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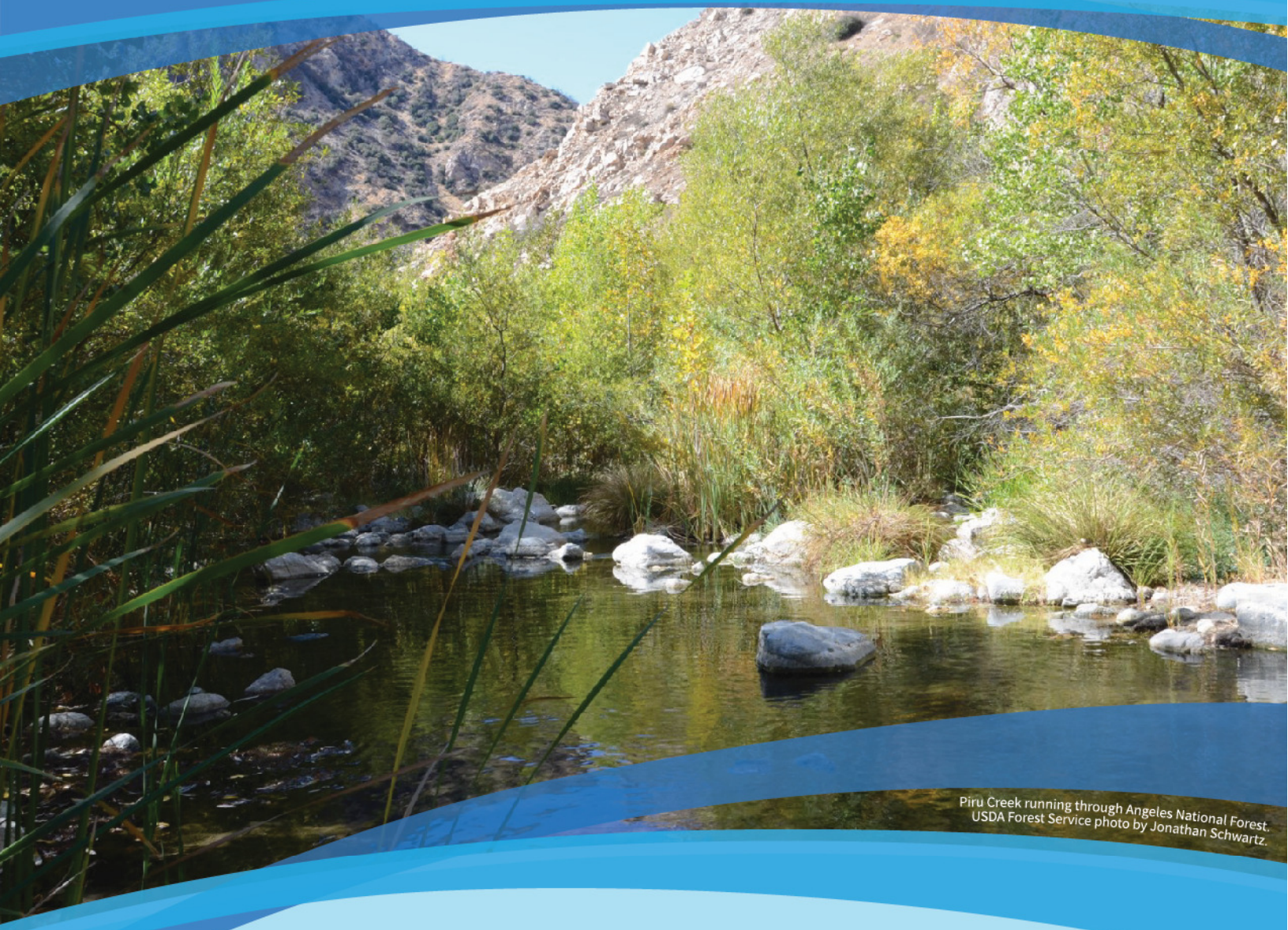

Piru Creek running through Angeles National Forest.
USDA Forest Service photo by Jonathan Schwartz.

River Values Assessment
For
Piru Creek Wild and Scenic River

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Introduction

This report describes the values for which Piru Creek Wild and Scenic River (WSR) was added to the National Wild and Scenic Rivers System. River values include free flow, water quality and outstandingly remarkable values. In this report, we document the existing conditions for the free flow and water quality river values. In addition, this report will document which scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values within each wild and scenic river segment meet the standard for outstandingly remarkable values. This report documents the evaluation of resource conditions and river values at the time that Congress designated these rivers as a wild and scenic river and present condition.

The Wild and Scenic River Act requires the administering agencies to "protect and enhance" these river values. Protecting and enhancing the free-flow condition, water quality, and outstandingly remarkable values become the basis for future management decisions within the river corridor and the foundation for managing the wild and scenic river corridor.

Wild and Scenic Rivers Act Requirements

Enacted in 1968, the Wild and Scenic Rivers Act (16 U.S.C. 1271-1278) preserves selected rivers and their immediate environments in free-flowing conditions in order to protect them for the benefit and enjoyment of present and future generations. The Act requires river-administering agencies and other Federal agencies to protect and enhance the values for which the river was designated. The following statutory provisions highlight this "protect and enhance" mandate:

> Section 10(a): Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration primary emphasis shall be given to protecting its aesthetic, scenic, historic, archeologic, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area.

Rivers designated by the Act may possess outstandingly remarkable values that may include one or more of the following: "scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values" (Section 1(b)).

This evaluation uses the criteria developed by the Interagency Wild and Scenic Rivers Coordinating Council (Interagency Wild and Scenic Rivers Coordinating Council 1999 and 2002) and incorporated into agency policy (Forest Service Handbook 1909.12, Chapter 82.14) to evaluate river values and determine the outstandingly remarkable values associated with the river.

In order to be assessed as outstandingly remarkable, a river-related value must be a unique, rare, or exemplary feature that is significant at a comparative regional or national scale. Dictionary definitions of the words "unique" and "rare" indicate that such a value would be one that is a conspicuous example from among a number of similar values that are themselves uncommon or extraordinary.

While the spectrum of resources and opportunities that may be considered is broad, all values should be directly river-related. Values should:

1. Be located in the river or on its immediate shorelands (generally within 1/4 mile on either side of the river);
2. Contribute substantially to the functioning of the river ecosystem; and/or
3. Owe their location or existence to the presence of the river.

Because a feature is rare or unique does not alone make it outstandingly remarkable. It must also be conspicuously dissimilar from the class of feature to which it belongs. Meaning, being an example of a type of feature that is remarkable is insufficient, the feature must be an outstandingly remarkable example of the type. For example, every archeological site is inherently unique and irreplaceable. To be outstandingly remarkable, an archeological site must be of a quality or extent such that it is among the best examples of a historical resource.

The description of river values should enable people who have never seen the river to understand whether the river has outstanding values worthy of protection. The determination that a river area does or does not contain one or more outstandingly remarkable values is a professional judgement on the part of the responsible official, as informed by the interdisciplinary team, best available scientific information, and public participation (Forest Service Handbook 1909.12, sec. 82.73).

Piru Creek

Two river segments totaling 7.25 miles of Piru Creek on the Angeles and Los Padres National Forests were designated by the Omnibus Public Land Management Act of 2009 (the Omnibus Act). These designated segments are summarized in Table 1.

Table 1. Description and Classification of Designated Wild, Scenic, and Recreational River Segments

Description	Miles	Classification
Piru Creek from 0.5 miles downstream of Pyramid Dam at the first bridge crossing to the boundary of the Sespe Wilderness	3	Recreational
Piru Creek from the boundary of the Sespe Wilderness to the boundary between Los Angeles and Ventura Counties	4.25	Wild

Located in Los Angeles County, Piru Creek drains the rugged and remote Sespe Wilderness and flows into the Santa Clara River. The recreational segment of Piru Creek is located within the Angeles National Forest, Mojave/Los Angeles Gateway Ranger District. The wild segment (as well as the other undesignated portions of Piru Creek) is located within the Los Padres National Forest, Mount Pinos Ranger District (see Figure 1).

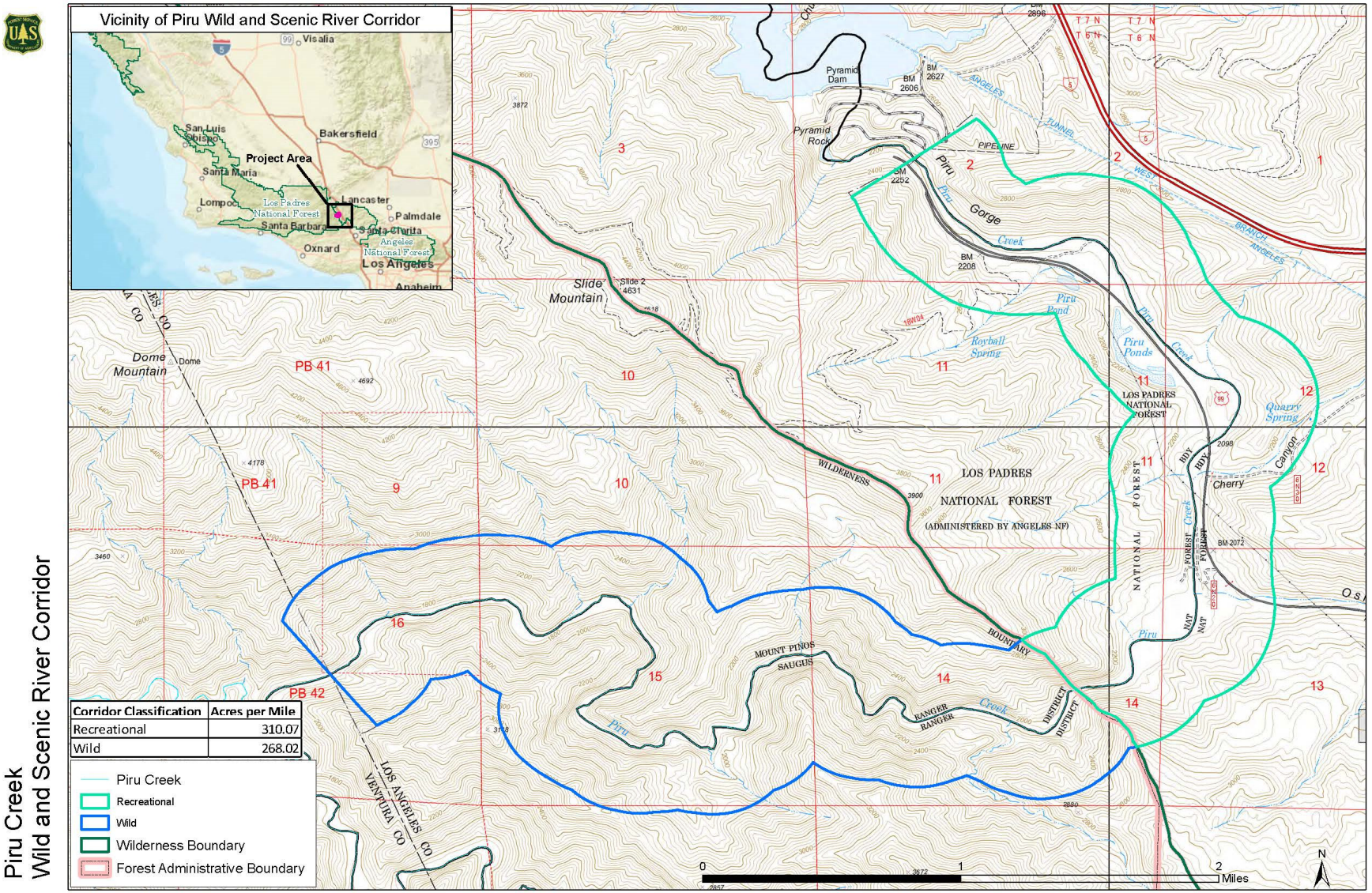

Figure 1: Map of Piru Creek designated segments (interim corridor)

Water Resource Projects

Piru Creek WSR is located between two water resource projects licensed by the Federal Energy Regulatory Commission (Table 2). Pyramid Dam is located immediately upstream of the upper terminus of Piru Creek WSR. Pyramid Dam is a component of the South State Water Project, the largest state-owned and operated water supply projects in the United States. An integrated licensing process for Pyramid Dam is currently in progress as of report date. The Santa Felicia Dam impounds Lake Piru, approximately 12 miles downstream from the lower terminus of Piru Creek WSR.

Table 2. Licensed Water Resource Projects Above and Below Piru Creek WSR

Project	License Holder	FERC License Expiration Date
Pyramid Dam, FERC Project No. 2426, South State Water Project	California Department of Water Resources, Los Angeles Department of Water and Power	January 31, 2022
Santa Felicia Hydroelectric Dam, FERC Project No. 2153	United Water Conservation District (UWCD)	August 31, 2048

Forest Plan Eligibility Study (2006)

In 1992, Public Law 102-301 mandated that five rivers within the Los Padres National Forest, including Piru Creek, be considered as potential additions to the National Wild and Scenic River System and be studied for eligibility and suitability. Those studies began in 1998, were continued as part of the Forest Plan Revision process and were eventually published as Appendix E in the Final Environmental Impact Statement for the 2006 Land Management Plans for the Southern Californian Forests (USDA, 2005).

During the 2006 river study. seven segments of Piru Creek were evaluated to determine if they contained outstandingly remarkable values. Segments 1-4 (above Pyramid Lake) were referred to as upper Piru Creek. Segments 5-7 (below Pyramid Lake) were referred to as lower Piru Creek. All segments evaluated were found to be eligible (having at least one outstandingly remarkable value) in the 2006 Forest Plan Record of Decisions (USDA, 2006a and b, 2005a). Segments 1-4 were also found to be suitable and were recommended for designation. Segments 5-7 were not evaluated in the suitability study.

Geology was found to be an outstandingly remarkable values for lower Piru Creek, including the segments that are now part of the national wild and scenic river system (Segment 5 and part of segment 6). Other values studied include scenery, recreation, fish and wildlife, cultural, historic, and botanical resources. While the river has important resources and values for each of these, these were found not to be outstandingly remarkable in lower Piru Creek when viewed within the region of comparison.

Evaluation Process

While previous evaluations have reviewed river values, a new assessment was completed as part of the Comprehensive River Management Plan (CRMP) development process to review and validate previous findings about river values specific to the designated segments of Piru Creek. The river values evaluation documents clear descriptions of values to inform protection of those values within the CRMP. The evaluation must take into consideration all features which are directly river-related and provide a holistic approach to investigating the relationship of river features. There are three components to the river values evaluation process:

1) outstandingly remarkable values must be judged in comparison with the characteristics of other similar regional rivers, so the evaluation should establish the 'region of comparison' (Forest Service Handbook 1909.12, Chapter 82.14);

2) outstanding remarkable values must meet the evaluation criteria - Forest Service directives establish a baseline set of criteria as minimum thresholds to establish outstandingly remarkable values that can be refined (Forest Service Handbook 1909.12 Chapter 82.73a); and,

3) if the above criteria are met, the outstandingly remarkable values should be described clearly for each segment.

We convened an interdisciplinary team in July and August of 2020 to evaluate river values for Piru Creek. Members of the team included specialists in the following areas: hydrology, geology, fisheries, wildlife, botany, recreation, and archeology. Worksheets were prepared for each river segment, for each value, to assess existing conditions, changes, values, and potential indicators. Their draft worksheets have been kept on file as draft workshop documents and the findings from the worksheets and workshop discussion have been incorporated into this report.

Outstandingly Remarkable Values

The following table summarizes the outstandingly remarkable values for Piru Creek.

Table 3. Summary of outstandingly remarkable values for all river segments

River Value	**Recreational Segment:** *From 0.5 miles downstream of Pyramid Dam at the first bridge crossing to the boundary of the Sespe Wilderness*	**Wild Segment:** *From the boundary of the Sespe Wilderness to the boundary between Los Angeles and Ventura Counties*
Scenery	No	No
Recreation	No	No
Geology	**Yes**	**Yes**
Fisheries	No	**Yes**
Wildlife	No	No
Historic and Cultural	No	No
Botany	No	No

Resource Descriptions and Determinations

Scenery

Baseline and Present Conditions

The recreational segment is characterized by typical landscapes of steep, chaparral covered slopes intermixed with foothill and valley areas of oak woodland and grassland. Strips of cottonwood and willow are adjacent to the relatively straight and confined stream channel. Two valleys in the river corridor, Frenchman's Flat and Piru Ponds, turn green for 1- 2 months in the spring as annual grasses grow, but otherwise the area lacks diversity of views or seasonal variation. The segment is appropriately classified as recreational, as it includes foreground views of a major dam and Interstate 5, and the Old Highway 99 directly in the river corridor. Lesser development includes the Frenchman's Flat Trailhead and day use area, with restrooms, picnic tables, and garbage dumpsters, and access roads, vaults, and visible sections of the California Aqueduct West Branch Tunnel between Pyramid and Castaic Reservoirs. The recreational segment is classified per the Forest Service scenic attractiveness classes as class B, "Typical".

The wild segment begins when the river enters the Sespe Wilderness. This segment lacks developed features or related sites and sounds, as the topography transitions abruptly from the wider valley of Frenchman's Flat to a narrow, steep canyon with 400-700 feet of elevation relief. Approximately 75 percent of the total wild river segment, and 41 percent of the total WSR corridor, are classified as "Distinctive", or scenic attractiveness class A, containing the highest combination of landform, water, rock and vegetation.

Since river designation in 2009, several new features have been constructed in the recreational segment, including a new restroom at Frenchman's Flat and a new flood warning system consisting of several small, fenced enclosures around 10-foot poles along Old Highway 99. In 2018-2019 the Department of Water Resources installed a flood warning system, including a series of flood danger signs along the recreational segment of Piru Creek. These signs are relatively small, were designed to match surrounding colors, and have not substantially changed scenery conditions since designation.

Evaluation Criteria

The landscape elements of landform, vegetation, water, color, and related factors result in notable or exemplary visual features and/or attractions. When analyzing scenic values, additional factors such as seasonal variations in vegetation, scale of cultural modifications, and the length of time negative intrusions are viewed, may be considered. Scenery and visual attractions may be highly diverse over the majority of the river or river segment.

Region of Comparison

For scenery, the region of comparison is the Southern California Mountain and Valley Ecological Section, based on USDA Forest Service's National Hierarchical Framework of Ecological Units[1].

Determination

Scenery is not an outstandingly remarkable value for Piru Creek. The scenery in the recreational section of Piru Creek WSR Corridor has very typical landscape elements within the region of comparison. The landforms, presence and amount of water, and variety of vegetation are not unique, exemplary, or rare. The high level of development in the recreational segment also limits the overall scenic quality.

The presence of water in such relatively dry, steep topography does offer some scenic attractiveness, especially in the wild segment of Piru Creek. While rock formations along the canyon in the wild segment are rare and visually interesting, their value is primarily academic and interpretive and is recognized in the assessment of geology values for the river (see Geology section). The region of comparison has numerous other canyons with primary river tributaries, and similar scenic elements. Distinctive, class A scenery is widespread throughout the Southern California National Forests within the region of comparison.

Recreation

Baseline and Present Conditions

The recreational segment of Piru Creek contains the Frenchman's Flat Picnic Area and Old Highway 99, an approximately 2-mile paved road converted to non-motorized trail, that provides the primary access to Piru Creek. Along this route, the primary uses are bicycling, swimming and water play, dispersed picnicking, dispersed camping along the creek at Frenchman's Flat, and catch and release fishing for wild (non-hatchery) trout. Dispersed overnight camping opportunities are concentrated along the river for about one quarter mile north of Frenchman's Flat.

Use levels in this segment are high, and typically exceed the parking capacity of 110 cars during the high use periods of April to November. The climate is mild to temperate, typical of Southern California, and allows for year-round use. An estimated 90 percent of visitors are from the local area. The recreation experience is similar to other major rivers in the region with developed sites and road or trail access along them, such as West Fork San Gabriel and Santa Ynez Rivers, and Manzana and Lytle Creeks. A lack of shade and high temperatures in the summer limit hiking use along Old Highway 99, some hiking occurs on user developed trails south of Frenchman's Flat, until the canyon narrows substantially just upstream of the Sespe Wilderness and wild segment of Piru Creek. The recreational segment of Piru Creek is a catch and release stream for angling under California Department of Fish and Wildlife (CDFW) Regulations.

[1] USDA Forest Service Ecological Sections https://databasin.org/datasets/9ebae13e920c47f3ab19a4586ad2152f

The wild segment, located entirely within the Sespe Wilderness, does not contain any National Forest System trails and, in some sections, the river flows through a narrow canyon where travel is restricted to directly within Piru Creek. Non-technical canyoneering is known to occur within Piru Gorge and the corridor provides access to a more technical route in Ruby Canyon. The wild segment offers opportunities for solitude and primitive recreation that are typical of most wilderness areas including fishing, dispersed camping, and backpacking opportunities. Use levels are very low, estimated no more than 300 visitors annually.

Advanced-level whitewater boating occurs in this segment, featuring Class IV rapids. Boating opportunities are limited to those instances, typically during very wet winters, when Pyramid Dam can release high enough volumes to accommodate boaters (minimum of approx. 200-300 cfs). During the period from 2007 through 2017, there were four years where there were no opportunities for boating, while in other years, as many as 16 boating days were possible (CDWR, 2019d). Even in those instances, boaters report needing to portage some sections.

Some changes have occurred within the corridor since designation. A double-sided vault restroom was installed at Frenchman's Flat in 2018. Drought years between 2011-2018 resulted in reduced releases from Pyramid Dam. The COVID-19 pandemic in 2020 substantially increased visitation at all National Forests in the region. In 2018-2019 the Department of Water Resources installed a flood warning system, and a series of flood danger signs along the recreational segment of Piru Creek.

California Department of Fish and Wildlife (CDFW) ceased stocking rainbow trout around 2010 in Piru Creek to avoid potential impacts to endangered species. As a result, the recreational fishing opportunities have diminished, although trout do persist in Piru Creek WSR. Angler survey data collected for CDFW by the Fisheries Resource Volunteer Group shows a range of 0.4 – 1.9 fish caught per hour.

Evaluation Criteria

Recreational opportunities are high quality and attract, or have the potential to attract, visitors from throughout or beyond the region of comparison; or the recreational opportunities are unique or rare within the region. River-related recreational opportunities include, but are not limited to, sightseeing, interpretation, wildlife observation, camping, photography, hiking, fishing, hunting, and boating. The river may provide settings for national or regional use or competitive events.

Region of Comparison

The region of comparison is the six counties generally considered to comprise the Metropolitan Southern California Region: Los Angeles, Ventura, Orange, San Bernardino, San Diego, and Riverside Counties. There is an abundance of recreation opportunities provided by local governments. The National Forests in Southern California tend to primarily draw local population, or from within the region, for recreational opportunities (USDA, 2016).

Determination

Recreational values on Piru Creek WSR are not considered outstandingly remarkable.

The recreational opportunities are similar to several other rivers in the region of comparison and are not unique or rare. Recreation in Piru Creek's designated segments generally does not attract visitors from outside the region. A variety of other developed day use recreation sites on the Angeles, Los Padres, San Bernadino, and Cleveland National Forests offer opportunities for accessible water play and dispersed recreational access to rivers for the local population within the Metropolitan Southern California region. Fishing success is below average due to lack of stocking. Several rivers in the region of comparison are

recognized as California Designated Wild and Heritage Trout Waters, including the upper Piru Creek drainage above Pyramid Lake. The Piru Creek WSR is not recognized for notable fishing opportunities.

The geologic interpretive uses are primarily academic (see Geology section) and are limited by lack of access to the wild segment of Piru Creek. Dispersed recreation and cross-country travel through the wild section is limited due to topography and offers non-technical canyoneering opportunities comparable to other river canyons throughout the region of comparison.

The potential for whitewater boating is constrained due to flows as well as challenging topography and vegetation. Lack of egress and the technical nature of rapids further limits these opportunities to experts. There are other boating opportunities that are similarly constrained within the region of comparison.

Geology

Baseline and Present Conditions

The east-west trending Transverse Ranges include California's highest peaks south of the central Sierra Nevada and the only Precambrian rocks in the coastal mountains of the United States. The Transverse Ranges are a unique geomorphic, stratigraphic, petrologic, and structural belt 400 kilometers long and 100 kilometers wide that is offset by a few tens of kilometers right laterally by the northwest trending San Andreas fault system. The prominent east-west trend of the Transverse Ranges is unique among the rest of the northwest-southeast trending coastal ranges in California. It has been proposed that they have rotated significantly from their original position. Along the entire mapped length of the San Andreas Fault Zone, from northern California to Mexico, no other such diverse belt of rocks, structure, and geomorphology similar to the Transverse Range Province crosses the zone. In addition, despite their comparatively small area, the Transverse Ranges seem to incorporate a greater spectrum of rock types and structure than any other province in the state. The Transverse Ranges may be the result of compressional forces along the Big Bend in the San Andreas Fault that itself is a unique geologic feature in North America if not the world.

Piru Creek, below Pyramid Reservoir, flows through scenic tilted layers of sedimentary rocks of the Ridge Basin Group, an inter-montane basin exposing the interrelationships of tectonics and sedimentation, and often the subject of geology field trips by academic and casual interest groups. The Ridge Basin is a prominent, northwest-southeast oriented basin between the San Gabriel Fault to the southwest and the San Andreas Fault to the northeast. The basin developed during a tectonically active period in the late Miocene to early Pliocene (11-5 Ma), during which about 14,000 meters of strata accumulated (Schwartz 2020), which is characterized by one of the world's highest sediment accumulation rates of about 2 meters /1000 years (Link, 1982). The Ridge Basin is the best exposure basin along the San Andreas transform belt and affords an excellent opportunity to observe marine and non-marine facies in a wrench-fault setting.

Accumulated along and displaced by the San Gabriel Fault are coarse gneissic debris, sourced from the Alamo-Frazier Mountain region, and known as the Miocene Violin Breccia. The Violin Breccia along with some other local geological units have been used to restore displacement on the San Gabriel fault, and thereby construct the tectonic history of Ridge Basin (Schwartz 2020).

About three and half miles south of Pyramid Dam, Piru Creek turns back to the west and crosses the San Gabriel Fault zone into Precambrian gneiss (metamorphic) and Mesozoic to Precambrian granitic (igneous) and gneissic rocks.

Piru Creek winds its way through tight bends in a 1,500- to 2,000-foot-deep canyon, displaying active debris slides on canyon walls and deep pools and carved granitic boulders in its upper reaches.

The San Gabriel and other nearby faults are interpreted by Dr. John C. Crowell, Professor Emeritus of the University of California, as strands of the San Andreas Fault system within this splintery boundary region between two giant tectonic plates, the North American Plate to the northeast and the Pacific Plate to the west. Where the San Gabriel Fault crosses lower Piru Creek, it separates 4- to 5-million-year-old (young) terrestrial sedimentary rocks from +/- 600 million year old Precambrian metamorphosed gneiss, exposing a dramatic change in rock type and geomorphic form (Crowell, 1952).

There is a close relationship between the geological/geomorphological values and the river. On one hand, the specific geological units along this proposed segment of Piru Creek are contributing directly to the spectacular geomorphic features (incised gorges and deep pools) of the creek. On the other hand, the fact that the river is flowing in its current path is contributing to the erosional processes (active debris slides) along the creek, along tribute drainages and along the steep slopes of the river itself. In addition, this incised creek has been deepening over millions of years, exposing furthermore the unique geological units along this river.

Evaluation Criteria

The river, or the area within the river corridor, contains one or more examples of a geologic feature, process, or phenomenon that is unique or rare within the region of comparison. The feature(s) may be in an unusually active stage of development, represent a “textbook” example, and/or represent a unique or rare combination of geologic features (erosional, volcanic, glacial, or other geologic structures).

Region of Comparison

The geologic features of Piru Creek were found to be unique within North America, as well as within the State of California and within the Transvers Range, which itself is a unique east-west mountain range within the state.

Determination

Geology is an outstandingly remarkable value for both segments of Piru Creek. Piru Creek flows within unique rock formations and features created by the San Gabriel Fault. Scenic tilted layers of sedimentary rocks exist in addition to faults and rock formations with features crucial to the understanding of geological formation on the west coast of North America.

Within the recreational segment, the sedimentary rocks, just below Pyramid Lake are part of the Ridge Basin Group and display a sequence of terrestrial and marine sedimentary rocks, from the late Miocene through early Pliocene Epochs (Crowell 1954, 1982; Dibblee 1996). These sedimentary rocks are important to the study of the development of the Ridge Basin that coincided with movement on the San Gabriel Fault. These rocks provide critical information about the movement history of the unique Transverse Ranges and are considered to be outstandingly remarkable.

The basement rocks that outcrop in the wild segment on the west side of the San Gabriel Fault are considered to be outstandingly remarkable. These rocks are gneisses and migmatites that are banded and form scenic outcrops and boulders along and in the creek. Geologically these rocks are important because exposures of basement rocks provide important clues to this less well-understood portion of North America’s tectonic history.

The active San Gabriel Fault is one of several important structural features greatly influencing the geologic exposures and geomorphic landforms in southern California. The transition from young sedimentary rocks (ridge-basin Group) to old basement rocks along with the clues each one of these rock types provides in the study and understanding of the San Gabriel and San Andreas faults are important geologic features within the corridor. In addition to these unique features, the understanding of the development of the west coast of North America and the geomorphic features as deep canyons and pools along the corridor meet the criteria of outstandingly remarkable.

Figure 2 - Example of the outstandingly remarkable geology from Recreational section of Piru Creek WSR. USDA Forest Service photo by Jonathan Schwartz .

Fisheries

Baseline and Present Conditions

Native fish species such as resident rainbow trout (*Oncorhynchus mykiss*), prickly sculpin (*Cottus asper*), and arroyo chub (*Gila orcuttii*), inhabit the designated segments of Piru Creek. The arroyo chub, a Forest Service sensitive species, was introduced into Piru Creek and now is mostly extirpated from its native rivers in Southern California (Moyle, 2002). Although resident rainbow trout in the designated segments of Piru Creek cannot reach the ocean due to a fish passage barrier at Santa Felicia Dam, they are >99.9% genetically identical to the federally endangered ocean-going Southern California steelhead (*Oncorhynchus mykiss)* found below fish passage barriers within the Santa Clara watershed (Adabia-Cardoso et al. 2016). For example, freshwater resident rainbow trout that have completed their life history

cycle entirely in freshwater can produce anadromous progeny that emigrate to the ocean. Conversely, steelhead that migrate from the ocean may produce progeny which complete their entire life history cycle in freshwater (Boughton et al. 2006, Garza and Clemento 2007, Christie et al. 2011, NMFS 2012). The two forms can interbreed and contribute to the genetic pool of the population. Nearly half of the resident rainbow trout surveyed in Piru Creek have been found to contain the genetic marker for anadromy (Pearse et al., 2014).

Water releases from Pyramid to Lake Piru have significantly modified the natural dynamics of stream flow and sediment transport within the channel (see Free Flow section). Water releases have also introduced several nonnative species from the state water project to the detriment of native species. Nonnative species include but are not limited to bullfrog (*Lithobates catesbeianus*), small and large-mouth bass (*Micropterus dolomieu* and *Micropterus salmoide*), black bullhead catfish (*Ameiurus melas*), green sunfish (*Lepomis cyanellus*), bluegill (*Lepomis macrochirus*), and brown trout (*Salmo trutta*). In 2005, Pyramid Dam's license requirements (Articles 51 and 52.26) to provide minimum flows for rainbow trout were waived to favor a more natural flow regime that would limit impacts to the federally endangered arroyo toad (*Bufo californicus*). In granting the waiver, FERC acknowledged that lower water conditions in the summer would negatively affect rainbow trout and "may eliminate the majority of trout occurring in middle Piru Creek between July and October" (FERC, 2005). However, the modified flow regime was found to provide benefits by controlling non-native plant and animal species as well as avoid incidental take of the arroyo toad.

The fishery in the recreational segment of Piru Creek is heavily impacted by the presence of infrastructure including dams, roads, high recreational use including dispersed camping, and a younger aged riparian vegetation since the Day Fire in 2006. There is little species diversity or quality of habitat, and although some recreational fishing opportunities persist for wild rainbow trout, angling success is low. No special status fish species are known to inhabit the recreational segment of Piru Creek.

The wild segment of Piru Creek exhibits natural fish habitat, with virtually no infrastructure. The segment contains a variety of mesohabitats typical of lower gradient streams, including deep pools, runs, glides, and low gradient riffles. The steep and narrow canyon walls provide shade, buffering the effects of warm temperatures and low water in the summer months. The wild segment, however, is still influenced by the presence of dams above and below, as well as multiple non-native species that prey on or are otherwise known to be harmful to native fish stocks.

A 2019 fish population study did not note any substantially changed conditions for fish habitat or populations since the time of wild and scenic river designation (CDWR, 2019).

Evaluation Criteria

Fish values may be judged on the relative merits of either fish populations or habitat, or a combination of these river-related conditions.

- **Populations**. The river is nationally or regionally an important producer of resident and/or anadromous fish species. Diversity of fish species or the presence of wild stocks and/or federal or state-listed, or candidate threatened, endangered, or species of conservation concern are of particular significance.
- **Habitat**. The river provides uniquely diverse or high-quality habitat for fish species indigenous to the region of comparison. Exemplary habitat for wild stocks and/or federal or state-listed or candidate threatened, endangered, or species of conservation concern is of particular significance.

Region of Comparison

For fishery resources, the region of comparison is the Southern California Mountain and Valley Ecological Section, based on USDA Forest Service's National Hierarchical Framework of Ecological Units.

Determination

Fisheries in the recreational segment of Piru Creek are not outstandingly remarkable. Existing development and uses limit fish populations and habitat quality. Existing values would not be noted as special, unique, or rare.

Fisheries in the wild segment of Piru Creek are an outstandingly remarkable value based on the exceptional habitat values for resident rainbow trout, including a diversity of lower gradient stream mesohabitats and a lack of infrastructure and development. The steep canyon walls provide shade during hot summer months and may buffer the impacts of increasing temperatures. Due to the relative merits of this high-quality habitat within the region of comparison, the fisheries value is an outstandingly remarkable value in the wild segment of Piru Creek. The population of resident rainbow trout with native ancestry may also be important resources to the recovery of Southern California steelhead (Adabia-Cardoso et al. 2016).

Wildlife

Baseline and Present Conditions

The natural dynamics of stream flow and sediment transport within Piru Creek have been modified significantly. Water releases from Pyramid Dam have introduced several nonnative species from the state water project to the detriment of native species. Nonnative species include but are not limited to bullfrog, small and large-mouth bass, black bullhead catfish, and green sunfish. In 2005, the DWR began releasing water from Pyramid Dam matched to reservoir inflows, to more closely mimic natural hydrologic conditions. The modification was intended to benefit arroyo toad populations and habitat.

The wild segment of Piru Creek is relatively narrow with steep canyon walls bordering either side of the creek. The narrow riparian habitat corridor consists mostly of scattered stands of valley oak and sycamore with thickets of arroyo willow (*Salix lasiolepis*) and mulefat (*Baccharis salicifolia*) bordering the stream margins. Forest Service sensitive species observed within Piru Creek WSR include striped garter snake (*Thamnophis hamondii)* and southern Pacific pond turtle (*Actinemys marmorata pallida)*.

In 2011 the US Fish and Wildlife Service (USFWS) published a Final Critical Habitat Designation Rule for the arroyo toad in the Federal Register. This listing noted that the change in water releases from Pyramid Dam have likely benefitted arroyo toad habitat throughout Piru Creek, but the arroyo toad occupied and designated critical habitats do not occur within Piru Creek WSR. They are located approximately 0.5 miles downstream of the Piru Creek WSR (76 FR 7246).

Critical habitat was designated for the southwestern willow flycatcher (*Empidonax trailii extimus)* in 2013. There are 70 acres of critical habitat within Piru Creek Wild and Scenic River. The final critical habitat designation included 208,973 total acres, 38,564 of which are in the region of comparison, the Southern California Mountain and Valley Ecological Section. The final critical habitat listing did not note any special significance of the acres of critical habitat within Piru Creek WSR, in comparison to other critical habitat areas within the region. The species is not known to occur within the Piru Creek WSR.

The least Bell's vireo (*Vireo bellii pusillus*) is another endangered species with potential habitat within the Piru Creek WSR. However, there are no known nesting or roosting sites and no designated critical habitat for least Bell's vireo within the Piru Creek WSR.

The recreational and wild segments of Piru Creek contain designated critical habitat for the California condor (*Gymnogyps californianus),* although there are no known active roosting or nesting sites within the river corridor. The federally endangered California red-legged frog (*Rana aurora draytonji)* occurs primarily downstream of and not within the designated portion of Piru Creek (CDWR, 2019b).

Evaluation Criteria

Wildlife values may be judged on the relative merits of either terrestrial or aquatic wildlife populations or habitat, or a combination of these conditions.

- **Habitat.** The river, or area within the river corridor, provides uniquely diverse or high-quality habitat for wildlife of national or regional significance, and/or may provide unique habitat or a critical link in habitat conditions for federal or state-listed or candidate threatened, endangered species, or species of conservation concern. Contiguous habitat conditions are such that the biological needs of the species are met.
- **Populations.** The river, or area within the river corridor, contains nationally or regionally important populations of indigenous wildlife species. Of particular significance are species diversity, species considered to be unique, and/or populations of federal or state-listed or candidate threatened or endangered species, or species of conservation concern.

Region of Comparison

For wildlife resources, the region of comparison is the Southern California Mountain and Valley Ecological Section, based on USDA Forest Service's National Hierarchical Framework of Ecological Units.

Determination

Wildlife is not an outstandingly remarkable value for Piru Creek WSR. There is nothing rare, unique, or exemplary about the wildlife populations or habitat in Piru Creek WSR. No sources describe any nationally or regionally significant wildlife populations, diversity of species or habitats, or habitats of exceptionally high quality. One exception is a nearby population of California condors, which are of national and regional significance due to the extremely low number of wild condors across the entire species range. Although this population is important, there are no confirmed nesting or roosting sites within Piru Creek WSR, and the occasional presence of a bird flying overhead is not directly river related.

The presence of critical habitat for the southwestern willow flycatcher occurs across many other rivers in the region. There are approximately 70 acres of critical habitat for this species within Piru Creek WSR, out of over 38,000 acres in the region of comparison, and over 200,000 acres of critical habitat total. Nothing about the minimal amount of critical habitat within Piru Creek WSR was noted as being of any greater value than any other critical habitat for the species.

Historic and Cultural Resources

Baseline and Present Conditions

Sizeable portions of the Piru Creek corridor have been surveyed for heritage resources. The creek lies within an area known to have been occupied during the prehistoric, protohistoric and historic periods.

However, unlike the upper Piru Creek segments (above Pyramid Lake), the designated segments lack the presence of sites that have the potential to contribute to local and regional understanding of both native and historic history. Fieldwork by McKenna et al. (1992) found no evidence of significant historic remains and one small prehistoric habitation site within the designated segments. Given the geomorphology of this corridor of Piru Creek, absence of such sites is not a surprise. Much of this lower segment winds its way through tight bends in 1,500 to 2,000 foot deep canyons, displaying active debris slides on canyon walls and deep pools and carved granitic boulders in its upper reaches.

Historic maps for the area illustrate the extent of the rough terrain. An 1880 map of the area shows a road leading through the Piru Creek area, north from a portion of Rancho Temescal and identifiable as far north as the current location of the Apiary Campground. No structures or habitation sites are reported on this map. This map shows a portion of a "trail to Fort Tejon" along Piru Creek, indicating this was a trafficked right-of-way for at least two miles along the creek below the spillway.

There have been no substantial changes in information or interpretation of cultural resource values within the study area since the 2006 Forest Plan Eligibility Study or the designation of the river.

Evaluation Criteria

The river, or area within the river corridor, contains important evidence of occupation or use by humans. Sites may have national or regional importance for interpreting history or prehistory.

- **History.** Site(s) or feature(s) associated with a significant event, an important person, or a cultural activity of the past that was rare or one-of-a-kind in the region. A historic site or feature, in most cases, is 50 years old or older.
- **Pre-history**. Sites may have unique or rare characteristics or exemplary human interest value; represent an area where a culture or cultural period was first identified and described; may have been used concurrently by two or more cultural groups, or may have been used for rare sacred purposes.

Region of Comparison

In determining whether there was an outstandingly remarkable value for the designated segments we compared to similar rivers nearby within the Angeles and Los Padres National Forests. In particular, in comparison to the upper segments of Piru Creek, which contain village locations, extensive lithic scatters, and rock shelters, including three historic properties that qualify for the National Register of Historic places, the designated segments of Piru Creek do not contain archeological resources of outstanding value. Input related to archaeological and tribal resources, (i.e., sacred sites, traditional cultural properties, etc.) was requested from federally recognized Indian tribes, in addition to state recognized local Native American groups with ascribed cultural affiliation with the designated Piru Creek segments, for information on any rare, unique, or exemplary cultural or tribal resources within these river corridors that should be considered in our river values assessment. No tribal resources or sacred sites were identified as a result of this outreach effort, however, the Fernandeño-Tataviam Band of Mission Indians has requested to continue their participation during any future management plan development, particularly in regards to any identified exceptional values that may benefit from a tribal perspective.

Determination

The historic and pre-historic sites and features recorded within the designated segments are common in the local area and region, and as such, they are not rare or unique or have national or regional importance for interpreting prehistory. There are no cultural resources present within the lower Piru Creek that offer outstanding remarkable values.

Botany

Baseline and Present Conditions

The botanical resources of the recreational segment of Piru Creek are well known due to the creek's proximity to roads and trails and the inclusion of the study corridor in other project analyses; however, no systematic effort has been made to inventory the botanical resources found in the study corridor. There are no known occurrences of endangered, threatened, proposed, candidate, or sensitive plant species within one-quarter mile of Piru Creek. There are a number of occurrences of sensitive plant species in the Piru Creek watershed but these populations all occur more than one-half mile from the creek.

Botanical values were reviewed across the entire Piru Creek WSR corridor (approximately ¼ mile from stream centerline). The botanical resources directly in and adjacent to the stream are river related, many of them are considered vital components of a riparian (water dependent) ecosystem. Upland vegetation is not as directly related to the WSR, although there can be ecological factors that indirectly relate upland vegetation to the presence of free-flowing water.

For botanical resources, detailed field inventories and studies associated with FERC re-licensing for Pyramid Dam were completed only for the immediate footprint of the licensed infrastructure, and do not overlap with the Piru Creek WSR. While there have not been detailed field surveys conducted within Piru Creek WSR, the data sources reviewed represent the best available information. A species-specific habitat review was not conducted, instead, the detailed species accounts from the forest plan formed a baseline.

The primary recent change in the vegetative condition is from the effects of the Day Fire in 2006.

The National Forest Management Act and Renewable Resources and Planning Act provides authority and direction for the Forest Service to make special designations of unique, rare, or high interest resources within the Agency's Land Management Plans, which all National Forests are required to prepare. The two most common of these designations for botanical resources are Special Interest Area, and Research Natural Area. Neither of these special designations for Piru Creek were considered, recommended, or adopted in either the 1987 or 2006 Angeles National Forest Land Management Plans, or subsequent amendments.

Region of Comparison

For botanical resources, the region of comparison is the Southern California Mountain and Valley Ecological Section, based on USDA Forest Service's National Hierarchical Framework of Ecological Units.

Determination

Botanical values are not considered to be outstandingly remarkable. A review of the best available information did not indicate any botanical values that are unique, rare, or otherwise meet the criteria for outstandingly remarkable values. The Forest Service existing vegetation dataset shows that the various habitat and vegetation types present within Piru Creek WSR are typical and widespread across the region of comparison, occurring along many other rivers.

Water Quality and Free Flow

As defined in the Wild and Scenic Rivers Act, water quality and free flow are values to be protected and enhanced for all designated rivers. This report documents and updates the baseline and current condition for water quality and free flow, including federally reserved water rights.

Water Quality

According to the California State Water Resources Control Board (CWRCB), the designated beneficial uses of water for the recreational and wild segments of Piru Creek are agricultural supply, cold freshwater habitat, municipal and domestic supply, non-contact water recreation, spawning, reproduction, and/or early development, warm freshwater habitat, and water contact recreation.

Both portions of the river segments are listed in the 2018 Water Quality Integrated Report (CWRCB, 2018) as an impaired waterbody (Class 5) with a Total Maximum Daily Load (TMDL) needed for chloride, pH, and toxicity. The California Water Quality Board for the Los Angeles Region is responsible for TMDL development. A TMDL analysis is currently under development for both chloride and pH that was due to be completed in 2019 but is not available at the time of this report. A TMDL analysis for toxicity is scheduled to be completed in 2027.

The Watershed Condition Class (WCC) rating for the Fish Creek-Piru Creek HUC12 watershed is listed as functioning at risk with both the water quality and water quantity metrics rated as poor. The water quantity metric is listed as poor due to the artificial impoundments of natural streamflow from Pyramid Lake.

The recreation segment has very gentle slopes averaging less than ten percent. Solar radiation in this segment is higher than average, providing a cooling effect to visitors from evapotranspiration of the cold waters discharged from Pyramid Lake. Solar radiation in the wild segment is much lower than average, reducing evapotranspiration rates and maintaining cooler surface stream temperatures, which are beneficial to the local fish and wildlife species.

Free Flow

Section 16b of the Wild and Scenic Rivers Act defines “free flowing” rivers as any river or section of river existing or flowing in natural condition without impoundment, diversion, straightening, rip rapping, or other modification of the waterway. There are no impoundments within the designated segments of Piru Creek, thus the river is considered free flowing. Pyramid Dam impounds Piru Creek directly upstream of the designated segment. Pyramid Dam was constructed by the California Department of Water Resources in the 1960s and completed in 1973 as part of the California State Water Project and has a storage capacity of 222,000 acre-feet of water. California Department of Water Resources controls releases from Pyramid Lake under a FERC license. These releases control the downstream flow of Piru Creek. The license Article 52, as amended in 2005, requires the licensees to match outflows from Pyramid Lake to natural inflows to Pyramid Lake, to the extent feasible for operations and safety. This flow regime is to avoid impacts to the federally endangered arroyo toad. The license allows for limited exceptions for emergency flood protection and other testing, and delivery of water to United Water Conservation District Lake Piru in the winter months (November to February) when flows would not interfere with arroyo toad reproduction. Pyramid Dam is unique because this large volume of water can be released out of the reservoir down the canal rather than into Piru Creek, directly.

A review of the streamflow data (1988 to present) from USGS Stream Gauge 1109525 – Piru Creek Below Pyramid Lake near Gorman, CA shows high fluctuations in discharge from a high of 779.5 cubic feet per second (cfs) recorded in February 1988 to a low of 1.8 cfs recorded in July 2018. Winter discharge rates increase in very wet winters when the dam operators are release large amounts of water to make room for additional storage anticipated for March and April rainfalls in the northern potions of California. Summer discharge averaged 26.1 cfs for the month of July for the period of 1989 to 2006. Summer discharge averaged 4.8 cfs for the month of July for the period of 2007 to present. These

alterations equate to an 81 percent reduction in summer streamflow since 2007, likely attributed to the implementation of the modified flow regime to protect arroyo toad.

Summer streamflow is augmented upwards of 0.8 cfs above the dam discharges in the recreation river segment from streamflow from tributaries into Piru Creek into the wild river segment.

Recreational Segment

A portion of US Route 99 was built through the recreation segment between 1929 and 1933 to provide a safer three lane road through the Tejon Pass to Gorman, California. Construction of this road bisected portions of the stream as evidenced in the 2018 NAIP imagery. Portions of US Route 99 north of this river segment are submerged under Pyramid Lake.

Wild Segment

The wild segment is composed of a natural landscape with steep gradients, including slopes over 100 percent. The only major disturbances in modern times were caused by the 1928 Didge Fire #96 and the 2006 Day Fire. These two wildfire events would have accelerated erosion of up to three to five years based on soil burn severity. Erosion rates should be back down to normal ranges.

Federally Reserved Water Rights

A federally reserved water right has not been asserted for this river.

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