more favorable

habitat conditions for the possible reintroduction of arroyo chub (DWR, 2005) and other native fishes.

Detrimental effects on native fishes could result during periods of low flow or no flow; some fish could be stranded, and thermal stress and predation could increase as they did historically under natural conditions. However, DWR (2005) acknowledges that even with the current augmented summer flows, trout are likely to experience thermal stress and reduced fitness in the project reach. With the exception of the driest years, the effects of the Proposed Action on water temperature would not be substantially different from that which would occur under the minimum instream flow requirements in article 52 (DWR, 2005).

It is likely that a decrease in the artificially high population of rainbow trout maintained by flow releases in the tailwater area between the dam and the concrete weir at Frenchman's Flat would occur during the summer and fall months due to outmigration, predation, stranding, angling, thermal stress, and other mortality compared to the population level that would exist under an augmented flow regime (article 52). The ramping effect created by matching each day the releases from Pyramid dam to the inflow to Pyramid Lake would decrease the risk of stranding and facilitate outmigration to areas of perennial water as flows decrease. Generally, the Proposed Action would create more dynamic flows than the instream flow requirements in article 52, and wild rainbow trout are adapted to these conditions. As Moyle (2002) notes, "The occurrence of rainbow trout in such a demanding environment [as southern California streams] requires distinct ecological and physiological adaptations." The Proposed Action would have the greatest effect on habitat for hatchery rainbow trout, which would indirectly benefit wild rainbow trout because the likelihood of hatchery stocks becoming naturalized and interbreeding with wild trout would decrease.

The Proposed Action would also indirectly affect the amount and quality of pool habitat available to native and non-native fishes in the project reach. The proposed return to a more natural flow regime would result in higher water temperatures, lower dissolved oxygen levels, and increased algal growth in shallow water habitats, particularly during August and September and low water years. However, the stream channel would be likely to develop more pools and deeper pools as a result of increased flood flows (DWR, 2005). Large, deep pools are important refugia from thermal stress and predators during periods of low flow and drought because they maintain cooler temperatures, higher oxygen levels, and less algal growth than shallow water habitat, and are low velocity refugia during storms. Increased flood flows would also increase cottonwood regeneration within the active floodplain and provide long-term, large woody debris recruitment potential (section VI.B, *Terrestrial Resources*). Large woody debris is an important structural element in pool formation, increases aquatic habitat complexity, and provides velocity breaks to prevent fishes and other aquatic fauna from being washed downstream during flood flows. As levels of large woody debris increase, the carrying capacity of fisheries habitat also increases. Therefore, the Proposed Action would increase the overall aquatic habitat carrying capacity within the project reach and would

be a long-term, significant benefit for resident rainbow trout and other native fishes. It is likely that a decrease in the artificially high population of naturally reproducing rainbow trout that has been maintained by minimum flow releases in the tailwater area between the dam and the concrete weir at Frenchman's Flat would occur during the summer and fall months. Over time, the wild trout population would reach equilibrium with habitat availability.

Detrimental effects on native fishes could result during testing of the radial gates when releases from Pyramid dam would cause brief spikes (no more than 50 cfs for 15 minutes) in the flow immediately downstream of the dam. However, the spikes would be quickly attenuated and decrease in magnitude downstream of the dam. Because the Proposed Action would: (1) prohibit these releases between March 15 and June 15, (2) avoid these releases to the extent possible between June 16 and July 31, and (3) plan releases between August 1 and March 14, the Proposed Action substantially meets NMFS's recommendation to confine the radial gate testing to late summer or early fall when the likelihood of adverse effects on *O. mykiss* spawning and early life stages would be reduced .

NMFS also recommends including specific provisions to prevent stranding of fish and implementation of an agency approved monitoring plan to validate the effectiveness of these actions in minimizing adverse effects on fish. The short duration and the timing of the radial gate testing flow releases, would greatly reduce the likelihood of stranding, therefore monitoring would not be necessary.

The continuous summer flow regime required by article 52 has benefited non-native, aquatic predators, such as bullfrogs, catfish, and largemouth bass, by creating the perennial, low velocity, warmwater habitat these species require. The proposed changes in flow regime would reduce the populations of non-native, aquatic predators because these species are non-migratory, require perennial flow, and have limited ability to withstand flushing flows. The decrease in non-native predator populations would be a long-term, significant benefit for wild rainbow trout and other native fishes.

a. Rainbow Trout Fishery:

Under the Proposed Action, the CDFG would continue to stock 3,000 pounds of catchable rainbow trout in the Frenchman's Flat area between November and May, which the CDFG believes to be the creek's carrying capacity in this area. CDFG may also annually stock up to 1,000 pounds of additional catchable rainbow trout between Frenchman's Flat and Pyramid dam.

Although the CDFG believed that naturally reproducing trout in the catch-and-release area were from wild stock, CDFG fisheries biologists have recently determined the trout above the weir are of the same genetic stock as the hatchery trout released at Frenchman's Flat (DWR, 2005). Previously, the CDFG felt that the naturally reproducing population needed to be kept separate from the hatchery-raised rainbow trout stocked in the put-and-take fishery downstream at Frenchman's Flat (CDFG, 2005a). In

its amended application, the licensees state, "With recent findings, there is no longer a biological need to keep the naturally reproducing and stocked populations separate" (DWR, 2005). Therefore, we assume the proposed rainbow trout stocking area includes the catch-and-release area between Pyramid dam and the concrete weir. This area has not been previously stocked, and has a naturally reproducing population of rainbow trout that is reproductively isolated because the weir is a barrier to upstream migration.

The CDFG genetic study results are in direct contrast with the NMFS genetic study results that indicate the native rainbow trout in the project reach are closely related to other Santa Clara River watershed trout populations that have access to the ocean, and are not related to rainbow trout reared in the CDFG Filmore hatchery (letter from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to Dr. Eva Begley, Chief, License and Regulatory Compliance Section, DWR, Sacramento, CA, dated January 11, 2005). The fish in the NMFS study were collected in the late summer and fall of 2003 after hatchery stocking was completed at Frenchman's Flat and anglers, predation, or other mortality factors had removed most of the stocked fish from the system. Methodologies may account for the differing study results.

The Proposed Action leaves the determination of whether or not to stock any or all of the additional 1,000 pounds of trout, and the timing of such stocking, solely to the recommendation of the CDFG on an annual basis.

b. Other Recommendations:

In its letter dated January 11, 2005, NMFS states "Stocking of hatchery reared fish into waters where populations of con-specific[21] native fishes exist (whether resident or migratory) can have a number of adverse affects on the native fish populations, including introducing unnatural level of competition for food or space, introduction of disease, and potentially introgression[22] (National Research Council 1996). Where such conflicts between sustaining a recreational fishery and protecting or restoring native fishes exist, efforts should be made to reduce or eliminate the conflicts. This can be accomplished through a number of means, including angling restrictions and stocking practices."

NMFS recommends maintaining the catch-and-release fishery without hatchery stocking in the tailwater area between Pyramid dam and the concrete weir to protect the small population of wild trout, which may include the "residualized progeny of anadromous steelhead" (letter from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to Dr. Eva Begley, Chief, License and Regulatory Compliance Section, DWR, Sacramento, CA, dated January 11, 2005). In addition, NMFS recommends stocking only sterile, triploid fish to further reduce the risk of genetic introgression and other impacts of hatchery rainbow trout on native *O. mykiss*.

[21]Member of the same species.

[22] Interbreeding between hatchery and wild fish that produces a generic hybrid of the two stocks.

This letter also states, "The preliminary results of this study [the NMFS Piru Creek genetic study] indicate that the level of introgression between the planted and the native *O. mykiss* reported in the [DWR] EIR is overestimated," and "…the reference to the introgression of wild *O. mykiss* with hatchery reared should be corrected and updated."

**4. Recreational Resources**

The Proposed Action would generally result in more frequent, higher, and faster storm flows during the winter and possibly spring, and lower and slower flows and possibly periods with no flow during the summer and fall. The changes in winter flows would not result in any significant change in the number of picnickers, hikers, or campers. The increased flows would not provide any additional recreational benefits to these users since the wet and rainy weather at this time tends to deter most of these uses.

The increased winter and spring flows would have a beneficial effect to kayakers and other users seeking out whitewater boating opportunities in the project reach. Based on the hydrological record, the Proposed Action would provide about twice as many days (about 49 days over 14 years) with suitable flows for whitewater boating than the No-action Alternative. It would not be expected that this use would increase to a point where resources and other user groups would be affected.

Pursuant to the National Forests LMPs concerning portions of rivers that may be considered eligible for the Wild and Scenic River designation, any proposed new facilities, management actions, or uses on National Forest land are not allowed if they have the potential to affect the eligibility or potential classification of the river segment. As stated in the environmental effects section of this EA under *Stream Morphology*, the change in flows within the Piru Creek downstream of Pyramid dam would result in higher peak flows, a larger floodplain, and greater geomorphic changes within the project reach during storm and flood events smaller than the 50-year event. The resulting changes would include scouring of the channel, banks, and pools on a more regular basis. Because the effect of scouring on the geologic features downstream of Pyramid dam is unknown, monitoring of the features would provide information on the need to manage any harmful effects that might occur to the geologic values.

The proposed decrease in summer flows would not result in any significant change in the number of anglers using the project reach. July, August, and September are the months with the fewest anglers according to communication between anglers and creel census monitors because the CDFG stops stocking the creek during these months due to increased water temperatures, and the crowds of picnickers and campers make it difficult to fish. However, the higher summer and fall water temperatures that would result from the implementation of this proposal would significantly reduce the naturally reproducing trout population. The reduction of trout would be particularly noticeable to anglers using the catch-and-release area immediately downstream of the Pyramid dam bridge during the fall of the year.

The licensees propose to mitigate this impact by consulting with the CDFG and stocking up to 1,000 pounds of catchable trout in the catch-and-release area between Pyramid dam and the concrete weir. This would be in addition to the 3,000 pounds of hatchery trout stocked at Frenchman's Flat. The additional 1,000 pounds of trout stocked in the catch-and-release area following the dry season would improve overall angling success in the put-and-take fishery; however, catch-and-release fly fishermen prefer wild fish, so the quality of their angling experience would decline.

The proposed summer flows would not adversely affect users who are searching for water activities, such as swimming and wading, except during low water years and drought years. During these years, sections of the creek that are currently being maintained by continuous flow could become dry. However, the increased peak and storm flows resulting from the Proposed Action would create larger, more numerous pools that could increase the area available to this user group during normal water years, and possibly increase the summer/fall swimming and wading use during these years. The project reach, particularly the Frenchman's Flat area, is already heavily used by swimmers and other water-play recreationists during the summer and fall months, and an increase in this use may decrease the recreational experience (e.g., crowding) of this user group and increase conflicts with other user groups. Other recreational opportunities exist in the area to provide similar opportunities for water play and can accommodate these user groups (e.g., Castaic Lake State Recreation Area and Pyramid Lake) during low water and drought years.

### 5. Land Use and Aesthetic Resources

a. Aesthetic Resources:

The licensees' proposal does not include any new construction, land clearing, or land disturbing activity that would change the aesthetic appearance of the project reach. The proposed winter/spring releases would result in some scouring of the creek. During the dry summer months less surface water would flow through the creek showing some reduced vegetation growth along the banks. This effect would be minor considering that much of the project reach is not readily visible to the public and this channel condition would be similar to other nearby streams that are not regulated.

b. Land Use:

The proposed project would not conflict with land use plans, policies, or regulations. The Angeles and Los Padres Land Management Plans and the General Plans and Zoning Codes of Los Angeles and Ventura Counties govern land use in the project area. No construction is proposed and the proposed flows would be consistent with the Forest Service guidelines to protect sensitive species and their habitat. Applicable County of Los Angeles and County of Ventura land use policies consist of restricting development in non-urban areas and the maintenance and preservation of open space and

recreation areas. There is no conflict with these policies since no development of any structures is being proposed. The licensees' proposal to provide a sustainable habitat for the endangered arroyo toad is also consistent with the County of Ventura's General Plan which calls for the preservation of natural resources including areas required for the preservation of plant and animal life.

The Proposed Action would not have any negative effect on any of the outstandingly remarkable values (ORVs) listed as part of the Wild and Scenic River designation for Piru Creek. The Proposed Action would improve conditions relative to the Fishery ORV. This ORV is assigned to a river that is a nationally or regionally important producer of resident and/or anadromous fish species. Of particular significance is the presence of wild stocks and/or federal or state listed (or candidate) threatened, endangered, or sensitive species. The Fishery ORV would not be compromised because the Proposed Action actually would improve conditions for the put-and-take fishery by: (1) increasing hatchery rainbow stocking by 1,000 pounds, (2) creating larger, deeper pools to improve wild rainbow trout habitat downstream of the weir, and (3) decreasing the number of non-native aquatic predators.

There could be periods when visitors might see lower flows or even no flow in the project reach; however, this variability would be consistent with what seasonally appears in unregulated nearby creeks. Visitors who seek water play might find fewer locations (pools) for their activities, but their experience could be improved by reduced conflicts and overall visitation.

### 6. Cultural Resources

It is probable that any historic resources that may have been located in the project reach would have been compromised, as indicated by the lack of evidence of any access road to the Whitaker homestead within the APE. There is the potential for previously unidentified components of the Whitaker homestead located adjacent to the property to be uncovered by increased winter flows and erosion.

The Proposed Action would have no effect on any known or unknown potentially eligible historic properties. No historic properties listed on the National Register have been identified to date within the APE. There is the potential for previously unidentified paleontological resources and components of the Whitaker homestead located adjacent to the property to be uncovered due to increased winter flows and erosion. Pursuant to article 407 of the license, if previously unidentified areas or historic sites are found, the licensee is required to consult with the appropriate agencies and to prepare a HPMP to avoid or mitigate effects on the resource.

### 7. Cumulative Effects

According to the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (50 CFR §1508.7) an action may

cause cumulative effects on the environment if its effects overlap in space and/or time with the effects of other past, present, and reasonable foreseeable future actions, regardless of what agency or person undertakes such other actions. Effects can be either direct or indirect. Direct effects are those that occur in the same place and at the same time and are a direct result of the proposed action. Indirect effects can occur at a distance from the proposed action, or the effects may appear some time after the proposed action occurs. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities and/or changes.

The geographic scope of the cumulative effects analysis defines the physical limits or boundaries of the proposed action's effects on the resources. Because the proposed action would affect each resource differently, the geographic scope for each resource may vary. For water quantity and sediment supply, we include Pyramid Lake, middle Piru Creek and its tributaries, Lake Piru, Piru Creek to its confluence with the Santa Clara River, and the Santa Clara River from the confluence of Piru Creek to the Pacific Ocean. We choose this geographic scope because the state of California determines the amount of water that enters Lake Piru via releases from Pyramid Lake, and releases from the Santa Felicia Project for most of the year serve primarily a flood control function and groundwater recharge function for downstream consumptive water users. For the arroyo toad we include Pyramid dam downstream to Piru Creek's confluence with the Santa Clara River. Arroyo toad habitat occurs both in middle Piru Creek and lower Piru Creek and is affected by the flow releases from both Pyramid and Santa Felicia dams.

The temporal scope of the cumulative effects analysis in this EA includes past, present, and future actions and their possible cumulative effects on each resource. Based on the license term, the temporal scope looks 30 to 50 years into the future, concentrating on the effect on the resources from reasonably foreseeable future actions. The historical discussion, by necessity, is limited to the amount of available information for each resource.

Project effects on sediment supply cumulatively affect the sediment supply in the Santa Clara River in the river reach beginning at the Piru Creek confluence and ending at the Pacific Ocean. Currently 36.5 percent of the total Santa Clara River watershed is affected by four water supply dams: Bouquet, Santa Felicia, Pyramid, and Castaic. Using data from 1928 through 1975, Brownlie and Taylor (1981) conclude that the annual average sediment yield from the Santa Clara River Basin is reduced 11 percent from natural levels. Brownlie and Taylor suggest that, prior to the construction of Pyramid dam, 71 percent of the sediment reduction in the Santa Clara River Basin was stored in Lake Piru. By 1995, Lake Piru filled with another 2,000 acre-feet of sediment, far less than the preceding 20-year period when Pyramid Lake was absent for all but the last few years of that period. With Pyramid dam trapping sediment from about 68 percent of the Piru Creek watershed, it appears a substantial portion of the sediment once supplied to Lake Piru is now trapped behind Pyramid dam. The Proposed Action would mimic more natural flows, which would allow higher flows during storm events,

increasing sediment movement and scouring along the project reach, however the sediment would still remain trapped behind Pyramid and Santa Felicia dams, cumulatively affecting the amount of sediment supply downstream of the two projects, into the Santa Clara River.

The volume of available surface water and groundwater in the Santa Clara River Basin, middle Piru Creek, and lower Piru Creek has been altered by the construction of reservoirs for water storage projects, flow diversions, reservoirs flow releases, groundwater extraction, and artificial recharge facilities. Construction of Pyramid and Santa Felicia dams has cumulatively decreased the peak yearly flows that occur during the winter and spring in middle and lower Piru Creek and the Santa Clara River, while supplementing flow to these reaches during the summer and fall. The Proposed Action, including changes in the amount of state water that is delivered and minimum flow releases, would affect the amount and seasonal variation in inflow rate which could affect the amount of water storage within Lake Piru and therefore, cumulatively affect the amount that is available for low flow and conservation releases from Santa Felicia dam.

The California Aqueduct and downstream Santa Felicia projects cumulatively affect the quality and quantity of arroyo toad habitat. Augmented year-round flows released from both Pyramid and Santa Felicia dams have resulted in abundant populations of exotic predators such as the bullfrog and dense riparian vegetation. Both of these factors have contributed to poor habitat conditions for arroyo toads throughout much of middle and lower Piru Creeks. The Proposed Action and the flow regime recommended in the final EA for the Santa Felicia Project both would eliminate augmented summer flows, returning both reaches to mimic natural flows. These two measures would cumulatively result in a decrease in exotic predator populations, benefiting arroyo toads and California red-legged frogs. Additionally, allowing high winter flows, as in the Proposed Action, combined with flushing flows and conservation releases from the Santa Felicia project, would control riparian vegetation encroachment and redistribute sediments in middle and lower Piru creeks, cumulatively benefiting arroyo toads and its habitat.

## B. NO-ACTION ALTERNATIVE

The No-action Alternative would (1) generally provide more and cooler water with higher dissolved oxygen during summer months, (2) provide a higher rate of both evaporation and vegetational uptake of water in the project reach upstream of Lake Piru, (3) limit the scouring and erosion along the project reach, (4) continue to incise the channel with undercut banks and swift water, (5) deliver high flows to the project reach between April 1 and August 31 (state water deliveries) and (6) increase riparian vegetation encroachment in the channel and These geomorphic and vegetative conditions would provide suitable habitat for species that require dense riparian habitat such as the sensitive yellow warbler, southwestern willow flycatcher, and least Bell’s vireo. These geomorphic and vegetative conditions would continue to degrade habitat for arroyo toads, wild rainbow trout, and southwestern pond turtles in the project reach. The cooler water

and higher minimums flows in the No-action Alternative would also continue to support a year-round, naturally reproducing population of rainbow trout between Pyramid dam and a concrete weir. In addition, suitable conditions would exist for exotic species such as bullfrogs that prey on juvenile southwest pond turtles, two-striped garter snakes, and arroyo toads. The effects would continue to cause the unauthorized take of the arroyo toad under the ESA.

Under the No-action Alternative, the CDFG would be required to annually stock 4,000 pounds of catchable trout between Pyramid dam and Frenchman's Flat. The CDFG has been stocking 3,000 pounds of catchable rainbow trout in the Frenchman's Flat area between November and May, which the CDFG believes to be the creek's carrying capacity in this area. Increasing the stocking rate by 1,000 pounds would exceed the aquatic habitat carrying capacity and would result in increased competition for food, increased predation, and increased risk of genetic introgression with wild fish.

Maintaining a year-round stocking schedule would be detrimental to wild *O. mykiss* populations because (1) the amount of deep pool habitat that is summer refugia for rainbow trout is a limiting factor, and (2) the rate of summer angling (typically low) and the risk of incidental harvest would increase.

Under the No-action Alternative, the increased winter flows would not be realized. The potential for previously unidentified paleontological resources and components of the Whitaker homestead located adjacent to the property to be uncovered would be reduced. Pursuant to article 407 of the license, if previously unidentified areas or historic sites are found, the licensee is required to consult with the appropriate agencies and to prepare a HPMP to avoid or mitigate effects on the resource.

## VIII. CONCLUSIONS

We recommend amending the project license consistent with the Proposed Action because this alternative would improve habitat for federally endangered species. The Proposed Action would improve habitat for *O. mykiss* by providing more dynamic geomorphic stream processes and creating deeper pools with cooler water temperatures. In addition, increased scour would improve cottonwood recruitment, which would be a source of large wood debris and would increase the carrying capacity of the project reach for steelhead. The Proposed Action would benefit arroyo toads by increasing geomorphic processes, providing the scouring needed to reduce riparian and emergent vegetation, increasing stream terraces and sand bars and providing the natural fluvial process to redistribute sediments. *O. mykiss, other native fishes,* and arroyo toads would benefit from a reduction in population of predators such as bullfrogs.

Until the genetic origins of *O. mykiss* in the project area are resolved, we recommend: (1) a continuation of the CDFG's no stocking policy in the catch-and-release area between Pyramid dam and (2) obtaining and maintaining the existing concrete weir. This would prevent possible genetic introgression of wild *O. mykiss* and

hatchery-reared rainbow trout until, NMFS, and CDFG biologists make a definitive determination regarding future stocking practices in the project area.

We also recommend that the license requirement to maintain a year-round fishery be changed to maintenance of a November through May seasonal fishery by amendment of exhibit S. In reality, the existing put-and-take trout fishery is a seasonal fishery, which is more appropriate for the habitat carrying capacity and the proposed summer/fall flow reductions.

We recommend including monitoring to ensure the objectives of the Proposed Action are met. Accordingly, we recommend monitoring for southwestern pond turtle prior to implementing the proposed operating regime to establish population numbers and age class structure. After collecting the initial population data, monitoring would occur at 3-year intervals to provide an indication of the response of turtles to changes in project-related flows and any potential habitat enhancements for turtles or other species that may be implemented in the future. This monitoring would provide additional information to base future management decisions.

We also recommend monitoring for arroyo toads and California red-legged frogs in the first 10 years after implementing the proposed instream flow requirements and subsequently, every 5 years for the remainder of the license term to ensure the flow regime is providing the anticipated beneficial effects on the arroyo toad and the California red-legged frog. Specifically, this monitoring would determine if the toads have become established in the upstream portions of the project reach, or if the loss of sediment extends further downstream than anticipated. Additionally, the monitoring would determine if the California red-legged frog has become established within the project reach following observations of larvae in 2005. As such, this monitoring should be conducted in consultation with FWS, the Forest Service, and the CDFG and encompass all of Piru Creek within the project boundary. This monitoring would provide information to base future management decisions.

Whereas the Proposed Action may reduce habitat for some terrestrial species that require abundant riparian vegetation, these effects would be minimal.

There would possibly be an increase in the number of days suitable for whitewater boating in the project reach. There would not likely be negative effects to anglers since the licensees would continue to stock the project reach and native fish would probably increase in response to the proposed flow regime. Opportunities for waterplay may be reduced in dry years but we note that regionally there are alternative locations for this activity.

We recommend including monitoring of the geologic features in the segment of Piru Creek on the Angeles National Forest which starts 300 feet below Pyramid dam and continues downstream to the Sespe Wilderness boundary. We recommend documenting, prior to implementing the proposed operating regime, those specific areas that contain the geological values that make this stretch of river eligible to be designated under the Wild

and Scenic River System. After collecting the initial data, monitoring would occur at 3-year intervals to provide an indication of any adverse changes in these features and any enhancements that may be implemented to protect the geologic values. This monitoring would provide additional information to base future management decisions.

Cultural resources would not be affected by the Proposed Action and if previously unidentified areas or historic sites are found, the licensee is required to consult with the appropriate agencies and to prepare a HPMP to avoid or mitigate impacts to the resource.

We recommend changing the timing of the state water delivery to United to November 1 to February 28 and that the water deliveries be made in association with a natural runoff event or to mirror an natural runoff event, unless alternative scenarios are specifically approved by FWS and the Commission. We also recommend allowing radial gate testing, as proposed, but that the testing be limited to the extent possible to avoid testing during sensitive arroyo toad periods as defined in section VI.B.2, *Terrestrial Resources*.

We recommend adopting the licensees' proposed operation plan during high flow periods with a maximum discharge of 18,000 and daily adjustments in the flow release from Pyramid dam. We consider daily adjustments appropriate because runoff which reaches Piru Creek downstream of Pyramid dam and upstream of Lake Piru provides a flashy flow regime for a large portion of the project reach. In addition, attempting to match the inflow on more than a daily basis would require substantial operation changes to Pyramid dam.

## IX. FINDING OF NO SIGNIFICANT IMPACT

On the basis of our independent analysis, the issuance of a license amendment for the project, with our recommended measures, would not constitute a major federal action significantly affecting the quality of the human environment.

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# APPENDIX A

## COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT
## Project No. 2426-197

The Federal Energy Regulatory Commission (Commission or FERC) issued its draft environmental assessment (draft EA) for amendment of project license for the California Aqueduct Project on March 1, 2007. The Commission requested comments be filed by April 30, 2007. In this appendix, we summarize the comments received; provide responses to those comments; and indicate, where appropriate, how we modified the text of the final EA. We grouped the comment summaries and responses by topic for convenience. The following entities filed comments on the draft EA:

| (a) Entity | (b) Date of Filing |
|---|---|
| **Agencies & Organizations** | |
| California Trout (CalTrout) & Friends of the River (FOR) | April 30, 2007 |
| Friends of the River (FOR) | April 30, 2007 |
| United States Department of Agriculture, Forest Service (Forest Service) | April 30, 2007 |
| United Water Conservation District (United) | May 1, 2007 |
| State of California - Department of Water Resources (DWR) | May 2, 2007 |
| National Marine Fisheries Service (NMFS) | May 3, 2007 |
| United States Department of the Interior, Fish and Wildlife Service (FWS) | May 10, 2007 |

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| Janet Baer | April 23, 2007 | Patricia Anderson | April 30, 2007 |
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| Jan Gould | April 23, 2007 | Robert Anderson | April 30, 2007 |
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We address all issues raised by commenters, as appropriate, in the final EA. Comments regarding purely editorial issues are addressed in the final EA and are not summarized below.

**GENERAL**

**Comment:** NMFS states that the affected environment descriptions in the draft EA in many instances ignore the fact that anthropogenic effects (such as construction and operation of dams and surface water diversions) that have contributed to the current environmental baseline would continue into the future. NMFS states that the effects of

anthropogenic activities (such as the effects of the presence of the dam) need to be added to the effects of the Proposed Action when conducting an impact assessment.

**Response:** The affected environment descriptions in the EA represent the current baseline condition, which includes the presence of both Pyramid and Santa Felicia dams. In the EA we analyze the effects of the Proposed Action, which includes altering the water releases from Pyramid dam into Piru Creek to match natural surface inflow into Pyramid Lake, in relation to the existing flow regime.

**Comment:** Interior states that its support for the proposed action should not imply that other flow regimes could not be considered. It states that it is interested in engaging in discussions of alternative ideas with DWR and other interested parties to find a solution that benefits the species and is acceptable to all stakeholders. CalTrout notes that FWS has indicated that the flow regime in the Proposed Action is not the only possible proposal that could protect the arroyo toad and that the Commission should engage in additional consultations with FWS to determine an alternative flow regime that would protect toads, fish, and other wildlife. The Forest Service encourages the Commission to work with the agencies to explore the possibility of designing a release flow scenario with a "summer flow floor" and to conduct long-term flow studies to document the response of arroyo toad and other special status species to the flow regime.

**Response:** Neither Interior nor the Forest Service recommended an alternative flow regime. Interior and other interested parties are welcome to continue to discuss other flow regimes in the future. If the parties identify a new flow regime that DWR is interested in implementing, DWR may apply for another license amendment. Also, in the EA we recommend a long-term monitoring program for the arroyo toad and the southwestern pond turtle, and we revised the final EA to include a recommendation for California red-legged frog monitoring.

**Comment:** CalTrout and over 500 individuals state that the Commission has violated the National Environmental Policy Act (NEPA) by failing to prepare a full environmental impact statement (EIS) that adequately analyzes the project's environmental impacts, as well as a reasonable range of alternatives to, and mitigation for, those impacts. CalTrout states that an EIS is necessary because, for one, additional research and studies on other potential flow regimes have not occurred.

**Response:** For hydropower relicensing applications, we follow NEPA guidelines. An EIS would be prepared when the analysis indicates that the project, even with staff-recommended measures, would have a significant effect on the quality of the human environment. Considering that the California Aqueduct Project is an existing project and

the staff's preferred alternative includes numerous environmental protection and enhancement measures, our EA concludes that the issuance of an amendment to the California Aqueduct Project would not constitute a major federal action significantly affecting the quality of the human environment. Given this conclusion, an EIS for this amendment application is unnecessary. In the EA we analyze a reasonable range of alternatives including a no-action alternative, the proposed actions, and the proposed action with staff modifications. No entity recommended an alternative potential flow regime for consideration in the EA.

**Comment:** CalTrout states that the draft EA uses an improper methodology for assessing environmental impacts by assuming that implementing a natural flow regime that attempts to mimic natural conditions would automatically result in no significant environmental impacts. CalTrout states that the conditions are not natural because flows are regulated by and released through the man-made Pyramid dam which alters many aspects of the natural environment. Gary Pintar states that, by operating to simulate natural events, DWR would relinquish liability for any adverse effects; however, the construction of Pyramid and Santa Felicia dams changed the natural processes in the project area.

**Response:** The Commission did not assume that implementing a natural flow regime would automatically result in no significant effects. The EA assesses the effects of the Proposed Action on each potentially affected resource. Additionally, the EA states that the Proposed Action would result in a more natural flow regime, not that the conditions would be the same as those occurring prior to project construction.

**Comment:** CalTrout states that the draft EA fails to address cumulative effects of the Proposed Action on arroyo toad, native trout, and other fish and wildlife, in particular the cumulative effects of the Proposed Action with those of the Santa Felicia Hydroelectric Project.

**Response:** We added a discussion of cumulative effects as section VII.A.7 to the EA.

**PROPOSED ACTION AND ALTERNATIVES**

**Comment:** DWR questions the need to include the 3,150 acre-feet water delivery to United as part of an amended license because water operations are variable and would change significantly over time as water demand increases or decreases. DWR requests that this not be listed as an article 52 condition, but instead be referenced as a project operation adjunct to the project license. United requests that this item be amended to add, "…unless alternative scenarios are specifically approved by FWS and FERC."

**Response:** Because the water delivery affects environmental resources within the project boundary and is a part of project operations, it must remain a part of the amended license. We concur, however, that water demands are variable and therefore revised sections VII.A.1.b and VII of the EA to include flexibility for future changes, as approved by the Commission.

**Comment:** CalTrout states that when designing alternatives, the Commission should consider that the Proposed Action contains two distinct hydrologic components: increased winter flows and decreased summer flows. CalTrout states that the draft EA fails to acknowledge that FWS's primary concern was unnaturally high flows in May 2003 that caused unauthorized take of arroyo toads and that there is no documentation from FWS or others demonstrating that the reduced summer flows are necessary to protect the arroyo toad.

**Response:** The Proposed Action represents a flow regime developed by DWR in consultation with FWS, CDFG, the Forest Service, and other interested parties to address concerns for the arroyo toad and the recreational fishery. The sustained summer flows specified under article 52 have resulted in conditions that are unfavorable to the arroyo toad: riparian vegetation on sand and gravel bars, artificially high flows flushing eggs and tadpoles downstream, and the proliferation of exotic predators. As the analysis contained in the EA shows, the Proposed Action, including stream releases from Pyramid dam into Piru Creek that are equal to the natural surface inflow into Pyramid Lake, would be beneficial to the arroyo toad. We further recommend that arroyo toad monitoring occur to ensure that the flow regime is providing these anticipated beneficial effects.

**Comment:** The Forest Service comments that a new flow regime could incorporate a "summer flow floor" value that would be somewhat protective of the fishery and not promote the deleterious conditions currently observed, since high flows would also be a part of the flow regime. CalTrout and two individuals state that the draft EA must include analysis of an alternative that maintains in-\stream summer and fall flows. CalTrout believes that restoring higher winter flows to mimic natural flood events would be beneficial to numerous species of Piru Creek, but it is concerned about the Proposed Action's lack of minimum in-stream flows during the summer and fall. CalTrout urges the Commission to prepare an EIS that includes analysis of several other alternatives, including (1) alternative flows that combine (a) one or more high volume winter flows, which would help to maintain the channel, decrease emergent vegetation, and eradicate invasive predators, with (b) minimum summer instream flows of about 10, 15, 20, and 25 cfs; (2) alternative flows equivalent to the existing flow regime; (3) alternative means of protecting trout from the adverse effects of the project's flow regime, including the

installation of fish passage at Santa Felicia dam; and (4) alternative means of controlling populations of bullfrogs and other invasive species, including active removal measures.

**Response:** Water is a limited commodity in southern California during many years, especially during a drought year or a series of drought years. A combination of winter flows mimicking natural inflows to Pyramid and elevated summer releases from Pyramid Lake, or similar regimes could cause a water shortage at Pyramid Lake. This deficit would be most likely during extreme droughts, and Pyramid Lake is a key part of the State Water Project which supplies water to southern California. Prior to 2005, the water released in the summer was balanced by withholding in Pyramid Lake water from winter storm events. During many water years, based on the mean and median values shown in table 2 of the draft EA under 'Calculated Estimated Inflow to Pyramid Lake,' the discharge from Pyramid Lake can be expected to remain in the 5 to 10 cfs range during July and August. Fish passage at Santa Felicia dam is not a viable option as stated in the January 2007 final EA issued by FERC for the Santa Felicia Project (FERC No. 2153).

The long-term success of active removal measures for exotic predators such as bullfrogs is unproven. The Proposed Action's flow regime would also benefit the arroyo toad by reducing the encroachment of riparian and emergent vegetation growth on sand and gravel bars and, during the low flow summer months, reducing water velocities.

## CONSULTATION AND COMPLIANCE

**Comment:** CalTrout states that the draft EA does not analyze whether or not the Proposed Action is consistent with the designated uses for Piru Creek under the L.A. Basin Plan as well as with sections 1726, 5931, and 5937 of the Fish and Game Code.

**Response:** DWR prepared an environmental impact report for the Proposed Action, under the California Environmental Quality Act. The environmental impact report discusses the applicable regulations and the Proposed Action's compliance with the applicable regulations.

**Comment:** CalTrout states that the draft EA fails to demonstrate that the agencies have complied with the obligations under the ESA because formal consultation is required for a number of species including the California red-legged frog, arroyo toad, and steelhead. CalTrout also states that the draft EA as the biological assessment is inadequate because (1) it does not contain information showing NMFS was consulted in regard to potential adverse effects on the steelhead and its critical habitat; (2) it does not use the best scientific data available, such as the results of the 2005 arroyo toad monitoring or more recent surveys for various other species; and (3) it excludes analysis of existing activities

that may jeopardize listed species or that would impair their recovery, as determined by FWS through formal consultation. Without an incidental take statement, any incidental take of listed species violates the ESA. CalTrout states that the draft EA acknowledges that the Proposed Action would be likely to adversely affect the California red-legged frog and its critical habitat and formal consultation under the ESA is required.

**Response:** We revised our findings regarding the Proposed Action's effects on ESA-listed species in the project area in the final EA to reflect the most current information. We have not engaged in formal consultation with NMFS, because there are no ESA-listed species or critical habitat under NMFS' jurisdiction within the project boundary. The EA has been revised to include a discussion on the results of the 2005 arroyo toad monitoring.

**Comment:** CalTrout and over 500 individuals state that the draft EA does not comply with the Clean Water Act because it does not taken any steps to ensure that the Proposed Action would maintain existing water quality standards for Piru Creek and protect the designated beneficial uses for the creek and the Commission has not obtained a section 401 certification for its interim flow regime.

**Response:** On December 26, 2006, DWR applied to SWRCB for a water quality certification, as required by section 401 of the Clean Water Act. SWRCB will determine whether or not the Proposed Action complies with the Clean Water Act and issue a certification, denial, or waiver by December 26, 2007.

**Comment:** CalTrout states that the Commission my have failed to comply with the Fish and Wildlife Coordination Act because the draft EA does not provide the necessary information to determine if the Commission has consulted with FWS, NMFS, and CDFG under the Fish and Wildlife Coordination Act. Prior to taking any actions on this Proposed Action, the Commission must consult with these agencies.

**Response:** On June 8, 2005, the Commission issued a public notice that the application for amendment had been filed soliciting comments, motions to intervene, and protests. On March 1, 2007, the Commission issued the Notice of Availability of the draft EA soliciting comments that were to be filed by April 30, 2007. FWS, NMFS, and CDFG were afforded the opportunity to comment on this proceeding at those times.

## WATER RESOURCES

**Comment:** NMFS states the revised environmental document should include a clear and complete description of the relationship between water-management operations at Pyramid dam and Santa Felicia dam including whether or not they are interrelated. If operation of Santa Felicia dam is interrelated to operations of Pyramid dam, the effects of Santa Felicia dam should be formally considered and the Commission should consult with NMFS on the Proposed Action in accordance with section 7 of the ESA. CalTrout states that the draft EA fails to discuss whether and to what extent changes in the flow regime in middle Piru Creek would affect flows downstream of Santa Felicia dam and any mitigation measures required as a result.

**Response:** We describe the existing relationship between the project and Santa Felicia dam/Lake Piru in section VI.A.1, *Water Quantity*. Table 4 of the EA provides information on the flow for the 2, 5, 10, 25, 50, and 100 year flood recurrence intervals at USGS Gage No. 11109600 Piru Creek above Lake Piru prior to construction of Pyramid dam and afterwards. The flood flow rates prior to construction of Pyramid dam are similar to what could be expected under the Proposed Action. This is due mostly to the large drainage areas and flashy natural flows of the tributaries which enter Piru Creek between Pyramid dam and this gage. We discuss the effects on the inflow to Santa Felicia dam in section VII.A.1.a, *Low and High Flow Conditions*, and VII.A.1.b, *Water Delivery to United and Testing of Radial Gates*.

Part of the Proposed Action is to limit the maximum release from Pyramid dam to 18,000 cfs or less if higher releases are a threat to downstream areas. While not specifically stated, downstream areas include Lake Piru and Santa Felicia dam. United supports the Proposed Action including the change in operation during the summer and states that the change in the water delivery to United to between November 1 and the end of February would slightly decrease the amount of water that is lost during transit of middle Piru Creek. The minor changes likely with the Proposed Action to the general inflow rate to Lake Piru would be mitigated by the current or future operation at Santa Felicia dam; therefore, consultation under section 7 of the ESA is not required.

**Comment:** NMFS recommends that the pattern and relative magnitude of in-channel water deliveries correspond with the pattern and magnitude of natural runoff events. NMFS states that this would require (1) a reliable ability to instantaneously identify periods when principal tributaries in the middle reach of Piru Creek are responding to rainfall events, and (2) the ready capability to facilitate water deliveries from Pyramid Lake according to the pattern and magnitude of flows observed in adjoining tributaries.

**Response:** NMFS's comment seems to combine the Proposed Actions as it relates to the delivery of the up to 3,150 acre-feet of state water to United (between November 1 and the end of February) and the operation of Pyramid dam to release the natural inflow under most circumstances. A release of the entire 3,150 acre-feet of water over a 4-day period would result in a release rate of about 400 cfs. Based on USGS gage data, this rate of release was common from Pyramid dam prior to the change in operation in 2005 and was very common farther downstream from Pyramid dam when inflow from tributaries such as Fish Creek and others provide substantial and flashy natural inflow to Middle Piru Creek during common winter rainstorm events. The ability to instantaneously identify periods when the principle tributaries of Middle Piru Creek are responding to rainfall events could require additional infrastructure such as a streamflow gage on Fish Creek. However, the installation of a gage on Fish Creek, a very remote and road-less area would require substantial environmental disturbance for what we determined was a very limited benefit. In addition, the capability to match water deliveries from Pyramid dam to the timing of flow peaks in these tributaries might require a substantial change in the operational methods used and infrastructure changes at Pyramid dam, also for what we have determined as a very limited benefit.

**Comment:** NMFS and the Forest Service state that the draft EA does not appear to provide a clear understanding of how the licensee would determine when and how much water to release from Pyramid Dam. NMFS states that the EA should include simulations (based on historical hydrology data) that predict with some known level of certainty the pattern and magnitude of water releases for a range of water-year types.

**Response:** The Proposed Action includes the measure to base the outflow at Pyramid dam on the inflow to Pyramid Lake as measured at two USGS gages: (1) USGS gage no. 11109375 Piru Creek below Buck Creek near Pyramid Lake; and, (2) USGS gage no. 11109395, Canada de Los Alamos above Pyramid Lake. These two gages account for 88 percent of the drainage area to Pyramid Lake. A multiplier would be used to account for the small portion of the drainage area to Pyramid Lake which is not included in these two gages. We added information on this topic to the final EA. Piru Creek has a very flashy and has a very wide variation of flows even at a day to day and especially on a week to week basis for most water year types which do not enhance the reliability results derived from modeling, unlike many other areas of California. In lieu of this modeling, we provided information in table 2 of the EA containing flow data from historical conditions. The *Calculated Estimated Inflow to Pyramid Lake* portion of table 2 provides estimated flows which might be released from Pyramid dam under the Proposed Action. The *USGS gage no. 11109600, Piru Creek above Lake Piru Water Years 1956 to 1973* portion of table 2 provides the estimated flows under the Proposed Action for the lower part of Middle Piru Creek.

**Comment:** NMFS, the Forest Service, CalTrout, and Gary Pintar indicate that because the flow-measurement devices are not capable of providing real-time data, water releases may not match the natural pattern and magnitude of runoff events. NMFS states given the benefits of the natural flow regime to aquatic organisms and the fact that the proposed action is to benefit native species, all feasible modifications should be made to the proposed action (including installing flow-measurement devices that would provide real-time data) to ensure water releases would correspond with the natural pattern and magnitude of inflows, and not simply the 24-hour average discharge. The Forest Service encourages the design of a release flow methodology that is both measurable and enforceable as a license condition. USGS gage 11109525, Piru Creek below Pyramid Lake near Gorman, is an active USGS gage and can be used for compliance of the flows released from Pyramid dam.

**Response:** As summarized in the EA, according to the DWR, access to USGS gage no. 11109375, Piru Creek below Buck Creek near Pyramid Lake is now limited to foot traffic for the protection of arroyo toads and it is not feasible to convert this gage to real-time gage. This gage accounts for approximately 67 percent of the drainage area to Pyramid Lake. More importantly, Pyramid dam does not currently have the ability to adjust outflows at more than a daily basis or a few times a day. However, during high runoff events, inflow from tributaries downstream of Pyramid can add substantial flow to Middle Piru Creek, helping to create a more natural high flow condition.

**Comment:** CalTrout states that the draft EA fails to address the potential effects of global warming on what is "natural." CalTrout states that the EA needs to analyze the potential effects of global warming in the context of the effects of the project. CalTrout also states that if global warming in combination with the elimination of minimum in-stream flows results in longer periods during which the river runs dry in the summer, adverse effects to the arroyo toad, as well as to other species, appears likely.

**Response:** Future climate change effects on water resources and water temperatures in Piru Creek are unknown, although some models may attempt to predict change in certain river basins. The Commission's standard reopener article would be included in any license as the vehicle for making changes to the license should unforeseen and unanticipated adverse environmental impacts occur in the future.

**Comment:** CalTrout states that the draft EA fails to demonstrate whether and how the Proposed Action would affect the designated beneficial uses and water quality standards for Piru Creek.

**Response:** Section VII.A.1.c. *Water Quality*, of the EA discusses the effects of the Proposed Action on water quality. Effects include a likely increase in water temperatures and decreases in the dissolved oxygen levels during the dry season and possibly higher dissolved sediment levels. However, none of these effects are expected to exceed what would exist under natural conditions. Additionally, state standards for water quality are not expected to be exceeded, and any effects on designated beneficial uses would be limited.

**TERRESTRIAL RESOURCES**

**Comment:** DWR states that FWS indicated in an August 20, 2003 letter to DWR that failure to implement a change in flow regime to natural flows would result in a violation of the federal endangered species laws.

**Response:** Section V.A., *Comments and Interventions* has been revised to include reference to FWS's August 20, 2003, letter.

**Comment:** Interior recommends an additional 10 years or more of arroyo toad monitoring and data collection to determine the effects of a simulated natural flow regime on the arroyo toad.

**Response:** We have revised our recommendation for arroyo toad monitoring from the first year after implementing the license amendment and subsequently every 5 years for the remainder of the license, to monitoring annually for the first 10 years after implementing the license amendment and subsequently every 5 years for the remainder of the license. Monitoring for the first ten years annually provides a larger amount of data to assess to determine the effects of the revised flow regime on arroyo toads.

**Comment:** The Forest Service encourages the Commission to work with the agencies to explore the possibility of designing a release flow scenario with a "summer flow floor" and to conduct long term flow studies to document the response of arroyo toad and other special status species to the flow regime.

**Response:** The EA recommends a long-term monitoring program for both the arroyo toad and the southwestern pond turtle. The final EA has been revised to include a recommendation for California red-legged frog monitoring.

**Comment:** CalTrout states that California red-legged from larvae were found in the project area during 2005 surveys for arroyo toads.

**Response:** We revised the EA to include this information.

**Comment:** CalTrout states that the draft EA downplays the potential for significant adverse effects of the Proposed Action's lack of summer flows on the arroyo toad and fails to analyze the effects or extent of sediment loss.

**Response:** Section VII. A. 2. c, *Environmental Effects, Terrestrial Resources* of the EA analyzes the effects of the Proposed Action, both in regards to instream flows, and sediment loss.

**Comment:** CalTrout states the draft EA does not indicate if sensitive species surveys were adequate to determine the presence or absence of the species. CalTrout also states that the draft EA does not indicate which sensitive wildlife species are protected by the seasonal closures found in the Forest Service Management Plans, whether these closures are implemented, and how the Proposes Action would protect these species. CalTrout states that the draft EA does not provide a meaningful analysis of the effects to sensitive species that are not listed under the ESA.

**Response:** The EA analyzes the effects of the Proposed Action on the great blue heron, great egret, yellow warbler, southwestern pond turtle, and two-striped garter snakes, all sensitive species that are not listed under the ESA. The Proposed Action does not affect any seasonal Forest Service closures.

**Comment:** CalTrout states the draft EA does not meaningfully analyze the potential of the Proposed Action to increase the impacts of recreational uses of the creek on biological resources, including protected species.

**Response:** Section VII. A. 2, *Environmental Effects, Terrestrial Resources* of the EA discusses the potential effects of recreational use on the protected southwestern pond turtle.

**Comment:** An individual states that prior to the construction of Pyramid dam, this reach of Piru Creek was referred to having lush riparian vegetation, yet the draft EA indicates that there is too much vegetation growing in the riparian areas. This individual inquires regarding how it would be determined the elimination of augmented flows is beneficial to the arroyo toad.

**Response:** The dense riparian vegetation and channel encroachment found within middle Piru Creek is the result of project operations and is unlikely to occur under natural conditions. Arroyo toad monitoring would occur annually for 10 years following amendment approval and then every 5 years for the length of the license. This monitoring would assess the effects of the Proposed Action on arroyo toads.

**Comment:** An individual states that it appears that California red-legged frog surveys were not conducted between Frenchman's Flat and Bluepoint Campground, which is a serious lack of information.

**Response:** Recommended California red-legged frog monitoring would identify any occurrences between Frenchman's Flat and Bluepoint Campground.

**Comment:** Gary Pintar states that logic indicates that since the scouring heavy rain events in 2004-2005 were able to wash out bullfrog habitat and reset the arroyo toad habitat then a combination of simulated natural flow and minimum flow regimes could be utilized to protect habitats of both the toad and the trout. He states that gage data indicates there have been a number of heavy flow episodes that occurred during the wet seasons over the past 25 years that could have had the same effect as the scouring that occurred during the 2004-2005 season. He believes that arroyo toad habitat could be reset every 4 to 5 years using periodic natural scouring and/or induced artificial scouring as a result of DWR's water release to United.

**Response:** Sandburg (2006) finds that the combination of high winter flood flows being released along with the cessation of augmented summer flows is likely to be needed to maintain optimum habitat conditions. Following an extreme winter flood event in 1998, the channel became entrenched again and vegetation encroached the channel quickly under augmented summer flows of 25 cfs, erasing the habitat benefits of the winter flood event by 2002. Therefore, it is unlikely that a flow regime continuing augmented summer flows in combination with high winter flood flows would result in suitable arroyo toad habitat.

**Comment:** Gary Pintar states that habitat restoration projects using volunteers under the guidance of the CDFG, FWS, and Forest Service could remove vegetation and exotic plants in the southern part of the project area on an annual basis during the arroyo toad's aestivation period, removing bullfrog habitat at the same time.

**Response:** The Commission can not mandate nor regulate volunteer activities. We encourage volunteers to worth with the agencies to conduct approved habitat

enhancement activities. The remoteness, lack of easy access, and length of the project reach preclude hand removal of vegetation as a viable option.

## AQUATIC RESOURCES

**Comment:** NMFS recommends that the Commission revise the draft EA to assess the effects of the proposed action on the capability of the project reach to contribute to recovery of endangered steelhead, including the effects of planting domestic trout, the effects of delivering water to Lake Piru outside of natural runoff events, and the effects on the migratory ecology and behavior of O. *mykiss* in the project reach.

**Response**: As stated in the draft EA, anadromous *O. mykiss* do not occur in the project reach. United provides evidence in its letter commenting on the draft EA that Piru Creek watershed did not support a natural steelhead run historically. The Proposed Action would not affect flow releases from the Santa Felicia project.

**Comment:** NMFS states that they inspected some of the structures identified in the draft EA as "potential obstacles" to steelhead migration and it believes the structures may block passage only during certain, but not all, discharge conditions and that these conditions could be enhanced. NMFS expects these structures to be modified for the purpose of improving passage conditions for endangered steelhead through collaboration with the entities responsible for the structures.

**Response:** As stated in the EA, the two earthen diversions between Santa Felicia dam and the Santa Clara River, including United's Piru diversion, and the box culvert bridge located at about RM 4.5 of lower Piru Creek are potential barriers to steelhead smolts and/or adults at various flows. These potential barriers are downstream of Santa Felicia dam and outside of the project area (figure 1), therefore any potential modifications to these structures are outside the scope of the Proposed Action.

**Comment:** NMFS states that the Commission should require the licensee to implement an agency-approved study for the purpose of acquiring data on the migratory behavior and ecology of *O. mykiss* in the project reach. Additionally, NMFS states that the Commission should require the licensee to implement an agency-approved plan to monitor movement of *O. mykiss* over time and space in the project reach to ensure the selected operating scheme, once fully defined, and implemented, is in fact compatible with the migratory ecology and behavior of *O. mykiss*, as determined from the fishery study.

**Response**: It is known that the wild rainbow trout in the tributaries exhibit an adfluvial life history pattern; the juveniles rear in the tributaries then emigrate to the reservoirs, instead of the ocean. The adults mature in the reservoirs before returning to the tributaries to spawn (letter from R.R. McInnis, Regional Administrator, NMFS, Long Beach, CA, to Dr. Eva Begley, Chief, License and Regulatory Compliance Section, DWR, Sacramento, CA, dated January 11, 2005). United presents evidence in its comments on the draft EA that Piru Creek did not support a natural steelhead run historically and attempts by CDFG to establish an anadromous run were not successful. Therefore, a fishery study to monitor movement of *O. mykiss* over time and space in the project reach is not recommended.

**Comment:** In regards to the testing of radial gates, NMFS recommends that (1) testing of the radial gates be confined to late summer or early fall when the likelihood of adverse effects on *O. mykiss* spawning and early life stages is reduced; (2) the manner of testing should include a specific provision to reduce the likelihood of stranding fish; and (3) the licensees should implement an agency-approved monitoring plan to validate the effectiveness of the specific provision for minimizing adverse effects from testing on the fishery resource.

**Response:** Periodic testing of the radial gates at Pyramid dam would result in no more than 50 cfs for 15 minutes. We concur that confining the testing of the radial gates to late summer or early fall would have a decreased likelihood of adversely affecting *O. mykiss*, as well as arroyo toad. The Proposed Action would prohibit these releases between March 15 and June 15 and would avoid these releases to the extent possible between June 16 and July 31. Because the releases are likely to occur between August 1 and March 14, the Proposed Action is consistent with NMFS's recommendation. Furthermore, because of the short duration and the timing of the radial gate testing flow releases, the likelihood of stranding is reduced, and monitoring is not required.

**Comment:** NMFS, DWR, the Forest Service, and United state that the draft EA is inconsistent and often incorrect in its use of the word "steelhead" versus rainbow trout.

**Response:** There were some editorial inconsistencies in the use of anadromous steelhead versus resident rainbow trout in the draft EA. We corrected these instances, and, in some cases, *O. mykiss* has been substituted when referring to both the resident and anadromous *O. mykiss*.

**Comment:** DWR states that Article 52 originally stated that flows were to protect fishery and aquatic resources in Piru Creek and that the 1995 agreement with CDFG to increase stream flow releases was to enhance habitat for resident rainbow trout.

References to steelhead are only recent because of genetic analysis. Page 32, paragraph five of the draft EA should be revised to reflect this information. United asks if it is documented in Article 52 that the purpose of the article was to protect anadromous steelhead.

**Response:** The EA has been revised to reflect this information.

**Comment:** DWR states that the existing concrete weir in the Piru Creek channel, recommended on page 68 of the draft EA to be maintained by DWR, is not regularly maintained, has been subject to significant flood damage over the years, and its ownership is uncertain.

**Response:** We recommend DWR take ownership and initiate maintenance of this apparently abandoned weir that is within the project boundary under the new license amendment to protect the native rainbow trout between Pyramid dam and the weir until further *O. mykiss* genetic results are available, and a management agreement is reached.

**Comment:** United states that the second paragraph of section V.B.1 should state that Santa Felicia dam "would" block steelhead, were they to migrate in Piru Creek. They indicate that there are several other factors that would hinder or preclude steelhead from migrating into the project reach.

**Response**: The final EA has been revised to incorporate this information.

**Comment:** United disagrees with the statement in the draft EA that Piru watershed historically contained steelhead spawning and rearing habitat that was accessible to steelhead and that it is unclear if this is referring to habitat above or below Pyramid. United states that documentation provided shows that Piru watershed historically never contained observable steelhead migrations, likely due in part to the natural percolative barrier that exists in the Santa Clara River immediately below the Piru confluence. United suggests that the percolative barrier be discussed in the EA. United indicates that the natural barrier was likely occasionally passable for short durations in the wettest seasons of the wettest years.

**Response**: The EA has been revised to incorporate the information provided.

**Comment:** United states that a letter from NMFS that is cited in section VI.C.1, second paragraph contains incorrect information. United states that documentation provided shows that due to highly variable rainfall in southern California, there were no annual

runs of steelhead, nor is there any evidence that steelhead adults ascended Piru watershed, therefore this area could not have contained their "principle spawning and rearing" areas.

**Response:** The EA has been revised to include information on the historic nature of *O. mykiss* populations in the Piru watershed.

**Response:** The EA has been revised to incorporate the information provided by United..

**Comment:** United disagrees with the description of Piru Creek's contribution to the Santa Clara River in the fourth paragraph of section VI.C.1 as "important" for steelhead access. United provides evidence that the Santa Clara riverbed percolates on the average over one-half of all contributions above Sespe Creek, of which Piru Creek's contribution is one-half again. It states that Sespe Creek accounts for almost 75 percent of all of Santa Clara River's discharges.

**Response:** The EA has been revised to include United's assessments of these factors.

**Comment:** United indicates that the first paragraph of section VI.C. 2 contains several errors and inconsistencies. It states that historical evidence shows that Piru Creek had neither a significant population of resident rainbow trout nor a natural winter run of steelhead, the Freeman Diversion is equipped with modern fish passage facilities that are used by steelhead, and there is no evidence provided in the draft EA that middle Piru Creek still produces "anadromous steelhead smolts". Additionally, United states that the fifteenth paragraph of section VI.C.3.a incorrectly states that there were historical steelhead habitats in Piru Creek and the eighteenth paragraph incorrectly infers that more than one single observation of adult steelhead occurs in the historical record.

**Response:** The EA has been revised to incorporate this information.

**Comment:** United comments that the statement "the progeny of anadromous steelhead have continued to persist as residualized populations" may be true in regards to the progeny of stocked fish, but there is substantial evidence that suggests there was no pre-stocking run in Piru Creek. United indicates that given the long and complex stocking history of the resident *O. mykiss* above Santa Felicia, the genetics of these fish is expected to be similarly complex and that Piru watershed's stocking history parallels that throughout the Santa Clara tributaries so one would expect more similar genetic signatures.

**Response:** It is probable that the progeny of historically stocked *O. mykiss* are a significant genetic component of the naturally-reproducing rainbow trout in the watershed. .

**Comment:** United suggests that the discussion on tributary habitat within section VI.C.3.a contain a discussion on the significant variations in natural access to the tributaries. United provides information indicating percolative losses at various locations.

**Response:** The percolative loss to groundwater that frequently prevents access from the Santa Clara River to the Piru Creek watershed has been addressed in response to other comments.

**Comment:** CalTrout states that rainbow trout found upstream of Frenchman's Flat are wild, native fish that are genetically related to steelhead, not genetically related to hatchery fish and that DWR previously concluded the impacts to native trout from the project, and from an alternative that included a 5 to 10 cfs summer flow, would be significant if these were native fish. CalTrout states that the controversy over the genetic make-up of the fish does not obviate the need for a preparation of an EIS.

**Response:** The *O. mykiss* found within middle Piru Creek are resident rainbow trout and not ESA protected steelhead. As discussed in the EA, although some detrimental effects on native fishes could result during periods of low flow or no flow; some fish could be stranded, and thermal stress and predation could increase as they did historically under natural conditions, with the exception of the driest years, the effects of the Proposed Action on water temperature would not be substantially different from that which would under the flow regime specified under Article 52. Although, it is expected the artificially high population of rainbow trout in the tailwater area between the dam and the concrete weir at Frenchman's Flat would decrease during the summer and fall months, the wild rainbow trout would benefit from the more dynamic flows and improved pool habitat.

**Comment:** CalTrout states that because Article 52-specified instream summer flows were instituted to protect native trout, the obvious conclusion is that the Proposed Action is likely to cause significant adverse effects to the native rainbow trout. CalTrout states that the draft EA's conclusion of no significant adverse effect is based on two faulty assumptions: (1) that the existing population is "artificially" high and that the resulting population decline caused by the proposed action would be "natural"; and (2) the mitigation measures would prevent significant effects from occurring. CalTrout states that the recommended measure to stock middle Piru Creek with hatchery fish is likely to cause significant harm to the native rainbow trout.

**Response:** Article 52 originally stated that flows were to protect fishery and aquatic resources in Piru Creek, and the 1995 agreement with CDFG to increase stream flow releases was to enhance habitat for resident rainbow trout. It is assumed that "aquatic resources" include non-game native fishes and amphibians such as arroyo toad that have different optimal habitat requirements than rainbow trout. The intent of the 1995 CDFG agreement was to "enhance" or increase natural rainbow trout population levels by stocking and maintenance of minimum instream flows that do not mimic a natural low flow hydrograph. Unfortunately, the continuous summer flow regime has also benefited non-native, aquatic predators, such as bullfrogs, catfish, and largemouth bass, by creating the perennial, low velocity, warmwater habitat these species require.

The hatchery stocked fish provide a put-and-take fishery in the Frenchman's Flat area, and little or no reproduction. In reality, the existing put-and-take trout fishery is a seasonal fishery, which is more appropriate for the habitat carrying capacity and the proposed summer/fall flow reductions. Native rainbow trout are adapted to the dynamic flows that would result from the Proposed Action.

**Comment:** CalTrout states the draft EA fails to analyze whether native rainbow trout are producing anadromous steelhead smolts that migrate downstream past Santa Felicia dam. CalTrout states that the draft EA appears to indicate that these smolts are capable of migrating downstream past Santa Felicia dam, therefore reducing this population of native trout would likely reduce the native trout's contribution to the population of endangered steelhead downstream of Santa Felicia dam which may jeopardize the continued existence and recovery of this endangered species.

**Response:** As stated in the EA, *O. mykiss* populations may exhibit strong, weak, or no anadromous behavior traits, and populations cut off from the ocean by natural or anthropogenic conditions have continued to produce anadromous smolts Natural percolation causes a frequent migration barrier between the Santa Clara River and the mouth of Piru Creek, and United presents evidence that there was no historic, pre-dam anadromy in Piru Creek (United letter dated April 30, 2007).

**Comment:** An individual states that large scale reductions in flows would affect the other species native to the creek, especially southern California steelhead. Reducing the flows in the summer means stagnation, growth in algae, vast fluctuations in dissolved oxygen levels that create terrible conditions for sustaining a population of wild native fish.

**Response:** Southern California steelhead do not occur within middle Piru Creek. The proposed return to a more natural flow regime would result in higher water temperatures,

lower dissolved oxygen levels, and increased algal growth in shallow water habitats, particularly during August and September and low water years. The stream channel would also be likely to develop more pools and deeper pools as a result of increased flood flows (DWR, 2005) and increased large woody debris recruitment over time. Deep pools are important refugia from thermal stress and predators during periods of low flow and drought because they maintain cooler temperatures, higher oxygen levels, and less algal growth than shallow water habitat.

**Comment:** Gary Pintar states that the draft EA acknowledges the discrepancy in the allegations regarding the genetic identity of the fish in the project area, but trivializes mitigation by giving CDFG the option to restock lost fish without providing for a resource to supply fish with the same genetic make-up.

**Response:** As previously stated, the hatchery stocked fish provide a put-and-take fishery in the Frenchman's Flat area, and little or no reproduction. In reality, the existing put-and-take trout fishery is a seasonal fishery, which is more appropriate for the habitat carrying capacity and the proposed summer/fall flow reductions. The hatchery fish released into middle Piru Creek are not intended to contribute to the population of native rainbow trout.

NMFS also recommends stocking only sterile, triploid fish to further reduce the risk of genetic introgression and other impacts of hatchery rainbow on wild *O. mykiss* that may be incorporated into future agency stocking recommendations.

**RECREATION**

**Comment:** The Forest Service indicates that both the Angeles and Los Padres National Forests published revised Forest Land Management Plans in September of 2005. It asks that the EA be revised to update the management directions, references, place names, and other information to reflect these newer documents.

**Response:** The final EA has been revised to include the September 2005 Land Management Plans for both the Angeles and Los Padras National Forest Strategy.

**Comment:** CalTrout states that the draft EA's analysis of the Proposed Action's effects on recreational fishing for native rainbow trout is inadequate and includes contradictions and conclusions lacking evidence. Specifically, the draft EA concludes that the reduction of the reproducing trout population would be mitigated for by stocking hatchery fish, however, the draft EA leaves the determination of whether to stock any or all of the

additional 1,000 pounds of trout and the timing of the stocking to the recommendation of CDFG.

**Response:** CDFG is the agency mandated by the California legislature to manage California's natural resources. The CDFG has unique abilities and understandings to manage California's natural resources to include fisheries resources as indicated by their mission statement. The Mission of the CDFG is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. This includes habitat protection and maintenance in a sufficient amount and quality to ensure the survival of all species and natural communities. The department is also responsible for the diversified use of fish and wildlife including recreational, commercial, scientific and educational uses.

**Comment**: CalTrout and two individuals state that the draft EA does not adequately comply with the Wild and Scenic River Act because the conclusion in the EA that the Proposed Action would not have an adverse effect on any of the Outstanding Remarkable Values listed for Piru Creek is contradicted by various statements elsewhere in the document.

**Response**: The Forest Service filed new information concerning the Wild and Scenic River Act and the eligibility of Piru Creek due to its geologic values.

**Comment**: More than 40 individuals expressed concern that the Proposed Action would adversely affect nearby schoolchildren's annual release of trout into Piru Creek.

**Response**: We examined the effects on the trout fisheries within Piru Creek in the draft EA, and no new information has been filed that warrants reconsideration of this issue.

**FINDING OF NO SIGNIFICANT IMPACT**

**Comment:** CalTrout states that the draft EA's finding of no significant impact is not supported by a convincing statement of reasons why the Proposed Action's effects are less than significant.

**Response**: We respectfully disagree. The EA contains analysis of the Proposed Action's effects on numerous resources.

Document Content(s)