

3. Affected Environment

3.1 Introduction

This chapter is a description of the biological, physical, and socioeconomic characteristics, including human uses that could be affected by implementing the action alternatives for this RMP/EIS (see Chapter 2). Where possible, the information and direction for Reclamation resources has been further broken down into fine-scale assessments and information. Specific aspects of each resource discussed in this section were raised during the public and agency scoping process. The level of information presented in this chapter is commensurate with and sufficient to assess potential effects of the action alternatives in Chapter 4.

3.2 Resources

This section contains a description of the biological and physical resources of the New Melones Lake area and follows the order of topics addressed in Chapter 2, as follows:

- Air quality;
- Noise;
- Climate;
- Geology;
- Topography;
- Hydrology/water quality;
- Vegetation;
- Fish and wildlife;
- Special status species;
- General land management;
- Access and transportation;
- Public health and safety;
- Invasive species control;
- Fire management;
- Cultural resources;
- Socioeconomic and environmental justice;
- Indian Trust Assets;
- General recreation;
- Aquatic recreation;
- Land-based recreation;
- Interpretive services and visitor information;
- Facilities, land use, and management areas; and
- Utilities.

3.2.1 Air Quality

The New Melones Lake area's location in Calaveras and Tuolumne Counties places it in the Mountain Counties Air Basin in the central Sierra Nevada foothills. Air quality problems in this air basin include periodic high levels of ozone and suspended particulate matter. Other air pollutants generally do not occur in concentrations high enough to constitute a problem.

Air quality management programs in California are the responsibility of local air pollution control districts (APCDs), the California Air Resources Board (CARB), and the US Environmental Protection Agency. The local air pollution control districts for the New Melones Lake area are the Calaveras County APCD and the Tuolumne County APCD.

Federal and state air quality management programs have evolved using a combination of two different approaches:

- The state implementation plan (SIP) process of setting ambient air quality standards for acceptable exposure to air pollutants, conducting monitoring programs to identify locations experiencing air quality problems, and then developing programs and regulations designed to reduce or eliminate those problems; and
- The hazardous air pollutant process of identifying specific chemical substances that are potentially hazardous to human health and then setting emission standards to regulate the amount of those substances that can be released by individual commercial or industrial facilities or by specific types of equipment.

Both the EPA and CARB have adopted ambient air quality standards for various pollutants. Federal ambient air quality standards have been adopted for ozone, suspended particulate matter, carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. State ambient air quality standards have been adopted for these same pollutants, plus sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Federal and state ambient air quality standards for suspended particulate matter have been established for two different size ranges of suspended particles: inhalable particles (designated as particulate matter less than 10 microns in equivalent aerodynamic diameter [PM₁₀]), and fine particles (designated as particulate matter less than 2.5 microns in equivalent aerodynamic diameter [PM_{2.5}]).

Ambient air quality in Tuolumne County is monitored in Sonora, specifically ozone, PM₁₀, PM_{2.5}, and carbon monoxide; ambient air quality in Calaveras County is monitored in San Andreas, specifically ozone and carbon monoxide. There is no PM₁₀ or PM_{2.5} monitoring in Calaveras County. Ozone monitoring data from Sonora and San Andreas show that the state and federal ozone standards typically are exceeded several times each year (CARB 2007).

High ozone levels in Calaveras and Tuolumne Counties are due almost entirely to pollutant transport from the Central Valley and the San Francisco Bay Area (CARB 2001a). Air quality management programs for Calaveras and Tuolumne Counties rely primarily on emission control programs in upwind source areas to provide for eventual attainment of state and federal ozone air quality standards.

Most hazardous air pollutant regulations relate to specific industrial sources and operations, but California has identified naturally occurring asbestos as a toxic air contaminant. Naturally occurring asbestos is found in serpentine rock and in some types

of ultramafic rocks (those most often found in fault zones). CARB has adopted regulations for limiting the amount of naturally occurring asbestos in aggregate material used for surfaces, including those for roads, road shoulders, parking areas, trails, and playgrounds (CARB 2000). CARB also has adopted separate regulations for construction, grading, quarrying, and surface mining that disturb areas of serpentine, ultramafic rocks, or other areas found to have naturally occurring asbestos (CARB 2001b). The local APCDs enforce these regulations.

Air pollutant emission sources associated with New Melones Lake area include car and truck traffic, boat and personal watercraft engine emissions, and generators, camp stoves, and campfires at campground facilities. Localized air quality can be lowered at boat ramps where cars, boats, and personal watercraft may idle while launching. Seaplanes and wildfires and prescribed burns on lands surrounding the New Melones Lake area are additional but infrequent sources of air pollutant emissions. Facility construction is another, temporary and localized, source of fugitive dust and vehicle emissions.

Ozone monitoring data from Sonora and San Andreas (CARB 2007) show that the state and federal ozone standards typically are exceeded several times each year, with considerable year-to-year variation. Ozone monitoring data from Sonora and San Andreas show no clear trend in either the frequency of violations or the maximum measured ozone levels. PM₁₀ monitoring data from San Andreas in Calaveras County do not show any clear trends in annual average PM₁₀ levels (CARB 2007).

3.2.2 Noise

In general, background noise levels vary with wind conditions and relative location (on the lake, along the shoreline, or inland). Typical background noise levels are expected to vary from 35 A-weighted decibels (dBA) to 50 dBA, depending on wind conditions. Aircraft overflights represent an intermittent contributor to overall background noise levels. Noise levels are often somewhat higher near such sources as highway traffic, occupied campgrounds, and areas of the lake with boat and personal watercraft use.

Intermittent but intense noise sources may occur as a result of floatplane landings and takeoffs, model aircraft flying, amplified music on wakeboard boats and houseboats, and construction or maintenance at various facilities (Reclamation 2006b) or detonations of explosives at the nearby Carson Hill Mine and at the Blue Mountain Minerals Mine in River Canyon. Hunting represents a seasonal, localized, and intermittent source of noise in areas away from campgrounds and other heavily used visitor facilities. Unauthorized off-road vehicle use represents another intermittent noise source affecting some portions of the New Melones Lake area.

The highest overall noise levels are expected to be in the vicinity of campgrounds, the marina, boat launching facilities, and occupied day use areas. In general, noise conditions in the New Melones Lake area would not interfere with recreational activities and experiences. However, in a 1993 survey during the Independence Day holiday, some visitors complained about excessive nighttime noise in campgrounds and high noise levels from boats. Boats and personal watercraft with underwater engine exhaust and at

full throttle generally produce noise levels of 75 to 85 dBA at a distance of 50 feet (15 meters) (Lanpheer 2000).

3.2.3 Climate

The foothills in which New Melones Lake is located are part of the Sierra bioregion, which includes the entire Sierra Nevada, extending approximately 380 miles (610 kilometers) along California's eastern side. Climate at the lake is Mediterranean, meaning that it has wet winters and dry summers. The location of the lake between the higher elevations of the Sierra and the low-lying floor of the Central Valley means that temperatures are moderate and between those found at these two extremes. Because of this transitional location, climatic features, such as temperature and precipitation, fluctuate widely throughout the year. This fluctuation in turn leads to profound yet predictable seasonal variations in the conditions of various resources, including water temperatures and levels, vegetative vigor, and wildlife residency.

Localized fluctuations in temperature and precipitation within the project area result from aspect and elevation. These fluctuations are apparent as differences in vegetation patterns, soil formation and stability, and moisture retention. Although these localized variations in resource conditions may affect planning on a project level, climatic resource conditions for the RMP/EIS are reported on a regional level.

Climate data shown in Table 3-1 reflect average high and low temperatures and average precipitation from 1992 to 2006. During this time, the maximum recorded temperature at New Melones Dam was 110 degrees Fahrenheit (43 degrees Celsius), while the lowest temperature was 24 degrees F (- 5 degrees Celsius). Extended periods of temperatures at or below freezing are uncommon. Mean annual rainfall at the dam during this period was about 33 inches (83 centimeters) (Western Regional Climate Center [WRCC] 2006).

Table 3-1: New Melones Dam, Period of Record Monthly Climate Summary

Period of Record: 3/1/1992 to 10/31/2006													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average maximum temperature (F)	56.2	59.3	64.8	69.2	79.3	88.1	96.5	95.8	90.1	79.2	64.6	56.6	75.0
Average minimum temperature (F)	38.4	40.1	43.6	45.2	52.5	58.2	65.0	63.8	59.4	51.9	43.3	38.1	50.0
Average total precipitation (in.)	7.67	5.35	4.18	2.75	1.82	0.48	0.05	0.07	0.23	1.33	2.86	5.71	32.50

Source: WRCC 2006

More annual precipitation is expected in some of the higher watersheds that ultimately contribute to New Melones Lake. Most precipitation in the immediate vicinity of the lake falls as rain, with a very small amount falling as snow, and occurs primarily between November and April (WRCC 2006). Although the dry season at New Melones is long,

hot, and dry, lake levels are maintained during this time by melting snowpack. Other climatic variables, such as global warming, drought, or long-term regional changes in precipitation, may affect resources over the next 15 to 20 years.

3.2.4 Geology

Overall Geology

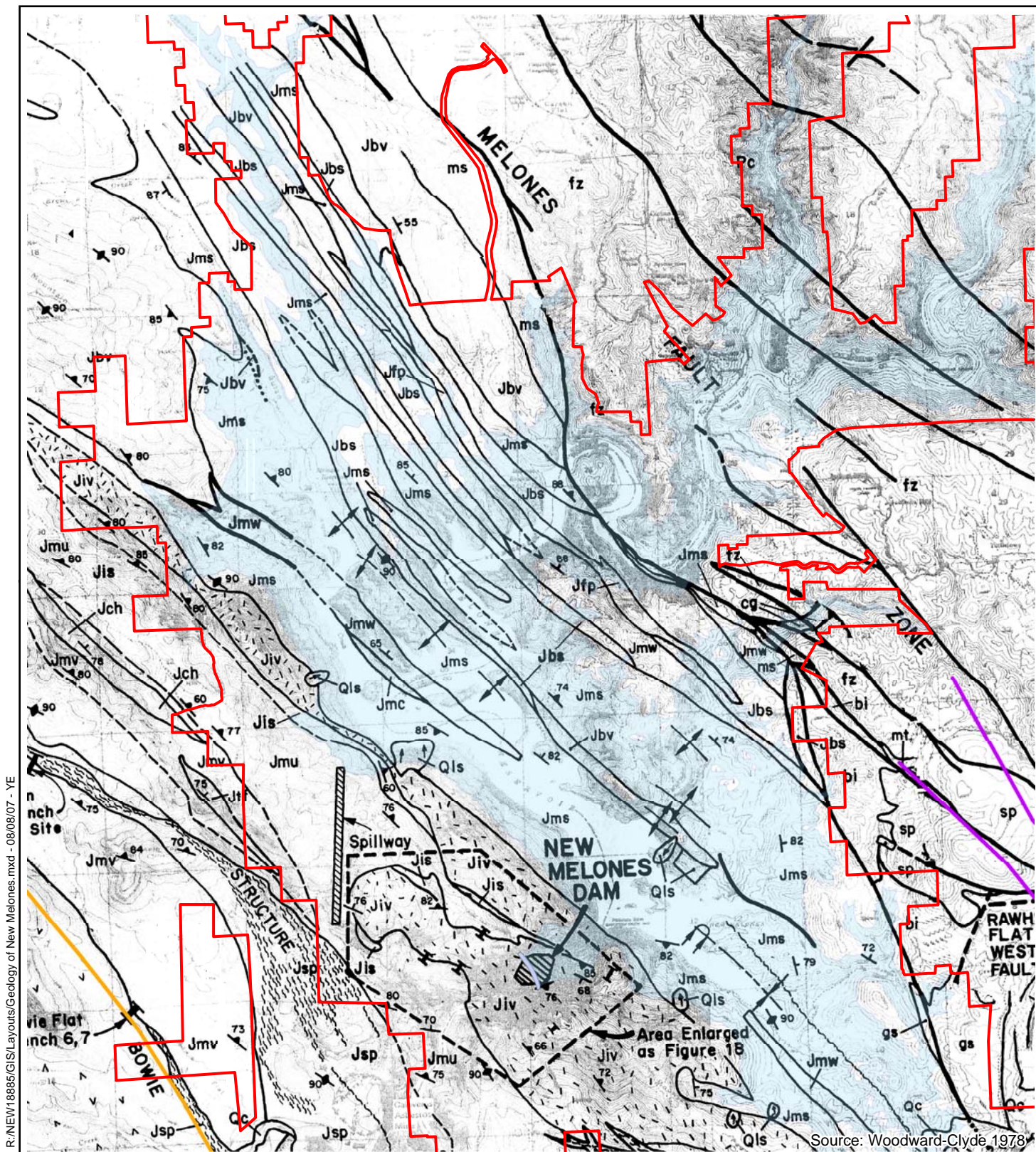
This section has been organized into the following subsections:

- **Geologic Formations**—Subterranean features that shape the topography of the lake and its surroundings;
- **Seismicity**—Faults found in the area;
- **Mineral Resources**—Minerals that have been mined commercially in the area or for which there may be specific management actions in the RMP/EIS;
- **Soils**—Soil types found in the area and the geologic features that produce them; and
- **Caves**—The numerous caves that are found in the limestone formations at the northern part of the lake.

Geologic Formations. The interpretation of the geology of the foothills of the Sierra Nevada is difficult because the understanding of the geology has undergone many changes and refinements. A narrative of the major geologic features has been included in this section to highlight the formations and stratigraphic units particularly influential to the New Melones Lake area.

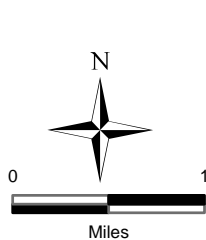
One of the noteworthy features of the study area that is apparent in Figure 3-1 is a general tendency of the mapped units and of lines representing structural features to have a northwest trend. In fact, it is clear that the main body of New Melones Lake is similarly oriented. This northwest trend is produced by the Foothills Metamorphic Belt (FMB), which extends about 150 miles (240 kilometers) from the Modoc Plateau in the north to about the latitude of Merced in the south. In the study area, the FMB is bounded on the east by the Calaveras Formation (also referred to as the Calaveras Complex) and on the west by sedimentary rocks of the Great Valley sequence. The two most prominent structural features within the FMB are the Melones Fault Zone and the Bear Mountain Fault Zone.



The Sierra Nevada is the result of relatively recent uplift of the range by faulting. The block containing the Sierra Nevada batholith was pushed up to the east and tilted down to the west. As this happened, the rocks into which the batholith had intruded eroded away, exposing its younger and more resistant granitic rocks. However, small remnants of the original continental rocks were preserved, including bodies of limestone that belong to the Calaveras Formation.



Source: Woodward-Clyde 1978

New Melones Lake Area, California
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-  Project Boundary
-  New Melones Lake

- Bear Mountain
— Melones

EXPLANATION

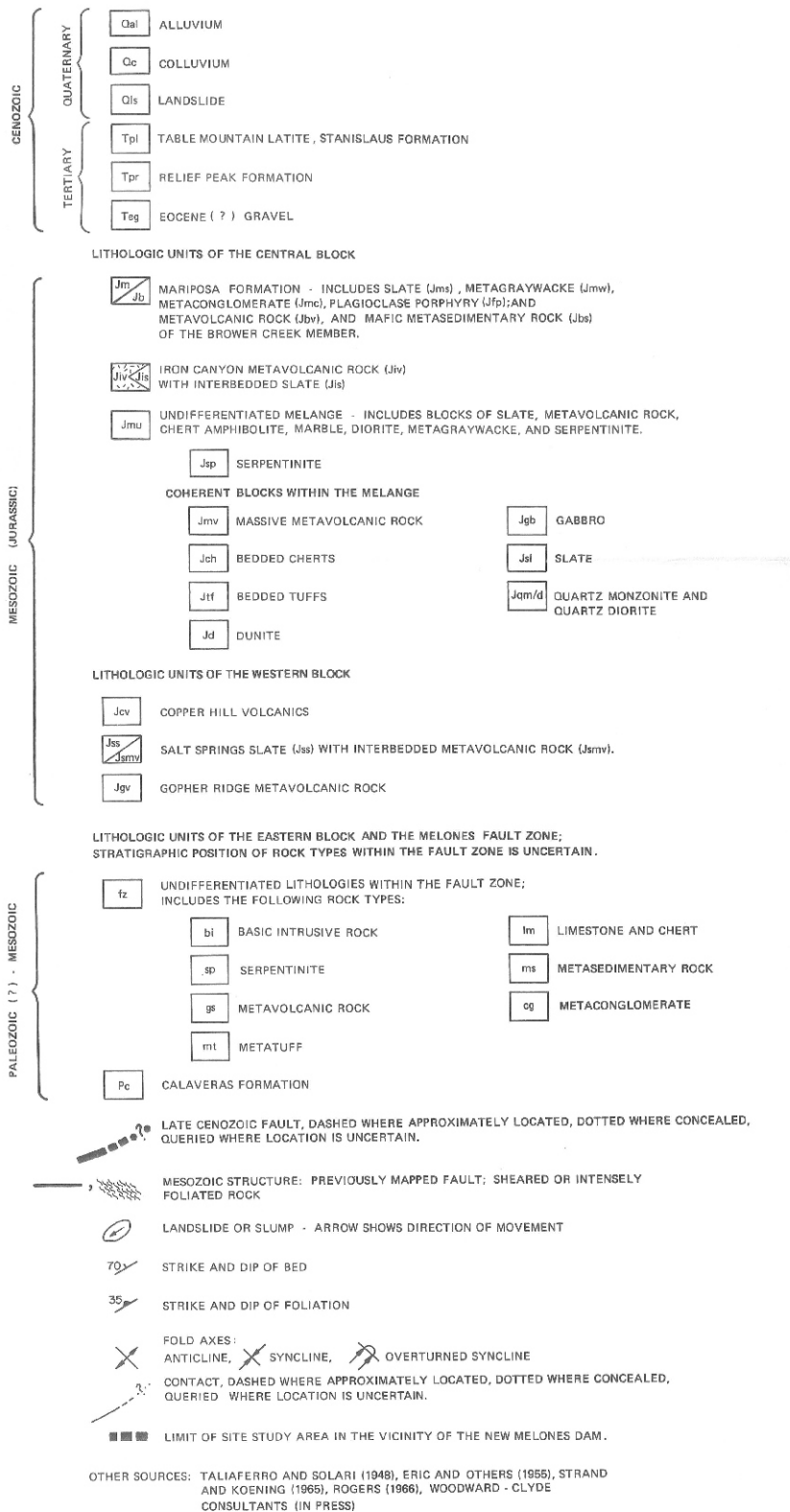


Figure 3-1 Legend

New Melones Lake Area, California
Central California Area Office

The uplift of the Sierra Nevada was preceded and accompanied by volcanic activity that resulted in significant deposits of volcanic material, some of which have been given formation names, the most prominent of which within the study area is the Table Mountain latite.

Table Mountain is the cast of an ancient river valley. During the early to middle Miocene Period, large volumes of andesitic lava erupted from volcanoes east of the study area in what is now the Carson Pass area. Large quantities of andesitic mud and debris washed down the stream channels. Subsequent eruptions of latite lava followed and filled these ancient stream channels, forcing the rivers to find other routes. The river channels buried under these volcanic deposits contained placer gold deposits. The lava buried and preserved both the placer gold deposits and the Mehrten Formation deposits. Eventually, the surrounding land surface eroded, leaving behind flat-topped ribbons of the resistant latite lava.

Seismicity. The two major faults affecting the dam foundation are the Powerhouse Fault and the IF-83 Fault. The Powerhouse Fault passes through the Powerhouse foundation, across the canyon floor downstream of the toe of the dam, and curves toward the east, crossing the left abutment of the dam at an elevation of about 940 feet (290 meters). The IF-83 Fault strikes N 75 degrees W and dips 65 degrees S. It passes through the foundation of the sloping intake structure, under the extreme upstream toe of the dam, and continues up the left abutment, where it intersects the Powerhouse Fault. Two smaller faults occur within the foundation, one located high on the right abutment and the other on the lower left abutment (Reclamation 2006c).

Faults found in the vicinity of the New Melones Lake area are not considered active, and the lake area's situation atop shallow bedrock would minimize shaking in the event of an earthquake. Reclamation would construct any new facilities in compliance with the California Building Code, which requires measures to minimize building failure in the event of an earthquake. Reclamation must also comply with the Alquist-Priolo Earthquake Zone Act, although this act would not restrict building because there are no Alquist-Priolo faults in the project area.

Mineral Resources. The mineral resources described below are found within the project area.

Gold. Gold occurs in lode deposits and placer deposits within the study area, which overlies the Carson Hill and Jamestown Gold Districts. The Carson Hill District (also known as the Melones District) includes the portion of the Mother Lode Belt, which extends from Carson Flat to the town of Melones on the Stanislaus River. (The town was abandoned when New Melones Lake was filled.) The Jamestown District extends south to the town of Stent. Milling ore of the Carson Hill District was usually low in grade, but the ore bodies were extensive (Oakland Museum of California 1998a, 1998b).

The Carson Hill (Melones) Mine is the largest recently active lode mining operation adjacent to New Melones Lake area. It is between State Route (SR) 49 Stevenot

Stanislaus River Bridge and Coyote Creek, just outside the study area boundary. The Jamestown Mine is on the southeast side of Table Mountain, outside the study area.

The town of Melones was historically the site of a placer gold dredging operation, and there are several former hydraulic mining locations within the study area. More important are the placer deposits contained in the ancient stream channels buried beneath Miocene Mehrten Formation and Table Mountain latite flows.

Chromite. Chromite deposits with moderate potential are present in the ultramafic rocks associated with the Bear Mountain Fault Zone. Little or no exploration has been conducted since the 1940s.

Limestone and dolomite. High-calcium limestone suitable for cement production is present in the Paleozoic limestone deposits of the Calaveras Complex.

Talc. Talc is present in localized hydrothermally altered schist deposits within the Melones Fault Zone. There are no active talc mining operations in the vicinity of the study area.

Asbestos. Asbestos minerals, such as chrysotile, are present in the serpentine deposits associated with the New Melones and Bear Mountain Fault Zones. The Jefferson Lake Asbestos Company operated the largest open pit asbestos mine in the United States at a site just south of the New Melones Dam, along the upper inlet of Lake Tulloch. The mine was closed in 1987. Calaveras Asbestos, Ltd., has operated the former pit as a landfill for disposing of asbestos-containing material and used tires.

Axonite. Axonite is a rare mineral known from only a few locations worldwide. Although not particularly valuable in and of itself, it is sought after by rock collectors due to its scarcity. Axonite has been identified at a single location on Reclamation lands, but collection of this mineral is not permitted.

Soils. Soils result from weathering rocks. They can be formed in place, or the parent material may be transported during a part of its history, as occurs with alluvial soils, which are deposited by flowing water. Soils reflect not only the geologic and mineral character of the parent rock material, but to an even greater extent, they reflect the climate conditions that the material is exposed to and the slopes that they form on. The study area is generally steep, with narrow V-shaped valleys and steep stream channels. There are few significant areas in which alluvium accumulates. The soils tend to be shallow and rocky. Soils on north-facing slopes are generally deeper than soils developed on south-facing slopes.

As part of an effort to classify the ecological regions of the United States into successively smaller units, the US Forest Service (USFS) has produced a map of the ecological subregions of California. Among other elements, the map identifies the broad categories of soils within the subregions (USFS 1997). The study area is in the Lower Sierra Nevada Foothills Metamorphic Belt Ecological Subregion, where the soils are well drained. Bicarbonate weathering and leaching and clay accumulating in subsoils are the

main processes driving soil formation. Soil temperature regimes are mostly thermic, and soil moisture regimes are xeric (requiring little moisture).

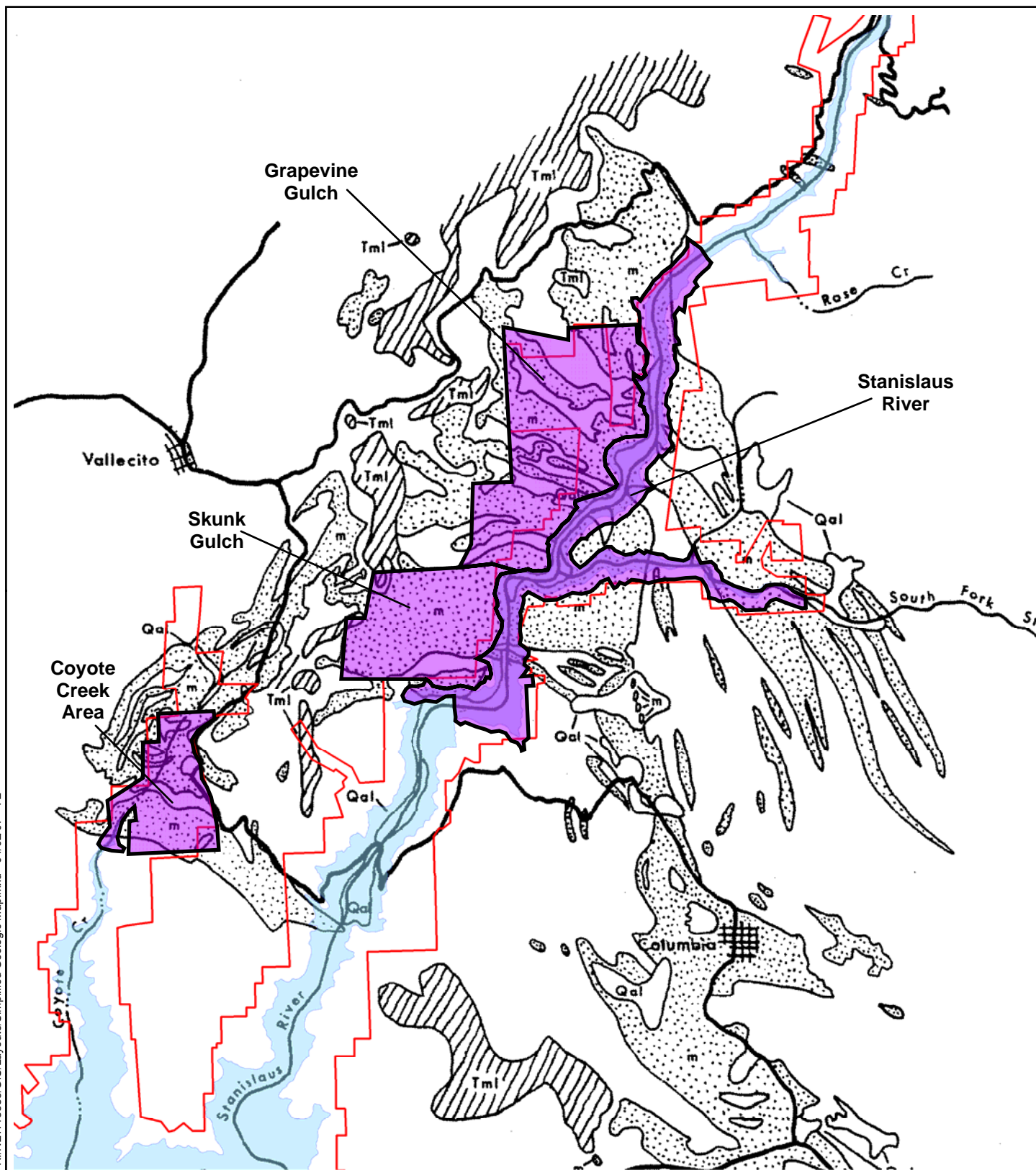
Soils are most vulnerable where they have been denuded. In the New Melones Lake area, this is most apparent where there has been a very hot wildfire or a landslide or below the top of the “bathtub ring” that is found beneath the high water mark of New Melones Lake. Soils in the bathtub ring are vulnerable to runoff from precipitation and also erode readily as a result of boat wakes or where vehicles have been driven across them. Soil management measures are most apparent in the Shell Road and Peoria Wildlife Management Areas. Reclamation attempts to control illegal grazing and inappropriate vehicle use by fencing sensitive areas, installing educational or warning signs, closing access roads, maintaining roads and trails, and creating stormwater pollution prevention plans for areas where construction or other use may occur. Reclamation also limits the construction season to minimize soil disturbance, initiates park ranger patrols, and creates no-wake zones to minimize shoreline erosion.

Caves. This section addresses cave conditions in the Calaveras Terrain bordering the Stanislaus River, the South Fork Stanislaus River, and the headwaters of Coyote Creek. The cave area is north of the Melones Fault Zone, and most of it is north of the Parrotts Ferry Bridge (Figure 3-2). Limestone deposits within the Calaveras Formation consist of isolated blocks of recrystallized limestone and dolomite, which have been identified in some reports as marble. About 11,000 acres (4,450 hectares), or roughly half of the known marble and limestone within the Calaveras Formation, is found in the vicinity of the New Melones Lake area, although most of these deposits are outside the management area.

The limestone and dolomite within the Calaveras Formation, known as the Calaveras Karst, is one of the most important karst areas in the state. Over 100 caves have been identified in the limestone of the Calaveras Formation. Before New Melones Lake was filled, the New Melones Reservoir Project (BLM 1978) studied cave resources, dividing the study area into four subareas: the Stanislaus River Canyon, Coyote Creek, Skunk Gulch, and Grapevine Gulch. These areas overlap the New Melones Lake area, as shown in Figure 3-2.

The 1978 study identified 87 caves in the inventory area. Thirty of the forty-four caves identified in the Stanislaus River Canyon are below the current spillway elevation of 1,088 feet (330 meters) above mean sea level and therefore are now inundated or subject to inundation by the lake. Nineteen caves were identified in the Coyote Creek Canyon. All but one of these (Lower Natural Bridges Cave) are above the current spillway elevation. Upper and Lower Natural Bridges caves are popular destinations for day hikers and have been since the Gold Rush. Coyote Creek flows through both caves. An early description of the Natural Bridges is included in a traveler’s guide written by James Hutchings (Hutchings 1862). Moaning Caves, a large commercial cave, is in the Coyote Creek watershed upstream of the study area. Fifteen caves were identified in the Skunk Gulch Recreation Area (now part of the Parrotts Ferry Management Area), none of which

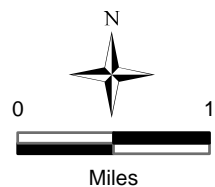
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Simplified Geologic Map of Columbia Area

Legend

- Qal Quaternary Alluvium
- Tml Table Mountain Latite
- M Limestone/Dolomite/Marble
- Project Boundary
- Cave Inventory Areas (Mc Eachern & Grady 1978)



New Melones Lake Area, California
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Figure 3-2

are below the spillway elevation. Northeast of Skunk Gulch, the Grapevine Gulch Recreation Area (now part of the Stanislaus River Canyon Management Area) contains nine known caves, all above spillway elevation.

Table 3-2 gives a summary of the study areas and the numbers of caves in each. Appendix E lists the caves identified in the 1978 study and summarizes information on each cave. The specific locations of the caves are not provided in the report in order to protect fragile resources. The study ranked each cave based on priority for implementing mitigation recommendations for various resource values. The ranking criteria included geological, paleontological, archaeological, biological, aesthetic, and recreational significance. Also included was a taphonomic rating, which is concerned with the processes that affect animal and plant remains as they become fossilized. Caves 9, 16, 25, 43, 51, and 54 received the highest geological resource rankings. Of these, caves 25 and 54 are below the 1,088-foot (330-meter) elevation.

Table 3-2: Summary of Pertinent Cave Study Area Information

Study Area	Elevation Range of Caves in Study Area (feet above sea level)	Number of Caves	Caves above High Water (1,088 feet)	Significant Caves*
Stanislaus River Canyon	910-1,550	44	13	3
Coyote Creek	1,060-1,980	20	19	2
Skunk Gulch	1,525-1,800	14	14	0
Grapevine Gulch	1,200-1,980	8	8	0

Notes: *Caves that have been nominated as "significant" and therefore eligible for protection under the Federal Cave Resources Protection Act of 1988.
Source: BLM 1978

In December 1994, the Mother Lode Grotto of the National Speleological Society nominated five caves in the vicinity of New Melones Lake as significant and eligible for protection under the Federal Cave Resources Protection Act of 1988. These included Caves 25, 54, 77, Upper and Lower Natural Bridges (Caves 52 and 85, respectively), and Dragon's Breath caves. Lower Natural Bridges Cave may be inundated at high lake elevations.

3.2.5 Topography

Topographical features of the New Melones Lake area include steep, rolling hills, incised river canyons, and distinct cliff and plateau features formed by unique geological processes. This variety of features contributes to a dramatic visual setting and provides for many recreational opportunities and habitat types. The lake itself is situated primarily along the historic canyon of the Stanislaus River, which was first flooded on completion and closure of Melones Dam and later by the much larger New Melones Dam. The orientation of the main stem of the Stanislaus River follows a general heading from northeast to southwest, with the canyons of several tributaries joining at different angles. The main body of the lake, stretching between Table Mountain in the south and Angels Arm in the north, follows a northwest-to-southeast bearing. The various ridges appear as

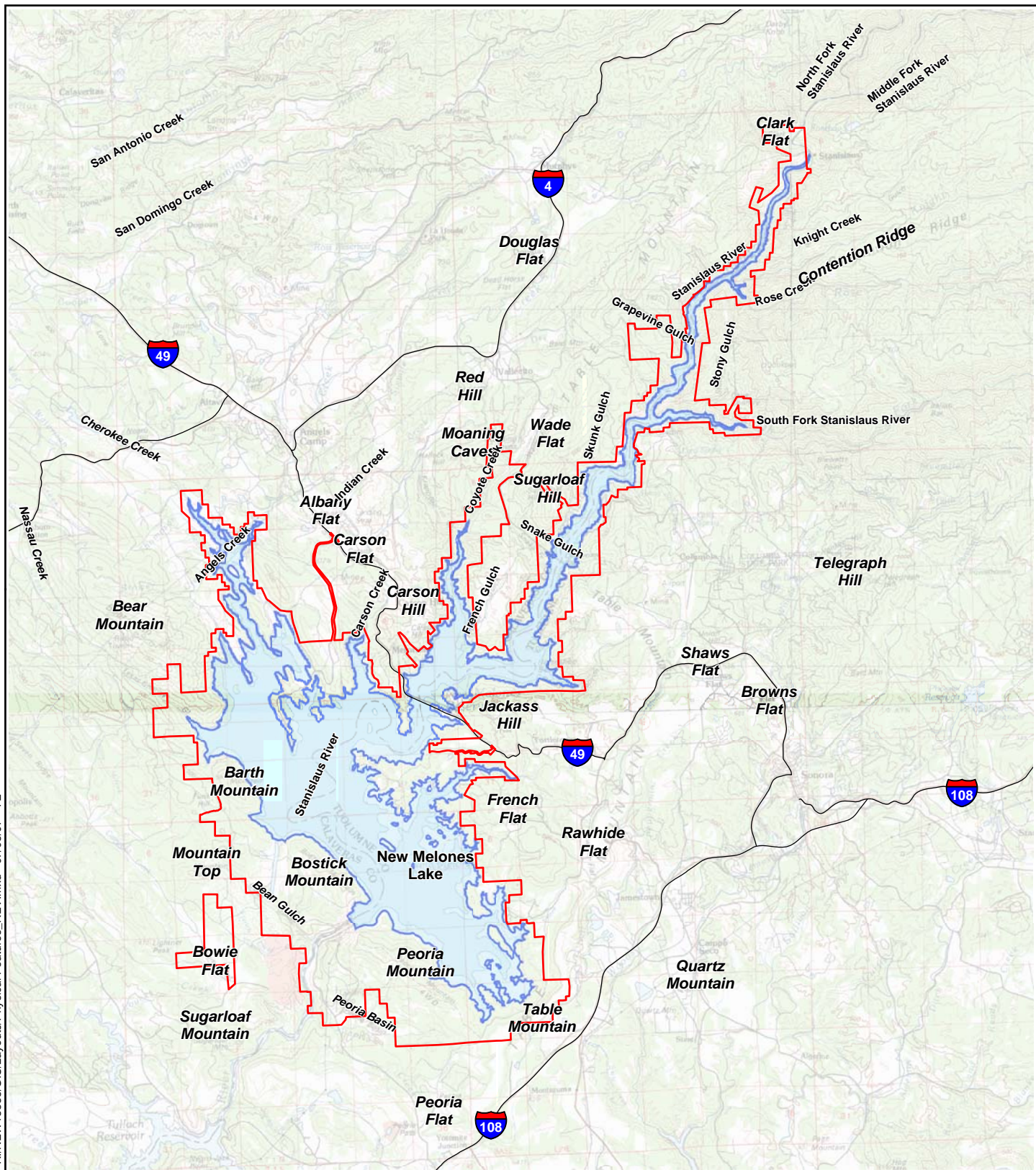
islands as the lake is drawn down over the dry season or during a period of below-average precipitation.

Figure 3-3 shows the physical details of the planning area as well as the major topographical features. The main stem of the Stanislaus River between the Clark Flat and Mark Twain planning units is dominated by very steep canyon walls that make much of the lakeshore inaccessible except by boat. The original streambed of the Stanislaus River is evident upstream of Clark Flat, which is above the flooded zone. The northeast side of the main body of the lake, which includes the Tuttletown, Carson, and Glory Hole planning units as well as lake headquarters, has more gently rolling and accessible terrain. The south end of the main body of the lake is dominated by Table Mountain, which is within the Table Mountain planning unit and exhibits dramatic topographical relief provided by fluted cliffs and a flat top. Sheer cliff faces of up to 300 vertical feet (90 meters) are found on the north side of Table Mountain, which is composed of more erosion-resistant bedrock than the surrounding area and thus was exposed as fluvial processes eroded softer materials around it. The mesa top slopes gently downward to the west and ranges between 1,500 and 1,800 feet (450 to 550 meters). Both the cliffs and the flat top provide unique opportunities for recreation, as the cliffs offer climbing and bird-watching opportunities and the mesa top offers scenic views.

The topography of the top of Table Mountain, being flat and exposed to few eroding features, such as rockfalls or streams, creates conditions conducive to vernal pools. Such pools form where rainwater is trapped in impervious depressions and dissipates solely by evaporation, allowing concentric rings of vegetation to become established. Plant and animal species that colonize vernal pools are often rare and endemic only to vernal pools.

In the Peoria Wildlife Area planning unit, 1,832-foot (560-meter) Peoria Mountain dominates the southwest end of the main body of the lake and, compared to terrain in the north fork arm, is marked by rolling topography and gentler ridgelines. This terrain and a north-facing aspect have allowed moderately deep to deep soils to develop, which in turn support a healthy and productive oak savannah habitat type. On the south side of the dam, Peoria Mountain's peaks plunge steeply into Iron Canyon, which contains New Melones Dam. On the north side of the dam, Bostick Mountain rises steeply to an elevation of 1,814 feet (550 meters), then gradually slopes down to Bowman Gulch, which spills into Bean Gulch before it enters Lake Tulloch. North of the spillway, Barth Mountain rises to an elevation of 1,916 feet (580 meters). Gently sloping terrain is found at the eastern foot of Bear and Barth Mountains in the Texas Charley planning unit and on the other side of the Angel Creek Arm in the vicinity of Glory Hole. Peoria, Bostick, Barth, and Bear Mountains form a major ridgeline on the west side of the main body of the lake. This ridgeline drops at a fairly steep angle into the lake, making development on this side of the lake difficult due to lack of access and staging areas.

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Physical Features

New Melones Lake Area, California
Central California Area Office

Figure 3-3

3.2.6 Hydrology/Water Quality

Overall Hydrology

The hydrology section has been organized into two subsections. The first focuses on water resources in the New Melones Lake area and gives a brief introduction to dam operations, including storage and release requirements; the second subsection focuses on water quality issues and current conditions in New Melones Lake.

Water Resources. Although dam operations are not managed by New Melones resource staff and will not be addressed in the RMP/EIS, this introduction is given to provide an overview of issues that relate to water levels, which in turn influence management of resources that will be addressed in the RMP/EIS.

One of the primary purposes of New Melones Lake is water storage for flood control. The primary operational criteria for New Melones Lake are provided in the California State Water Resources Control Board (SWRCB) Water Right Decision 1422, which was issued in 1973. This decision allowed Reclamation to appropriate water from the Stanislaus River into New Melones Lake for irrigation and municipal and industrial uses but required that lake operations include releases of water for existing water rights, fish and wildlife enhancement, and the maintenance of water quality conditions (primarily temperature and dissolved oxygen) on the Stanislaus and Lower San Joaquin Rivers (Reclamation 2005b).

The maximum storage volume of the lake is 2,420,000 acre-feet (2.9 million megaliters), and the maximum surface area is 12,500 acres (5,000 hectares). The lake has a shoreline of approximately 100 miles (160 kilometers) when filled to capacity. Between 2000 and 2006, storage in New Melones Lake ranged from approximately 1.1 to 2.1 million acre-feet (1.3 to 2.6 million megaliters), with the highest levels typically in early summer and the lowest levels at the beginning of the water year in October. According to Reclamation's rating curve for the lake, this translates into a maximum water level elevation of 1,061 feet (320 meters) above mean sea level. Water levels vary as a result of drought, varying amounts of precipitation, and discharge requirements for flood control, power generation, irrigation, municipal requirements, and maintenance of aquatic habitat. Surface levels may also vary as a result of managed releases from storage facilities on streams above New Melones Lake. At least 10 reservoirs, with storage capacities ranging from 250 acre-feet (310 megaliters) to 189,000 acre-feet (233,000 megaliters), store water above New Melones. Those facilities and their storage capacities are shown in Table 3-3. The New Melones Lake area's position in the regional watershed is shown on Figure 3-4, and the watershed draining directly to the New Melones Lake area is shown on Figure 3-5.

Daily outflows from the lake vary widely and are generally lowest during the rainy season (approximately October through April). Between 2000 and 2006, outflows ranged from 0 to 3,000 cubic feet per second (85 cubic meters per second), with the highest outflows typically in the summer (US Geological Survey [USGS] 2007).

Table 3-3: Existing Storage Above New Melones Lake

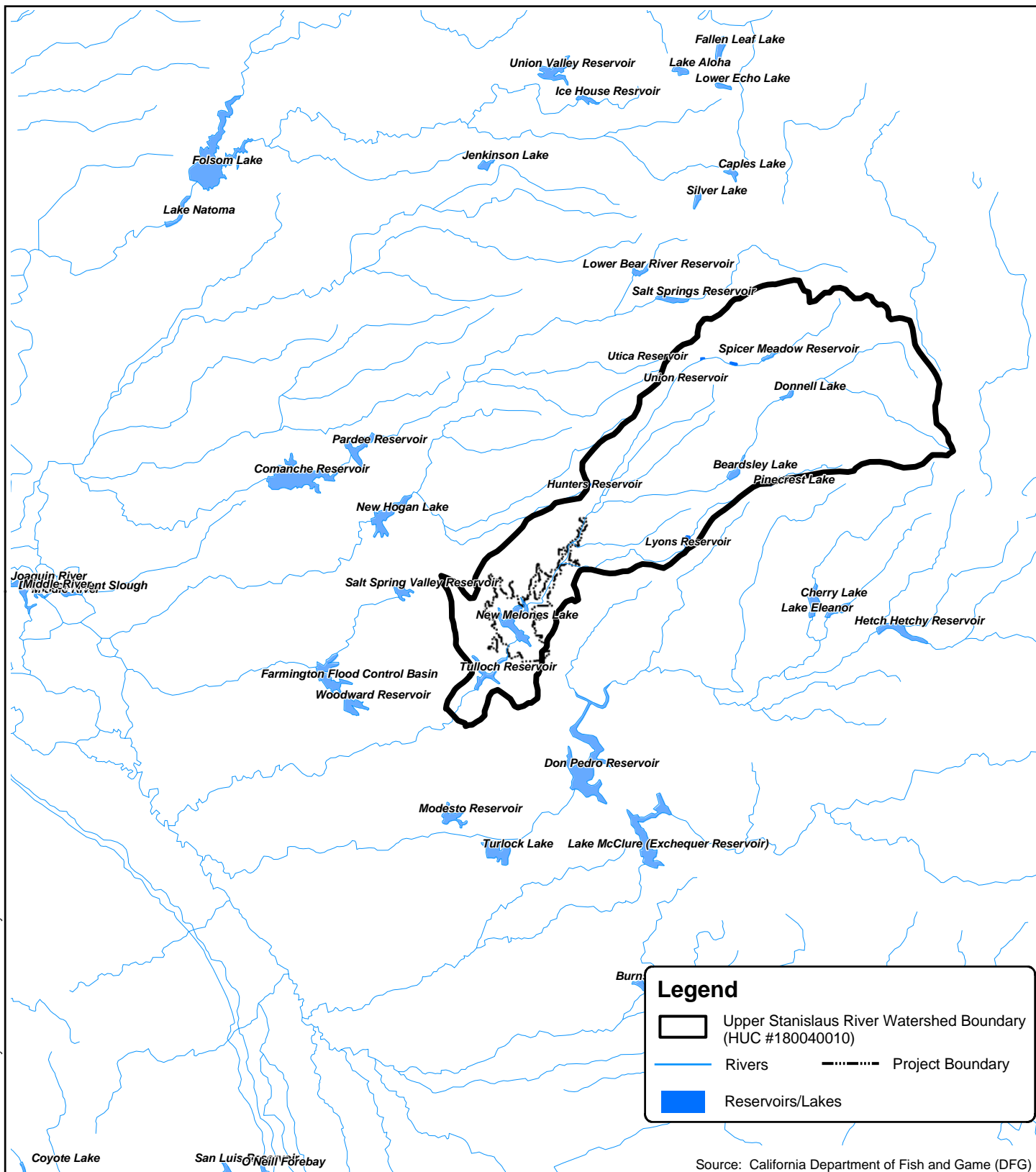
Fork of the Stanislaus River	Reservoir	Storage Capacity (acre-feet)
North		
	Lake Alpine	4,120
	Union Reservoir	3,130
	Utica Reservoir	2,330
	Spicer Meadows Reservoir	189,000
	Hunters Reservoir	250
Middle		
	Relief Reservoir	15,500
	Donnel Lake	64,300
	Beardsley Lake	97,800
South		
	Pinecrest Reservoir	18,310
	Lyons Reservoir	6,220

Source: Moore 1994

Streams. All three forks of the Stanislaus River originate in the Sierra Nevada. There are also a number of small creeks, both ephemeral (flowing only a portion of the year) and perennial (flowing year round), that discharge into New Melones Lake, including Coyote Creek, Carson Creek, and Angels Creek; however, the Stanislaus River is the main source of water for New Melones Lake. The main factor that determines whether streams within the planning area maintain perennial or ephemeral characteristics is their place of origin. In general, streams originating higher in the Sierra Nevada and fed by melting snowpack are more likely to flow year round than streams fed primarily by rainfall. The exception to this is Coyote Creek, which is spring fed and maintains year-round flows of cold clear water.

With the exception of the Stanislaus River, which contains weirs and other diversion structures, streams on Reclamation lands and their associated riparian areas are largely unaltered from their original conditions, except in cases where historic placer or dredge mining altered surface features. Some modification of stream substrate from recreational gold dredge operations may continue today, but these operations are small and focus on sandy or gravelly substrate that regains its natural form quickly.

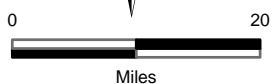
Watersheds and Drainage. New Melones Dam is on the Stanislaus River below the confluence of its North, Middle, and South Forks, forming New Melones Lake. Most of the water comes from the North and Middle Forks, with a lesser amount coming from the South Fork drainage. New Melones Lake is in the Upper Stanislaus River watershed, USGS hydrologic unit code 18040010. (This watershed is called the Stanislaus River Hydrologic Unit in the SWRCB hydrologic code system.) Figure 3-4 shows the location of New Melones Lake within the Upper Stanislaus River watershed and several subbasins that have been delineated by the SWRCB.

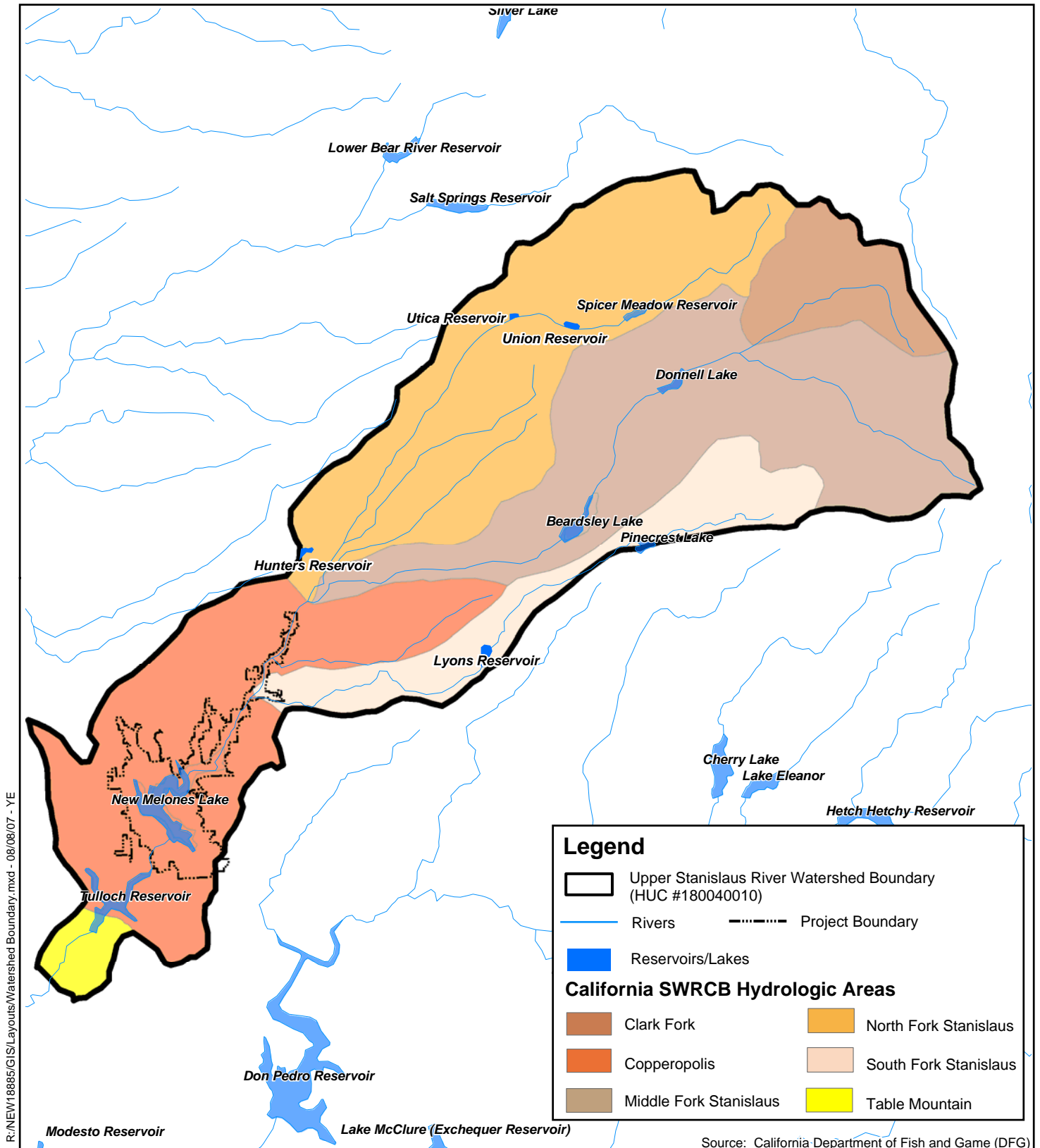


Watershed Boundary Overview

New Melones Lake Area, California
Central California Area Office

Figure 3-4





Watershed Boundary

New Melones Lake Area, California
Central California Area Office

Figure 3-5

The Upper Stanislaus River watershed has a drainage area of approximately 980 square miles (250 hectares). Over 90 percent of this area (approximately 904 square miles [230 hectares]) drains into New Melones Lake. Those areas draining directly to the lake include the following:

- Subbasins draining directly to the Stanislaus River and New Melones Lake, below the confluence of the North and Middle Forks of the Stanislaus River;
- The portion of the South Fork of the Stanislaus River drainage basin below the confluence of Wet Gulch;
- The lower watersheds of eastern tributaries to the main stem of the Stanislaus River, including the Rose Creek, Knight Creek, and Stony Gulch drainage basins;
- Watersheds of several small eastern tributaries to the main stem, including Experimental Gulch, Sandy Wash, Wolf Gulch, Deadman Gulch, Chile Gulch, Quail Gulch, Grizzly Gulch, Devils Canyon, and Norwegian Gulch;
- Coyote Creek drainage basin below Wades Flat Gulch;
- Small western tributaries to the main stem, including Squirrel Gulch, Snake Gulch, Skunk Gulch, Deep Gulch, Mariana Gulch, Grapevine Gulch, Wool Hollow, Cataract Gulch, and Yea Hoo Gulch;
- Slopes along the eastern portion of the lake, including portions of Mormon Creek, Bear Creek, Jackass Hill, and French Flat; and
- Slopes along the northwestern portion of the lake, including portions of Carson Creek, Greenhorn Creek, Indian Gulch, Indian Creek, Six Mile Creek, Angels Creek, Vonich Gulch, and Texas Charlie Gulch.

Upstream of New Melones Lake and within the lake's watershed, the Middle Fork of the Stanislaus is dammed at Beardsley Lake and Donnell Lake. Water from New Melones Lake feeds into Tulloch Lake, located directly downstream.

Water Quality. Water quality refers to physical, biological, and chemical properties of a water body. These properties include temperature, organic content, carbon and dissolved oxygen, turbidity, and pathogen content. Water quality is influenced by vegetation, soil and mineral substrate, livestock and human activities, and the source of the water. Surface water has less mineral content than groundwater and is indicative of the most water entering New Melones Lake.

Water quality issues at New Melones Lake are typical of those found in most reservoirs. Compared to natural lakes or streams, reservoirs may have elevated surface water temperatures in shallow areas or areas with poor circulation, high incidence of suspended sediments from shoreline erosion, high nutrient levels, and diminished dissolved oxygen.

Localized water quality problems may occur as a result of recreational boaters, particularly in refueling areas or in areas where boaters congregate.

In some reservoirs, pollution from historic mining sites has been cited as a major water quality issue. Although this has not been reported as a problem at New Melones, its location in the heart of the Mother Lode gold mining region and its proximity to both active and abandoned mines greatly increases the chances that mine-based pollution will find its way into the lake. One of the most likely sources of mine-based pollution is acid mine drainage, which is metal-rich water formed from the chemical reaction between water and rocks containing sulfur-bearing minerals. The runoff formed is usually acidic and frequently comes from areas where ore or coal mining have exposed rocks containing pyrite, which is a sulfur-bearing mineral. Problems that can be associated with mine drainage include contaminated drinking water, disrupted growth, and reproduction of aquatic plants and animals and the corroding effects of the acid on parts of infrastructures, such as bridges (USGS 2008).

Under Section 303(d) of the 1972 Clean Water Act, states, territories, and authorized tribes are required to develop a list of water quality-limited segments. The waters on the list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology (SWRCB 2004).

The most recent 303(d) list for California is the 2002 list, which the EPA approved in July 2003. The 2002 list indicates that the Lower Stanislaus River is the only water body in the Stanislaus River watershed that is impaired, suggesting that water quality in New Melones Lake is generally very good. This segment of the Stanislaus River is at the bottom of the watershed, below both New Melones Lake and Tulloch Reservoir. Water quality impairments for this section of the Stanislaus River include diazinon, group A pesticides, and mercury. Total maximum daily loads (TMDLs) have not been established for these chemicals for this watershed.

3.2.7 Vegetation

General Plant Species and Communities

Five broad categories of vegetation are found within the planning area: woodlands, grasslands, wetlands, serpentine, and other. These are subdivided into more specific vegetation associations. The most common plant communities, as well as their acreage and percentage of the planning area can be found in Table 3-4.

Blue oak woodland is the most common, blue oak-foothill pine woodland is the second most common, and annual grassland is the third most common vegetation type within the planning area (Reclamation 1997).

Montane hardwood and montane hardwood-conifer woodlands are the dominant vegetative communities in the northeasterly portion of the planning area. Wetland vegetation is found in some locations along the edges of the lake and in moist canyons. There are many riparian communities, seeps, and wet meadows in the upper reaches of

Table 3-4: Plant Communities Found in the Planning Area

Plant Community	Acreage	Percentage of Study Area
<i>Woodlands</i>		
Blue oak woodland	7,915	52 %
Blue oak-foothill pine woodland	2,082	14%
Montane hardwood woodland	592	4%
Montane hardwood-conifer woodland	257	2%
<i>Grasslands and chaparral</i>		
Annual grassland	1,709	11%
Chamise chaparral	1,090	7%
<i>Wetlands</i>		
Valley and foothill riparian woodland	249	2%
Wet meadow	91	< 1%
Vernal pool	53	< 1%
<i>Serpentine-based communities</i>		
Serpentine foothill pine-chaparral	669	4%
Blue oak woodland and serpentine foothill pine-chaparral	84	< 1%
<i>Other land use designations</i>		
Not classified	203	1%
Barren land	148	1%
Residential or park	18	< 1%
Total	15,168	

Source: Reclamation 1997

streams that are tributaries of the lake (Reclamation 1995). Each vegetation community is described in detail below.

Blue oak woodland (Sawyer and Keeler-Wolf 1995: *blue oak series*). In this community, blue oaks average 47 percent of the vegetation cover and grasses make up nearly 100 percent of the understory (Allen et al. 1989 in Reclamation 1995). Oaks usually form an open canopy on hills and ridges, usually on slopes of less than 45 percent, particularly on the rolling hills surrounding the lake (Reclamation 1995). Blue oak woodlands grow on all types of soils and parent materials (Allen et al. 1989 in Reclamation 1995) and occur in the planning area between 300 and 1,000 feet (90 and 300 meters) in elevation. Characteristic plant species include blue oak (*Quercus douglasii*), brome grass (*Bromus* sp.), and wild oats (*Avena* sp.). Other species that may be found in blue oak woodland communities are ponderosa pine (*Pinus ponderosa*), California buckeye (*Aesculus californica*), manzanita (*Arctostaphylos* spp.), ceanothus (*Ceanothus* spp.), yerba santa (*Eriodictyon californicum*), foothill pine (*Pinus sabiniana*), scrub oak (*Quercus berberidifolia*), black oak (*Q. kelloggii*), valley oak (*Q. lobata*), interior live oak (*Q. wislizenii*), coffeeberry (*Rhamnus californica*), redberry (*R. crocea*), holly-leaved cherry (*Prunus ilicifolia*), and needlegrass (*Stipa* sp.) (Reclamation 1997).

Blue oak woodland is a common community type within the Tuttletown, Dam and Spillway, Glory Hole, Greenhorn Creek, and Westside management areas. It is also the

most extensive plant community in the Peoria Wildlife Management Area (PWMA), where it occurs along the southern two-thirds of the access road and is also present at the Peoria Basin trailhead site (Reclamation 2007a). Within the PWMA, blue oak woodlands are particularly prevalent where steep rock outcrops and fields with boulders occur, including the talus slopes of Table Mountain and the rocky slopes overlooking the lake and the dam output. Stands of blue oak woodland also occur in a riparian corridor in the PWMA (Evens et al. 2004).

Blue oak woodlands are common but are under considerable development and grazing pressure in the California foothills (Reclamation 1995). The main issue that may affect the future of blue oak woodlands is a lack of recruitment from new seedlings (Reclamation 1995). Throughout the state, deer herd size has shown a general increase from year to year, resulting in greater browsing pressure on oak seedlings. Several statewide surveys of oaks have shown a shortage of small trees for certain oak species. If this shortage continues, then oak stands will gradually be lost (IHRMP 1996 *in* Reclamation 1997). Inadequate blue oak regeneration has been found in areas around the lake, and it is likely that blue oak regeneration at the lake is inadequate to sustain existing blue oak stands (Swiecki 1997 *in* Reclamation 1997). Blue oaks can also reproduce vegetatively, as stumps sprout after fire, but as fire has been increasingly controlled, even this mode of reproduction has declined (Reclamation 1995). Other activities threatening oaks in the planning area, particularly along the PWMA access road, include illegal OHV traffic and unregulated camping, fire building, trash dumping, and woodcutting (Reclamation 2007a). Soil compaction from concentrated recreational use, such as camping, also threatens oak trees. In addition, fluctuating levels in New Melones Lake impact oaks because high water levels occasionally inundate and kill lower growing oaks.

The lack of blue oak regeneration is a concern in the Tuttletown, Bear Creek, PWMA, Dam and Spillway, Glory Hole, and Westside Management Areas (Reclamation 1995). Blue oak woodland covers more than half of Reclamation's lands; as such, oak conservation and regeneration are significant issues to consider when making land management decisions (Reclamation 1997).

Blue oak-foothill pine woodland (Sawyer and Keeler-Wolf 1995: *blue oak series*). In this community, mixed stands of oak and pine occur. The open oak canopy ranges from 20 to 40 feet (6 to 12 meters) high, with occasional less open pine canopies above. Frequent fire favors blue oak over pine. This community occurs between 500 and 3,000 feet (150 and 920 meters) in elevation (Verner *in* GWH 1988 *in* Reclamation 1995) on steep, rocky, or exposed, largely north-facing sites along ridges or canyons with poor or shallow soils (Holland 1986 *in* Reclamation 1995). Dominant species in this woodland are foothill pine and blue oak, with associated species, including California buckeye, coast live oak (*Quercus agrifolia*), scrub oak, valley oak, interior live oak, poison oak (*Toxicodendron diversilobum*), woodland star (*Lithophragma heterophylla*), sugar cups (*Saxifraga californica*), shooting stars (*Dodecatheon hendersonii*), Chinese houses (*Colinsia heterophylla*), and gooseberry (*Ribes quercetorum*) (Reclamation 1997).

Blue oak-foothill pine woodlands are found in the Westside and Bowie Flat Wildlife Management Areas and PWMA on gentle to moderate slopes with variable parent material. In particular, this community type occurs on all of the slopes at the immediate base of Table Mountain, with foothill pine, blue oak, California buckeye, and toyon as the common species (Ayres 2005; Evens et al. 2004). Additionally, mixed oak woodlands are found in the Bear Creek planning area.

Montane hardwood woodland (Sawyer and Keeler-Wolf 1995: Interior live oak series). Vegetation in this community is broad-leaved and grows up to 50 feet (15 meters), where dense canopy closure and abundant, persistent leaf litter preclude a herbaceous understory (Holland 1986 *in* Reclamation 1995). It occurs on north-facing hillsides farther upstream and at higher elevations (300 to 3,000 feet [91 to 910 meters]) than the blue oak woodland, above the reservoir's historic high water mark (GWH 1988 *in* Reclamation 1995). Slopes where this vegetation occurs are steep to very steep. Dominant plant species include interior live oak, blue oak, buckeye, and California bay laurel (*Umbellularia californica*). Species that are less abundant in the montane hardwood woodland include canyon oak (*Quercus chrysolepis*), elderberry (*Sambucus mexicana*), western redbud (*Cercis occidentalis*), redberry (*Rhamnus crocea*), buck brush (*Ceanothus cuneatus*), and poison oak. Special status plant species that may occur in this woodland include Layne's butterweed (*Senecio laynea*) and Red Hills soaproot (*Chlorogalum grandiflorum*) (Reclamation 1995). A more detailed discussion of special status plants can be found in Section 3.2.9 below.

This community type can be found in the Camp Nine management area at elevations ranging from 1,500 to 2,000 feet (450 to 610 meters). Upstream of Camp Nine, the Stanislaus River flows through very narrow steep canyons. Montane hardwood woodland vegetation, such as interior live oak, canyon oak, and black oak, is found along the canyon walls. Stands of this community type occur throughout the PWMA, usually on somewhat steep cool slopes with moderately high rockiness. In particular, it is found on the north-facing slope of Table Mountain and on the metavolcanic slopes overlooking the lake (Evens et al. 2004). In addition, montane hardwood woodland is present along the northern third of the PWMA access road and on the slopes between the road and Table Mountain.

Montane hardwood-conifer woodland (Sawyer and Keeler-Wolf 1995: Black oak series OR canyon live oak series). This community occurs most commonly on north-facing slopes (between 25 and 66 percent grade) in canyons upstream of the lake between 1,000 and 2,400 feet (300 and 730 meters) in the planning area. It occurs mainly on soils having sandstone parent material, but metamorphic and igneous parent materials are also known to support this community (Allen et al. 1989 *in* Reclamation 1995). Species of this community are less tolerant of dry conditions than montane hardwood woodland and are adapted to regular but light ground fires (Holland 1986 *in* Reclamation 1995). Dominant species are black oak, canyon oak, interior live oak, and coast live oak. Species that may associate with this community type include foothill pine, California buckeye, mariposa manzanita (*Arctostaphylos viscida*), deer brush (*Ceanothus intergerrimus*), toyon

(*Heteromeles arbutifolia*), redbud, mountain mahogany (*Cercocarpus betuloides*), and poison oak (Reclamation 1997).

The composition and diversity of these woodlands has changed as a result of fire suppression throughout California (Reclamation 1997). In particular, densities of incense cedar (*Calocedrus decurrens*) and white fir (*Abies concolor*) have increased in previously ponderosa pine-dominated forests (Vankat 1970, in Reclamation 1997). Continuation of fire suppression policies may further shift the dominant species in the montane woodlands to incense cedar and white fir (Reclamation 1997).

Annual grassland (Sawyer and Keeler-Wolf 1995: California annual grassland series). This vegetation type is characterized by dense to sparse cover of annual grasses and some perennial bunchgrasses. Flower heads are generally one to two feet high, although they may be as tall as eight feet in a moist year. Annual grasslands occur between 800 and 3,000 feet (240 and 910 meters) on relatively flat plains and rolling hills of valleys or on steep slopes of foothill regions. Perennial grasslands are often found on finely textured moist soils. Common annual plant species include wild oats, soft chess (*Bromus mollis*), ripgut (*B. diandrus*), fiddleneck (*Amsinckia* sp.), longbeak stork's bill (*Erodium botrys*), and redstem stork's bill (*E. cicutarium*). Dominant perennial grasses may include triple-awned grass (*Aristida* spp.), wheat grass (*Agropyron* spp.), bent grass (*Agrostis* spp.), wild-rye (*Elymus triticoides*), melic grass (*Melica* spp.), needle-grass (*Stipa pulchra*, *S. cernua*, *S. lepida*), and muhly (*Muhlenbergia* spp.). Other plant species that may be associated with grasslands are foothill pine, blue oak, California poppy (*Eschscholzia californica*), and lupines (*Lupinus* spp.) (Reclamation 1997).

Annual grasslands are found within the PWMA and the Bowie Flat and Glory Hole Management Areas. It is the principal plant community on the top of Table Mountain. Throughout these areas, grasslands are often correlated with areas burned in the mid-1990s or along roads and power lines where native shrub vegetation has been cleared. They are also found on relatively gentle volcanic and serpentine substrates, particularly the long narrow draws on the ridgetop of Table Mountain that collect more soil than the surrounding, more exposed rocky areas of the ridgetop (Evens et al. 2004). Annual grassland also occurs in a narrow band along the PWMA access road and is a component of the understory of the oak woodlands along the PWMA access road corridor. In this area, the characteristic grasses are soft chess, ripgut brome, medusahead (*Taeniatherum caput-medusae*), and Italian ryegrass (*Lolium multiflorum*). The forb component is diverse, composed of both native and nonnative species, including winecup clarkia (*Clarkia purpurea*), popcornflower (*Plagiobothrys* sp.), yellowflower tarweed (*Holocarpha virgata*), sky lupine (*Lupinus nanus*), winter vetch (*Vicia villosa*), and clover (*Trifolium* sp.) (Reclamation 2007a).

Nonnative annual grasses dominate annual grasslands and cannot be eliminated under current rangeland management practices (Reclamation 1997). Further, grazing livestock and wildlife depend on some introduced species for forage, such as soft chess (*Bromus hordeaceus*), wild oats (*Avena fatua*), slender wild oats (*A. barbata*), and annual ryegrass.

Chamise chaparral (Sawyer and Keeler-Wolf 1995: Chamise series). This community type is dominated by the chamise shrub (*Adenostoma fasciculatum*), generally three to ten feet tall. Vegetation can be very dense, reaching 50 percent cover in 10 years. This community is adapted to frequent fires by stump sprouting, and plants will reach maturity in 25 to 60 years in the absence of fire. Chamise chaparral occurs between 1,000 and 2,000 feet (300 and 610 meters) in elevation on dry, south- or west-facing slopes and ridges. Limestone soils in the middle basin above the reservoir but not far upstream in the lake area support chamise. Species that may co-occur with chamise in this community include several manzanitas (*Arctostaphylos glauca*, *A. tomentosa*, *A. viscida*), ceanothus species (*Ceanothus cuneatus*, *C. papillosus*), mountain mahogany, buckwheat (*Eriogonum fasciculatum*), yerba santa, deer brush, holly-leaf cherry, and scrub oak (Reclamation 1997).

Chamise chaparral occurs on various substrates throughout the PWMA (Evens et al. 2004). This community type is intermixed with oak woodland in the PWMA access road corridor (Reclamation 2007a). In addition, several stands were located on the volcanic ridgetop of Table Mountain (Evens et al. 2004).

Similar to montane woodlands, fire suppression is likely decreasing the biodiversity in chaparral communities (Meadows 1996 in Reclamation 1997). If chaparral management is unchanged, the community would continue to decrease in biodiversity, reducing its sustainability and value to wildlife (Reclamation 1997).

Valley and foothill riparian woodland (Sawyer and Keeler-Wolf 1995: California sycamore series). Vegetation in this community consists of tall, dense, winter-deciduous, broad-leaved, riparian forest whose canopy may be closed with a shade-tolerant understory. It grows on relatively fine-textured alluvium, somewhat receded from river channels, in the floodplains of low gradient streams and rivers. Dominant species in this community include box elder (*Acer negundo californica*), sycamore (*Platanus racemosa*), Fremont cottonwood, and several willow species (*Salix gooddingii variabilis*, *S. laevigata*, *S. lasiandra*). White alder (*Alnus rhombifolia*) and big-leaf maples (*Acer macrophylla*) are less common species (Reclamation 1997). California vervain (*Verbena californica*) is a special status plant species that may grow in valley and foothill woodlands, particularly near streams that run through serpentine areas, as in the northernmost reach of the north fork of the Stanislaus River (Reclamation 1997).

Little riparian vegetation exists along the shoreline because fluctuating water levels make it hard for riparian vegetation to become established (Reclamation 1997). Riparian vegetation is more commonly found in the upstream reaches of some of the perennial drainages that flow into the reservoir, within the Stanislaus River Arm, Tuttletown, Greenhorn Creek, Carson, and Coyote Creek Management Areas. Other management areas that support riparian vegetation are Camp Nine, Parrotts Ferry, Mark Twain, Bear Creek, and Dam and Spillway.

Wet meadow (Sawyer and Keeler-Wolf 1995: Sedge series). This community is composed of generally grass (or grasslike) species and forbs, ranging from six inches to three feet (15 cm to 1m) high. Cover may be sparse to dense, depending on the intensity

of grazing, if any. In the planning area, wet meadows are found at elevations between 800 and 2,000 feet (240 to 610 meters). This natural community develops on flats or in bowl-like basins, which may have rapid drainage or none at all. Soils may vary from 20 percent organic material to sandy loam with almost no organic material. In wet meadows, water is at or near the soil surface most of the growing season, rather than having standing water (Holton Associates 1987 in Reclamation 1997). They may dry up in the summer or stay ponded all year. Meadow-type indicator species include short-hair sedge (*Carex exserta*), shorthair (*Calamagrostis breweri*), gentian-aster (*Gentian newberryi* aster sp.), few-flowered spikerush (*Heleocharis pauciflora*), carpet clover (*Trifolium monanthum*), bentgrass (*Agrostis scabra*), pull-up muhley (*Muhlenbergia filiformis*), beaked sedge (*Carex rostrata*), Nebraska sedge (*C. nebrascensis*), Kentucky bluegrass (*Poa pratensis*), longstalk clover (*Trifolium longipes*), and tufted hairgrass (*Deschampsia caespitosa*) (Ratliff 1982 in Reclamation 1995). Special status plant species that grow in wet meadows are California vervain and Cusick's speedwell (*Veronica cusickii*).

Field observations at the Angels Creek arm, conducted by Reclamation in 1997, found no typical wet meadow community or topography, despite previous documentation of wet meadows in this planning area (Reclamation 1995). However, the bunch grass (reed canarygrass) found on a hillside at Angels Creek grows in moist areas, indicating a seep-like condition, which is considered a wetland community (Reclamation 1997). Such a unique upland site with more available water than the surrounding upland areas increases wildlife habitat values and the overall biodiversity at the lake.

Vernal pool (Sawyer and Keeler-Wolf 1995: Northern basalt flow vernal pools). Vernal pools are an ephemeral wetland vegetative community with predominantly low-growing ephemeral herbs. Germination and early growth occur in winter and early spring, often while plants are submerged, and pools dry out by summer. Flowering is often in bands at the margins of the pools. This community type occurs in shallow depressions, ranging from a few meters to tens of meters in diameter. Characteristic plant species found in vernal pools are Pacific foxtail (*Alopecurus saccatus*), common blennosperma (*Blennosperma nanum*), Cleveland's shooting star (*Dodecatheon clevelandii* var. *patulum*), toothed downingia (*Downingia cuspidata*), spiny-sepaled button-celery (*Eryngium spinosepalum*), hedge-hyssop (*Gratiola ebracteata*), Fremont's goldfields (*Lasthenia fremontii*), Douglas' meadowfoam (*Limnanthus douglasii* var. *rosea*), white-headed navarretia (*Navarretia leucocephala* ssp. *leucocephala*), adobe popcorn flower (*Plagiobothrys acanthocarpus*), miniature popcorn flower (*P. stipitatus* var. *micranthus*), Sacramento pogogyne (*Pogogyne zizyphoroides*), Delta woolly marbles (*Psilocarphus brivissimus* var. *multiflorus*), greater duckmeat (*Spirodela polyrrhiza*), and Wildenow's clover (*Trifolium wildenovii*) (Stone et al. 1993 in Reclamation 1995). Special status plant species that may grow in the planning area vernal pools include Sacramento orcutt grass (*Orcuttia viscida*), slender orcutt grass (*O. tenuis*), Bogg's Lake hedge-hyssop (*Gratiola hetersepala*), and legenere (*Legenere limosa*).

Within the planning area, ephemeral pools appear after rainfall or snowmelt on top of Table Mountain, between 1,200 feet (360 meters) in elevation in the south and 2,600 feet (790 meters) in the north. Although these pools share some of the characteristics of some

vernal pools in the Central Valley, they are not true vernal pools in that they do not have a clay under layer that prevents percolation. Instead, they form in swales in the rocky surface of Table Mountain. The soil is poorly drained and the parent material on Table Mountain is a Pliocene lava flow (andesite). Intermittent pools occur on Table Mountain in seasonally wet to saturated rocky meadows that have slight soil development (Evens et al. 2004). They are interspersed within the annual grassland (Reclamation 2007a). Intermittent pools at Table Mountain do not support the range of species found in vernal pools in the Central Valley, possibly due to differences in substrate (primarily shallow, rocky substrate versus clay substrate in valley vernal pools). Although vernal pool habitats are very delicate and easily disturbed in general, this is even more pronounced on Table Mountain, where soils are poor, shallow, and loose.

To date, vernal pools have resisted invasion by exotic plant species, probably due to their ephemeral nature (Reclamation 1997). However, the scientific community is concerned that exotic plants may colonize vernal pool communities, possibly displacing the highly specialized native vernal pool species (Reclamation 1997). Despite these concerns, there is no supporting evidence that this change is occurring in vernal swales found on Table Mountain (Reclamation 1997).

Serpentine foothill pine-chaparral (Sawyer and Keeler-Wolf 1995: Foothill pine series). This natural community consists of an open woodland with some chaparral on Redhills soils derived from serpentine. Serpentine soils are high in magnesium, iron, silicates, and asbestos and low in nitrogen and phosphorus (Reclamation 1997). Serpentine soils in the planning area are of the Delpiedra and Henneke Series. The Redhills form a rounded rolling terrain and occur at elevations between 800 and 2,000 feet (240 and 610 meters). Characteristic plant species on Delpiedra soils are foothill pine and buckbrush, while on Henneke soils manzanitas (*Arctostaphylos manzanita* and *A. viscida*), chamise, and toyon are prevalent. A number of special status plant species prefer serpentine foothill-pine chaparral habitat, including Rawhide hill onion (*Allium tuolumnense*), Chinese Camp brodiaea (*Brodiaea pallida*), Red Hills soaproot, Congdon's lomatium (*Lomatium congdonii*), shaggyhair lupine (*Lupinus spectabilis*), veiny monardella (*Monardella douglasii* ssp. *venose*), Cleveland's butterweed (*Packera clevelandii*), Layne's butterweed, and California vervain.

Stands of this community type have been found in the southwest and lower central portions of the PWMA on serpentine parent material (Evens et al. 2004). Serpentine soils provide habitat for only very specialized plant species that are highly adapted to the relatively inhospitable soil type. There is no evidence of ecological stages in serpentine vegetation (Kruckeberg 1984 in Reclamation 1997); therefore, unless severely disturbed by humans or natural causes, the composition and structure of serpentine-based vegetative communities at the New Melones Lake will likely change little over time.

Blue oak woodland and serpentine foothill pine-chaparral (Sawyer and Keeler-Wolf 1995: foothill pine series). This type of chaparral is similar to serpentine foothill pine-chaparral, with blue oaks interspersed throughout. It occurs upland on gentle to steep slopes. Soils are shallow, infertile, moderately to excessively drained. The soil surface

may be covered with stones and rock outcrops. Foothill pine emerges from a shrub canopy composed of blue oak, black oak, California buckeye, coast live oak, Coulter pine, interior live oak, valley oak, and western juniper. Vegetation height is less than 70 feet (20 meters) and occurs at elevations of between 1,000 and 7,000 feet (300 and 2,100 meters).

Serpentine chaparral plant communities can be found in the Stanislaus River Canyon, PWMA, and Dam and Spillway planning areas (Reclamation 1995).

Sensitive Habitat Types

Several sensitive habitat types occur in the planning area. These are serpentine communities and wetlands, such as vernal pools and valley and foothill riparian woodlands.

Serpentine communities. Serpentine is considered an ultramafic rock formation, meaning that it is high in ferromagnesian silicate minerals (Kruckberg 1984; USFWS 2002 *in* Ayres 2005). These minerals produce soils with several unique characteristics, including low calcium levels, high magnesium levels, high concentrations of heavy metals (especially iron, chromium, and nickel), and nitrogen, potassium, and phosphorus levels below that needed to grow agricultural crops (Kruckeberg 1984 *in* Ayres 2005). These chemical characteristics usually co-occur with a distinctive vegetation pattern of sparse amounts of plant biomass, even in areas known for their productivity, such as coastal forests. The sparse vegetation in these environments contributes to low turnover of nitrogen and phosphorus, high temperatures, high water stress, and low soil stability (Kruckberg 1984; USFWS 2002 *in* Ayres 2005). The coexistence and interdependence of these biochemical factors in the same environment has been dubbed the serpentine effect (Kruckeberg 1984 *in* Ayres 2005). However, this sparse vegetation is also characterized by a high degree of endemic plant species (found only in California or only on West Coast serpentine). In California, endemic serpentine species make up ten percent (215 species) of the total endemic flora of California (2,125 species), while serpentine soils make up only 0.6 percent of the area of California (Raven and Axelrod 1978, Kruckeberg 1984 *in* Ayres 2005). In addition, many of these endemic species are endangered, threatened, or rare. Of the six federally listed plant species potentially occurring in the planning area, three are found on serpentine soils. This community's small land area and high proportion of endemic plant species makes it particularly important to the preservation of biodiversity. Further, the barren appearance of serpentine communities falsely indicates that they lack ecological value; as a result, they are threatened by disturbance and degradation (e.g., grazing or mining) (Reclamation 1997). Serpentine communities are found within the West Side, Peoria Wildlife Area, and Dam and Spillway planning units.

Wetlands. In California's Mediterranean climate, with hot dry summers, wetlands have always been scarce and limited in size. These small isolated areas are very productive because associated plants have longer growing periods. Further, wetlands are valuable to animals because they provide abundant food and water. Since the distribution of wetlands has generally declined, associated plants and animals have, in some cases, become rare

and endangered (Reclamation 1995). Further, wetlands play a critical role in the watershed as the most productive of all ecosystems, as habitat for many sensitive plant and wildlife species, as flood control areas, as natural water quality purification systems, and as buffers against erosion (Reclamation 1995). Wetlands are found in all planning areas.

Vernal pools. The ponded water in vernal pools prevents annual grasses and other introduced forbs from growing in these depressions. Instead, the depressions are host to a number of native plants that may be limited in distribution to the pools of one particular area. Many vernal pool plants are known for their medicinal value (BLM 2006). Frequently, the endemic plant species are considered endangered or threatened due to lack of habitat caused by development and urban encroachment (Reclamation 1995). Due to their ephemeral nature, vernal pools provide habitat for short-lived invertebrates and breeding habitat for amphibians, such as the Pacific tree frog and western toad. Species that inhabit surrounding grasslands may also use the pools as a temporary water source. An extremely seasonal water regime provides foraging habitat for waterfowl and a number of bird species during spring migrations, as well as habitat for endemic species specifically adapted to vernal pool soil conditions (Reclamation 1995). More than 70 rare species are restricted to vernal pools, with new species discovered regularly (BLM 2006).

Only about 10 to 25 percent of the vernal pools that originally occurred in California remain. The two biggest threats to vernal pools now are development and agricultural conversion (USFWS 2007a). Vernal pools have not been documented in the New Melones Lake area, although vernal swales may be found on the top of Table Mountain.

Valley and foothill riparian woodland. Riparian areas along larger streams that are tributaries of New Melones Lake provide important habitat for a diverse array of species, including nesting habitat for a great variety of birds. More than 225 species of mammals, birds, reptiles, and amphibians rely on riparian areas. These shaded, moist, and typically well-vegetated corridors serve as escape cover and facilitate movement and dispersal of several species, such as black-tailed deer. Perennial stream courses also provide a year-long source of water for mammals, reptiles, and amphibians; a large range of species require riparian zones for breeding and foraging needs (Reclamation 1995).

Riparian systems are vulnerable and are easily altered by human activities. Even a slight change in the vegetation can modify the flow of the system, the temperature and pH of the water, the amount of oxygen in the water, and even the substrate. All of these changes have a subsequent impact on the species that depend on the systems. River corridors and riparian areas with natural flows and qualities are becoming a diminished resource throughout all of California (BLM 2006). Riparian woodlands can be found in the Camp Nine, Stanislaus River Canyon, Parrotts Ferry, Mark Twain, Tuttletown, French Flat, Bear Creek, Dam and Spillway, Greenhorn Creek, Carson, and Coyote Creek Planning Areas.

3.2.8 Fish and Wildlife

Fish

The Stanislaus River and New Melones Lake are part of the Sacramento-San Joaquin drainage system, a large interior system draining the west slope of the Sierra Nevada Mountains, the east slope of the Coast Ranges, and the southern Cascade Mountains, Warner Mountains, and Goose Lake to the north (Reclamation 1995). The native fish of the Stanislaus River likely included spring-run Chinook salmon (*Oncorhynchus tshawytscha*), rainbow trout (*O. mykiss*), Sacramento sucker (*Catostomus occidentalis*), large minnows, such as hardhead (*Mylopharodon conocephalus*), Sacramento squawfish (*Ptychocheilus grandis*), hitch (*Lavinia exilicauda*), and one or two species of sculpin (*Cottus* spp.). Some of the numerous fish species introduced by humans to the Sacramento-San Joaquin system likely also colonized the Stanislaus River prior to dam construction, and others, such as bass (*Micropterus* spp.) and catfish (*Ictalurus catus*, *I. nebulosus*, *I. punctatus*), have been introduced to New Melones Lake as sport fish.

The Stanislaus River in the region of New Melones Lake would fit two categories in the freshwater classification scheme for California developed by Moyle and Ellison (1991): spring Chinook stream and hardhead-squawfish stream. A spring Chinook stream is defined as a third to fifth order stream at elevations of 1,500 to 4,500 feet (450 to 1,370 meters), with deep canyons containing deep cold pools that can sustain spring Chinook salmon through summer. A hardhead-squawfish stream is defined as a low- to mid-elevation stream with deep bedrock pools, clear cool water (below 77 degrees Fahrenheit [25 degrees Celsius]), and characteristically containing hardhead, Sacramento squawfish, Sacramento sucker, and two to three other species. New Melones Lake would be classified under artificial habitats as a cool water stratified reservoir.

The fish species known to occur or most likely to occur in the reservoir or its tributaries are listed in Table 3-5.

Chinook salmon are restricted to the river downstream from New Melones Lake, although the CDFG successfully planted them in the lake in 1985 to enhance the sport fishery. Those salmon are no longer present, and a Chinook salmon fishery in the lake could be maintained only by regular stocking. The present sport fishery in the lake is focused on rainbow and brown trout (*Salmo trutta*), largemouth bass (*Micropterus salmoides*), other sunfishes, such as black crappie (*Pomoxis nigromaculatus*) and bluegill, and three species of catfish. Kokanee salmon (*Oncorhynchus nerka*), which are land-locked sockeye salmon, were introduced to the lake in 1997. The CDFG annually stocks rainbow trout, Kokanee salmon, and brown trout, while largemouth bass are stocked in smaller numbers by local bass clubs, with guidance from the CDFG (Lewis 2008).

The large native minnows and suckers, and introduced carp, although edible and catchable, are generally ignored by sport fisherman. The bass, crappie, bluegill, and smaller species of catfish (white catfish and brown bullhead) are regarded as shallow-water, warm-water species, and are sought by fisherman. These fish are caught in the warm upper layer of water on New Melones Lake, mainly around the shoreline. The

Table 3-5: Fish Species of New Melones Lake

Common Name	Scientific Name	Origin	Comments
Minnows and Carps	Cypriniformes		
Sacramento sucker	<i>Catostomus occidentalis</i>	N	C
Common carp	<i>Cyprinus carpio</i>	I	C
Hitch	<i>Lavinia exilicauda</i>	N	P
Hardhead	<i>Mylopharodon conocephalus</i>	N	P
Golden shiner	<i>Notemigonus crysoleucas</i>	I	C
Sacramento blackfish	<i>Orthodon microlepidotus</i>	N	C
Sacramento squawfish	<i>Ptychocheilus grandis</i>	N	C
Catfish	Siluriformes		
White catfish	<i>Ictalurus catus</i>	I	C
Brown bullhead	<i>I. nebulosus</i>	I	C
Channel catfish	<i>I. punctatus</i>	I	C
Trout and Salmon	Salmoniformes		
Rainbow trout	<i>Oncorhynchus mykiss</i>	N	C
Kokanee salmon	<i>O. nerka</i>	I	C
Brown trout	<i>Salmo trutta</i>	I	C
Livebearers	Cyprinodontiformes		
Western mosquitofish	<i>Gambusia affinis</i>	I	P
Scorpion Fish	Scorpaeniformes		
Prickly sculpin	<i>Cottus asper</i>	N	P
Riffle sculpin	<i>C. gulosus</i>	N	P
Perch, Freshwater Sunfish	Perciformes		
Green sunfish	<i>Lepomis cyanellus</i>	I	C
Bluegill	<i>L. macrochirus</i>	I	C
Red-eye bass	<i>Micropterus coosae</i>	I	C
Spotted bass	<i>M. punctularus</i>	I	C
Largemouth bass	<i>M. salmoides</i>	I	C
White crappie	<i>Pomoxis annularis</i>	I	C
Black crappie	<i>P. nigromaculatus</i>	I	C

Notes: N = native species, I = introduced species, C = confirmed, P = probable, U = unlikely
 Sources: USGS 2007, Lewis 2008

catfish live on the soft lake bottom, whereas the bass and crappie typically occupy territories offering some kind of cover, such as snags, logs, rocks, and emergent plants. Thus, prime areas for fisherman seeking sunfishes are shorelines with a lot of relief, such as cliffs or rock outcrops, and especially those narrow arms and coves with many drowned trees, logs, and marsh areas. Shorelines from which trees and brush have been cleared for aesthetic or other purposes are much less important to these species.

Rainbow trout, brown trout, and the large channel catfish are generally restricted to colder, deeper water during the summer when New Melones Lake has two distinct thermal layers of water, although large brown trout and channel catfish are often caught in shallow water near steep banks at night, when they ascend in search of food. Rainbow trout generally feed in deep water during the daytime and feed in shallower areas at night.

In fall, when the lake “turns over,” thermal stratification disappears and both species of trout may be caught in shallower water through winter and spring. Trout are also vulnerable to shallow-water fishing in tributary arms in late summer, when they enter tributaries to spawn.

The lake’s perennial tributary streams and their associated lake arms are critically important aquatic habitat. The cool clean water and gravel beds of these tributaries are likely to be trout spawning and rearing areas. Artificial habitat was created at the time of construction.

Wildlife

The planning area contains a diverse range of wildlife habitats typical of the lower Sierra Nevada foothills, including open water, riparian, and oak woodland communities in the lower lake area to montane hardwood and montane hardwood-conifer woodlands in the upstream canyon area. Consequently, a diverse range of bird, mammal, reptile, amphibian, and invertebrate species are also present. Numbers and species of birds vary by season, habitat, weather, and migration patterns. Section 3.2.7 (Vegetation) contains additional information on vegetation communities that make up wildlife habitats. The following sections describe wildlife resources by habitat type.

Open Water and Riparian Areas. The open water of New Melones Lake, along with associated shoreline vegetation, provides foraging and resting habitat for a variety of waterfowl and shorebirds, such as ruddy duck (*Oxyura jamaicensis*), ring-necked duck (*Aythya collaris*), and mallard ducks (*Anas platyrhynchos*), grebes, and coots. Several fish-eating bird species, such as grebes, forage in the open water; other species, such as ducks, herons, and egrets, dabble along the shoreline foraging on seeds and small fish in shallow areas. Fowl hunting is permitted in the New Melones Lake area and is regulated by CDFG. (See Section 3.2.20 for further discussion of hunting opportunities.)

Trees along the shoreline provide nesting substrate adjacent to preferred foraging habitat for some of these species, such as osprey. Riparian areas along larger tributaries to New Melones Lake provide important habitat for a diverse species assemblage. These shaded, moist, and typically densely vegetated corridors provide food, cover, water, and nesting habitat, and they serve as travel corridors for species such as black-tailed deer (*Odocoileus hemionus columbianus*). Perennial streams provide a year-long source of water for mammals, reptiles, and amphibians. A large assortment of species, including several bird species, require riparian zones for breeding and foraging needs. Deer hunting is permitted in the New Melones Lake area, regulated by the CDFG. Most deer hunting occurs in the PWMA. Other species hunted here include California quail (*Callipepla californica*), wild turkey (*Meleagris gallopavo*), and mourning dove (*Zenaida macroura*). (See Section 3.2.20 for further discussion of hunting opportunities.)

Oak woodlands. Oak woodlands are interwoven with grasslands at lower elevations and more conifer-dominated woodlands at higher elevations. In association with a grassy understory, oak woodlands cover virtually all of the gently rolling hills that surround New Melones Lake. Wildlife species within these woodlands vary depending on

microhabitat features. Where oak woodland occurs adjacent to open grasslands, many species move between and use resources provided by both communities. Oak woodlands provide important food resources, such as acorns, fungi, lichens, galls, and mistletoe. They also provide shelter, shade, and nesting sites for numerous species, including mule deer (*Odocoileus hemionus californicus*), which winter in the Railroad Flat area, black-tailed deer, which winter in the Stanislaus River Canyon and Parrotts Ferry areas, western grey squirrel (*Sciurus griseus*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), feral pig (*Sus scrofa*), striped skunk (*Mephitis mephitis*), mountain lion (*Felis concolor*), bobcat (*F. rufus*), California quail, wild turkeys, woodpeckers, and mourning doves. Tree cavities provide nesting opportunities for several species. The PWMA contains large areas of representative high quality oak woodlands.

Grasslands. While grasslands offer relatively few roosting or nesting sites for birds, they provide a large number of seeds for seed-eating species, such as mice, voles, quail, meadowlarks (*Sturnella neglecta*), horned larks (*Eremophila alpestris*), and sparrows. These species, in turn, provide food for predatory species, such as black-shouldered kite (*Elanus caeruleus*), northern harrier (*Circus cyaneus*), great horned owl (*Bubo virginianus*), red-tailed hawk (*Buteo jamaicensis*), and Swainson's hawk (*B. swainsoni*), which nest and roost in adjacent oak woodlands, wetlands, and riparian areas.

Chaparral. Often merging with oak woodlands and grasslands, chaparral provides large amounts of dead material and leaf litter, as well as almost impenetrable cover, for reptiles, birds, and smaller mammals. Although not restricted to this habitat type, fence lizards (*Sceloporus occidentalis*), quail, wren tits (*Chamaea fasciata*), deer mice (*Peromyscus maniculatus*), feral pigs, California thrashers (*Toxostoma redivivum*), and bobcats often use chaparral communities for cover and forage.

Table Mountain. The Table Mountain area, located primarily to the west and south of New Melones Lake, includes unique habitat conditions and opportunities not found elsewhere in the vicinity. The relatively steep cliffs and ledges (including caves and crevices) associated with Table Mountain provide nesting and roosting substrate required by several bird and bat species, several of which are special status species described in Sections 3.2.9. On the top of Table Mountain, vernal swales are interspersed with grassland and rock. Due to their short-lived nature, vernal swales provide habitat for short-lived invertebrates and breeding habitat for amphibians, such as Pacific tree frog (*Hyla regilla*). Species that inhabit surrounding grasslands may also use the pools as a temporary water source. An extremely seasonal water regime in this habitat type provides foraging habitat for waterfowl and other birds in the spring, as well as habitat for endemic species specifically adapted to vernal swale conditions.

Montane hardwood. Once established, the montane hardwood community is relatively stable, with a dense canopy and supporting wildlife species that rely on acorns as a primary food source or that browse on hardwood foliage. The forest floor, as opposed to lower elevation oak woodlands, is covered by a persistent leaf litter that provides habitat for many species of amphibians and reptiles. Representative wildlife species found in this community include gray fox, coyote (*Canis latrans*), striped skunk, opossum (*Didelphis*

virginiana), quail, wild turkey, band-tailed pigeon (*Patagioenas fasciata*), Nuttall's woodpecker (*Picoides nuttallii*) and acorn woodpecker (*Melanerpes formicivorus*), scrub jay (*Aphelocoma californica*) and Steller's jay (*Cyanocitta stelleri*), titmouse, western gray squirrel, dusky-footed woodrat (*Neotoma fuscipes*), black-tailed deer, black bear (*Ursus americanus*) in the Camp Nine region, mountain lion, bobcat, California mountain kingsnake (*Lampropeltis zonata*), and western rattlesnake (*Crotalus viridis*). Special status species that use this habitat type are described in Section 3.2.9.

Montane hardwood-conifer. This typically climax community supports a variety of wildlife species and is transitional between dense coniferous forests and montane hardwood, mixed chaparral, or open oak woodlands and savannahs. Mature trees provide nest cavities and acorns for some birds and mammals. Variability in canopy cover and understory vegetation provides structural diversity within this community. Representative wildlife species include mule deer, mountain lion, bobcat, pine siskin evening grosbeak (*Pinicola enucleator*), Steller's jay, western bluebird (*Sialia mexicana*), western tanager (*Piranga ludoviciana*), acorn woodpecker, wild turkey, western rattlesnake, and gopher snake (*Pituophis catenifer*). Special status species associated with this community are described in Section 3.2.9.

Limestone Caves/Outcrops. Some limestone caves and outcrops provide temperature, light, and moisture suitable for endemic invertebrate species. Cave and cavity-dwelling mammals, such as bats, may also find suitable habitat in these features. Two genus of bats, *Myotis* and *Corynorhinus* (*Plecotus*), are known to use the caves for roosting and breeding. The interior of some caves provides unique habitats where over 50 species of invertebrates have developed adaptations specific to the cave conditions. Several species of special status bats and invertebrates have been found in this type of habitat in the region and are described in Section 3.2.9.

When New Melones Dam was constructed, many limestone caves were inundated, and species' habitats were lost. To mitigate these effects on the New Melones harvestman (*Banksula melones*), a type of rare spider, the USACE transplanted individuals of this species to other caves that would not be affected by inundation. Monitors of these transplants have found that they have successfully become established in the caves where they were transplanted (CDFG 2007).

3.2.9 Special Status Species

Federally Endangered, Threatened, Proposed, or Candidate Species of Fauna

There are eleven species or subspecies that are listed as threatened or endangered under the Federal Endangered Species Act that could occur and be affected by projects in Calaveras or Tuolumne Counties (Table 3-6) (USFWS 2007b). In addition four species are candidates for listing. No species that occur in the counties are currently proposed for listing.

Table 3-6: Federal Threatened, Endangered, Proposed, and Candidate Species that Occur in or That May Be Affected by Projects in Calaveras and Tuolumne Counties

			Status	Potential Occurrence in the Planning Area
			E=Endangered T = Threatened C = Candidate SC = Species of Concern DL = Delisted CH = Critical Habitat	C = Confirmed P = Possible U = Unlikely
Scientific Name	Common Name	Habitat		
Invertebrates				
<i>Branchinecta lynchi</i>	Vernal pool fairy shrimp	Vernal pools	T	U
<i>Desmocerus californicus dimorphus</i>	Valley elderberry longhorn beetle	Riparian habitats and associated upland habitats where elderberry grows	T	P
<i>Lepidurus packardii</i>	Vernal pool tadpole shrimp	Vernal pools	E	U
Fish				
<i>Oncorhynchus (=Salmo) clarki seleniris</i>	Paiute cutthroat trout	Watershed of Silver King Creek and its isolated tributaries in Alpine County	T	U
<i>O. mykiss</i>	Central Valley steelhead	Sacramento and San Joaquin Rivers and their tributaries (excluding steelhead from San Francisco and San Pablo Bays and their tributaries)	T CH	U
<i>O. tshawytscha</i>	Winter-run Chinook salmon, Sacramento River	Sacramento River and its tributaries in California	E	U
<i>O. tshawytscha</i>	Central Valley fall/late fall-run Chinook salmon	Sacramento River and its tributaries in California	SC	U
Amphibians				
<i>Ambystoma californiense</i>	California tiger salamander, central population	Vernal pools and permanent waters in grasslands; burrows in adjacent upland sites	T CH	U
<i>Bufo canorus</i>	Yosemite toad	Lakes or ponds with grassy margins, wet meadows, and quiet areas of streams above 4,800 feet (1,460 meters) elevation	C	U

Table 3-6: Federal Threatened, Endangered, Proposed, and Candidate Species that Occur in or That May Be Affected by Projects in Calaveras and Tuolumne Counties (*continued*)

Scientific Name	Common Name	Habitat	Status	Potential Occurrence in the Planning Area
			E=Endangered T = Threatened C = Candidate SC = Species of Concern DL = Delisted CH = Critical Habitat	C = Confirmed P = Possible U = Unlikely
<i>Rana aurora draytonii</i>	California red-legged frog	Aquatic habitat (for breeding); use a variety of habitat types, including riparian and upland areas	T	P
<i>R. muscosa</i>	Mountain yellow-legged frog	Rocky and shaded streams with cool waters above 4,500 feet (1,460 meters) elevation	C	U
Reptiles				
<i>Thamnophis gigas</i>	Giant garter snake	Inhabits natural and artificial wetlands, irrigation supply and drainage canals, freshwater marshes, sloughs, ponds, and other aquatic habitats	T	U
Birds				
<i>Haliaeetus leucocephalus</i>	Bald eagle	Large bodies of open water, such as lakes, marshes, coasts, and rivers with accessible fish; also need tall trees for nesting and roosting	DL	C
Mammals				
<i>Martes pennanti</i>	Fisher	Mature coniferous forest and dense riparian habitats at high elevations	C	U
<i>Vulpes macrotis mutica</i>	San Joaquin kit fox	Annual grasslands with scattered shrubs and loose soils for burrowing	E	U

Source: USFWS 2007b

Small numbers of bald eagles commonly use the lake and tributaries for foraging and roosting in the winter. Bald eagle nests exist in the region, and three nests were recorded in 2006 and 2007 at New Melones Lake. Future eagle nesting at the lake is a possibility.

The valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) occurs in association with elderberry (*Sambucus* spp.) shrubs in riparian areas and oak savanna habitats. Because these habitat types and elderberry occur in the New Melones Lake area and the species has been documented nearby, it is possible that the species occurs in the planning area.

The California red-legged frog (CRLF) (*Rana aurora draytonii*) inhabits a variety of aquatic habitats, usually with submerged and emergent vegetation. CRLF typically inhabit the margins of still or very slow water where bordering and aquatic vegetative cover is very dense and large populations of forage species occur, including aquatic macroinvertebrates, rodents, and Pacific tree frogs (*Hyla* [= *Pseudacris*]) regilla (Storer 1925; Hayes and Tennant 1986; Hayes 1989; Jennings and Hayes 1994 in Barry 2007). Most of the low gradient riparian stream zones that may have offered this type of habitat in the New Melones Lake area were inundated when the lake was filled, and any such habitat in the planning area is remnant and fragmented at best. A 2006-2007 survey of Sierra Nevada foothill streams in the counties north of the project area found that the nearest extant population of CRLFs was west of New Hogan Lake, approximately 25 miles (40 kilometers) northwest of the project area (Barry 2007). A valid historical record of a CRLF sighting occurred near Columbia, approximately five miles from the lake, but this record was not confirmed during the recent survey. The overall results of this survey indicated that although CRLFs can and do occupy streams at similar elevations as those in the New Melones Lake area, populations are relatively rare and depend on high-quality habitat.

No records exist of CRLFs in streams in the planning area, and there is a low probability that the species occurs in the planning area.

The rest of the listed species that could occur in the counties are unlikely to occur in the New Melones Lake area due to lack of appropriate habitat or documented range, including elevation.

Federally Endangered, Threatened, Proposed or Candidate Species of Plants

The project area encompasses portions of Tuolumne and Calaveras Counties. Within these counties, the six federally listed plant species that may occur include Ione manzanita (*Arctostaphylos myrtifolia*), Chinese Camp brodiaea (*Brodiaea pallida*), succulent owl's clover (*Castilleja campestris* ssp. *succulenta*), Hartweg's golden sunburst (*Pseudobahia bahifolia*), Layne's ragwort (*Packera layneae*), and California vervain (*Verbena californica*) (USFWS 2007b). These are presented in Table 3-7 and are described in detail below.

Table 3-7: Federally Endangered, Threatened, Proposed, or Candidate Plant Species That Occur in or May Be Affected by Projects in Calaveras and Tuolumne Counties

Scientific Name	Common Name	Preferred Habitat	Status	Potential Occurrence in the Planning Area
			E = Endangered T = Threatened	C = Confirmed P = Possible U = Unlikely
<i>Arctostaphylos myrtifolia</i>	lone manzanita	Chaparral or oak-dominated, open-canopied woodlands	T	U
<i>Brodiaea pallida</i>	Chinese Camp brodiaea	Valley and foothill grassland, vernal swales, or serpentine clay	T	U
<i>Castilleja campestris</i> ssp. <i>succulenta</i>	Succulent owl's clover	Margins of vernal pools, swales, and some seasonal wetlands, often on acidic soils	T	U
<i>Pseudobahia bahifolia</i>	Hartweg's golden sunburst	Valley and foothill grasslands at the margins of blue oak woodland	E	
<i>Packera layneae</i>	Layne's ragwort	Dry serpentine or granular igneous soils in chaparral and foothill pine/oak woodlands	T	P
<i>Verbena californica</i>	California vervain	Cismontane woodland, valley and foothill grassland, and foothill pine-blue oak woodland	T	P

Sources: CNPS 2007; CDFG 2007; Reclamation 2007a; USFWS 2007c; Ayres 2005

Ione manzanita. This species is federally listed as threatened and is found in Calaveras and Amador Counties (California Native Plant Society [CNPS] 2007). It is an evergreen shrub with white flowers that bloom November through February (CNPS 2007).

This species may grow in chaparral or oak-dominated open-canopied woodlands lower in elevation than coniferous forests (though conifers may be present). It grows on Ione clay with chaparral associates (CDFG 2007), including Mariposa manzanita (*Arctostaphylos mariposa*), Indian manzanita (*A. mewukka*), chamise (*Adenostoma fasciculatum*), Bisbee peak rush-rose (*Helianthemum suffrutescens*), goldwire (*Hypericum concinnum*), and Sonoma sage (*Salvia sonomensis*) (CDFG 2007). It often makes up 50 to 80 percent cover and can be found at elevations of 250 to 1,800 feet (75 to 550 meters) (CDFG 2007). The California Natural Diversity Database (CNDDDB) does not have a recorded occurrence of this species within the project area (CDFG 2007), and the plant has not been documented in surveys there (Evens et al. 2004).

Chinese Camp brodiaea. This species is federally listed as threatened and is found in the Central Sierra Nevada foothills, near Chinese Camp, in Tuolumne County (Reclamation 2007a). It is a perennial bulbiferous herb, with pale purple flowers that bloom May through June (CNPS 2007). The species hybridizes with *B. elegans* ssp. *elegans* (CNPS 2007).

Chinese Camp brodiaea is known from only two occurrences near Chinese Camp. Part of one occurrence was destroyed by construction in 1982; the remainder is threatened by residential development (CNPS 2007). The species may grow in valley and foothill grassland, vernal swales, or on serpentine clay and has been recorded in rocky, vernal wet streams on serpentine at 1,250 feet (380 meters) elevation (Reclamation 1995, 2007a). The CNDDDB does not have a recorded occurrence of this species within the project area, nor did surveys conducted on PWMA serpentine record the species (CDFG 2007; Reclamation 2007a).

Succulent owl's clover. This species is federally listed as threatened and is listed as endangered under the CESA (CDFG 2007). It is found only along the rolling lower foothills and valleys along the eastern San Joaquin Valley in the Southern Sierra Foothills Vernal Pool Region, which includes the planning area (USFWS 2006). It is an annual partially parasitic herb, with bright yellow to white flowers that bloom in April and May (USFWS 2007c; CNPS 2007).

The species grows on the margins of vernal pools, swales, and some seasonal wetlands, often on acidic soils. It is never dominant and it is found in only a few of the pools in an area (USFWS 2007c). It grows in between 80 and 2,450 feet (25 and 750 meters) elevation. It is not recorded within the project area (CDFG 2007).

Hartweg's golden sunburst. This species is federally and state-listed as endangered (CDFG 2007). It is a slender woolly annual and is found only in the Central Valley. The species has yellow flowers that bloom in March and April (USFWS 2007d).

The species occurs in valley and foothill grasslands at the margins of blue oak woodland, primarily on shallow, well-drained, fine-textured soils (USFWS 2007d; CDFG 2007). It can also be found along shady creeks, near vernal pools, or around the margins of volcanic boulders (CDFG 2007). It is often found on the northern slopes of knolls one to six feet (30 cm to 2 meters) high and 10 to 100 feet (3 to 30 meters) in diameter at the base. These are interspersed with basins that may pond water in the rainy season (USFWS 2007d; CDFG 2007). The species has not been recorded within the project area (CDFG 2007).

Layne's ragwort. This species is federally listed as threatened and is listed as rare in California (CDFG 2007). It is a perennial herb with yellow flowers (CNPS 2007). Layne's ragwort has eight to thirteen ray flowers and fewer than 40 disk flowers that bloom April through July (Reclamation 1995, 2007a).

The species can be found on dry serpentine or granular igneous soils in chaparral and foothill pine/oak woodlands (Ayres 2005). It has been found in the Red Hills area,

approximately 10 miles (16 kilometers) south of the lake area (BLM 2006), and a possible population was recorded in a drying stream margin in Peoria basin (Ayres 2005). The CNDDB does not have a recorded occurrence of this species within the project area (CDFG 2007).

California vervain. This species is federally listed as threatened and is found in Tuolumne County (CNPS 2007). It is a perennial or biennial herb, with violet to purple flowers that bloom May through September (CNPS 2007; Reclamation 1995).

The species is known from ten occurrences in the Red Hills and is threatened by grazing, mining, development, recreation, and vehicles (CNPS 2007). It is protected in part at Red Hills Area of Critical Environmental Concern (ACEC) on BLM land (CNPS 2007). California vervain may grow in cismontane woodland, valley and foothill grassland, and foothill pine-blue oak woodland (CDFG 2007; Ayres 2005). It has been found on mesic sites on Delpiedra serpentine, usually seeps, creeks, swales, or in wet meadows at 830 to 1,300 feet (250 to 400 meters) (CDFG 2007; BLM 2006; Ayres 2005). It is often associated with Cleveland's butterweed, which was observed on Peoria serpentine (Ayres 2005). The CNDDB does not have a recorded occurrence of this species within the project area; further, the species was not recorded during surveys conducted on PWMA serpentine (CDFG 2007; Reclamation 2007a). California vervain has been recorded at Yosemite Junction, approximately seven miles from the lake area (Reclamation 1995).

Federally Proposed or Designated Critical Habitat for Fish and Wildlife

Two threatened species have critical habitat designated within Calaveras or Tuolumne Counties, Central Valley steelhead (*Onchorhynchus mykiss*) and California tiger salamander (*Ambystoma californiense*), central population (USFWS 2007b). The planning area is not within either of these designated areas (NMFS 1999; USFWS 2006), but there is critical habitat for both species on the Stanislaus River downstream of Tulloch Lake.

Federally Proposed or Designated Critical Habitat for Plants

Within Tuolumne County there is designated critical habitat for four special status plant species: succulent owl's clover (*Castilleja campestris* ssp. *succulenta*), Hoover's spurge (*Chamaesyce hooveri*), Colusa grass (*Neostapfia colusana*), and Greene's tuctoria (*Tuctoria greenei*) (USFWS 2007b).

For all species, critical habitat was designated in FR 68:46683, on August 6, 2003. The designation was revised in FR 70:46923 on August 11, 2005, and species by unit designations were published in FR 71:7117 on February 10, 2006 (USFWS 2007c). The critical habitat in Tuolumne County is present as a small band on the western edge of the county, outside of the planning area.

Succulent owl's clover occurs on the margins of vernal pools, swales, and some seasonal wetlands, often on acidic soils. It is never dominant and it is found in only a few of the pools in an area (USFWS 2007c). It has not been recorded within the planning area.

Hoover's spurge grows in relatively large, deep vernal pools and tends to occur where competition from other species has been reduced by prolonged seasonal inundation or other factors (USFWS 2007e). It has not been recorded within the planning area and is unlikely to occur, given the size and depth of the vernal pools on Table Mountain.

Colusa grass occurs in large or deep vernal pools with substrates of high mud content (USFWS 2007f). It has not been recorded within the planning area and is unlikely to occur, given the size and substrate of the vernal pools on Table Mountain.

Greene's tuctoria grows in the dried bottom of vernal pools (CDFG 2007). It has not been recorded within the planning area or within either Calaveras or Tuolumne County.

All Other Special Status Fauna

Twenty special status species (state endangered, state threatened, California special concern, state fully protected, and federal birds of conservation concern) have been documented in the planning area. These species include foothill yellow-legged frog (*Rana boylei*), sharp-shinned hawk (*Accipiter striatus*), tri-colored blackbird (*Agelaius tricolor*), golden eagle (*Aquila chrysaetos*), Barrow's goldeneye (*Bucephala islandica*), western burrowing owl (*Athene cunicularia hypugae*), ferruginous hawk (*Buteo regalis*), northern harrier (*Circus cyaneus*), Swainson's hawk (*B. swainsoni*), yellow warbler (*Dendroica petechia brewsteri*), California horned lark (*Eremophila alpestris actia*), merlin (*Falco columbarius*), prairie falcon (*F. mexicanus*), bald eagle, northern loggerhead shrike (*Lanius ludovicianus*), osprey, double-crested cormorant (*Phalacrocorax auritus*), bank swallow (*Riparia riparia*), pallid bat (*Antrozous pallidus pacificus*), and western mastiff bat (*Eumops perotis californicus*) (Table 3-8). Other species listed in Table 3-8 include those that fall into a state or federal status category that is included in the CNDDDB (CDFG 2007) for Calaveras and Tuolumne Counties.

Table 3-8: Special Status Species* That Occur in or May Be Affected by Projects in Calaveras and Tuolumne Counties

Scientific Name	Common Name	Preferred Habitat	Status	Potential Occurrence in the Planning Area
			SE= CA State Endangered ST = CA State Threatened DL = Federally delisted FP = Fully protect in CA BCC=Birds of Conservation Concern CSC = CA Species of Special Concern NL = Not listed	C = Confirmed P = Possible U = Unlikely
Invertebrates				
Ammonitella yatesi	Yates' snail	Inhabits limestone caves and outcroppings; favors north-facing slopes.	NL	U

Table 3-8: Special Status Species* That Occur in or May Be Affected by Projects in Calaveras and Tuolumne Counties (*continued*)

Scientific Name	Common Name	Preferred Habitat	Status	Potential Occurrence in the Planning Area
			SE= CA State Endangered ST = CA State Threatened DL = Federally delisted FP = Fully protect in CA BCC=Birds of Conservation Concern CSC = CA Species of Special Concern NL = Not listed	C = Confirmed P = Possible U = Unlikely
<i>Aphrastochthonius grubbsi</i>	Grubbs' Cave pseudoscorpion	Caves	NL	P
<i>Banksula martinorum</i>	Martins' cave harvestman	Caves	NL	U
<i>B. melons</i>	New Melones harvestman	Limestone caves with temperatures between 57 and 60 degrees F (14 and 16 degrees Celsius) and humidity between 82 and 97 percent. Found under rocks or wandering on floor or walls.	NL	P
<i>B. Tuolumne</i>	Tuolumne cave harvestman	Caves	NL	P
<i>B. tutankhamen</i>	King Tut Cave harvestman	Caves	NL	P
<i>Larca laceyi</i>	Lacey's Cave pseudoscorpion	Caves	NL	P
<i>Pseudogarypus orpheus</i>	Music Hall Cave pseudoscorpion	Caves	NL	P
<i>Stygobromus gradyi</i>	Grady's Cave amphipod	Mostly found in caves, but one collection from a spring.	NL	P
<i>S. harai</i>	Hara's Cave amphipod	Mostly found in caves and mine tunnels, though also found near a spring.	NL	U
Fish				
<i>Lavinia symmetricus</i> ssp. 1	San Joaquin roach	Generally found in small, warm, intermittent streams. Most abundant in mid-elevation streams in the Sierra foothills and in the lower reaches of some coastal streams.	CSC	U

Table 3-8: Special Status Species* That Occur in or May Be Affected by Projects in Calaveras and Tuolumne Counties (*continued*)

Scientific Name	Common Name	Preferred Habitat	Status	Potential Occurrence in the Planning Area
			SE= CA State Endangered ST = CA State Threatened DL = Federally delisted FP = Fully protect in CA BCC=Birds of Conservation Concern CSC = CA Species of Special Concern NL = Not listed	C = Confirmed P = Possible U = Unlikely
<i>L. symmetricus</i> ssp. 3	Red Hills roach	Small streams in areas with serpentine soil.	CSC	P
<i>Oncorhynchus mykiss</i>	Central Valley steelhead	Sacramento and San Joaquin Rivers and their tributaries (excluding steelhead from San Francisco and San Pablo Bays and their tributaries).	CSC, DL	U
<i>O. tshawytscha</i>	Central Valley fall/late fall-run Chinook salmon	Sacramento and San Joaquin River basins and their tributaries, east of Carquinez Strait.	CSC	U
Amphibians				
<i>Bufo canorus</i>	Yosemite toad	Ponds used as breeding areas and nearby meadows that provide food.	CSC	U
<i>Ambystoma californiense</i>	California tiger salamander, central population	Vernal pools and permanent waters in grasslands; burrows in adjacent upland sites.	CSC	U
<i>Rana aurora draytonii</i>	California red-legged frog	Aquatic habitat (for breeding); a variety of habitat types, including riparian and upland areas.	CSC	P
<i>R. muscosa</i>	Mountain yellow-legged frog	Rocky and shaded streams with cool waters.	CSC	P
<i>Hydromantes platycephalus</i>	Mount Lyell salamander	Caves, granite exposures, rock fissures, and seepages from springs and melting snow.	CSC	U
<i>Rana boylei</i>	Foothill yellow-legged frog	Permanent water.	CSC	C

Table 3-8: Special Status Species* That Occur in or May Be Affected by Projects in Calaveras and Tuolumne Counties (*continued*)

Scientific Name	Common Name	Preferred Habitat	Status	Potential Occurrence in the Planning Area
			SE= CA State Endangered ST = CA State Threatened DL = Federally delisted FP = Fully protect in CA BCC=Birds of Conservation Concern CSC = CA Species of Special Concern NL = Not listed	
<i>Scaphiopus hammondi</i> (= <i>Spea hammondi</i>)	Western spadefoot	Grasslands; nests in temporary wetlands.	CSC	U
Reptiles				
<i>Emys</i> (= <i>Clemmys</i>) <i>marmorata pallida</i>	Southwestern pond turtle	Permanent or near permanent water bodies with logs, vegetation, or mudflats for basking.	CSC	P
<i>E.</i> (= <i>Clemmys</i>) <i>marmorata marmorata</i>	Northwestern pond turtle	Permanent or near permanent water bodies with logs, vegetation, or mudflats for basking.	CSC	P
Birds				
<i>Accipiter cooperi</i>	Cooper's hawk	Patchy dense tree stands/riparian areas.	CSC	P
<i>A. gentilis</i>	Northern goshawk	Woodlands with suitable prey source.	CSC	U
<i>A. striatus</i>	Sharp-shinned hawk	Woodlands with suitable prey source.	CSC	C
<i>Agelaius tricolor</i>	Tri-colored blackbird	Marsh vegetation or vegetation near small water bodies.	CSC	C
<i>Aquila chrysaetos</i>	Golden eagle	Cliffs or isolated trees.	CSC	C
<i>Asio otus</i>	Long-eared owl	Riparian areas.	CSC	U
<i>Athene cunicularia hypugea</i>	Western burrowing owl	Flat open grasslands.	CSC	C
<i>Bucephala islandica</i>	Barrow's goldeneye	Open water bodies.	CSC	C
<i>Buteo regalis</i>	Ferruginous hawk	Open grasslands.	CSC	C
<i>B. swainsoni</i>	Swainson's hawk	Oak savannah; isolated trees or riparian areas.	ST	C
<i>Circus cyaneus</i>	Northern harrier	Marshlands.	CSC	C
<i>Cypseloides niger</i>	Black swift	Cliffs near waterfalls.	CSC	U

Table 3-8: Special Status Species* That Occur in or May Be Affected by Projects in Calaveras and Tuolumne Counties (*continued*)

Scientific Name	Common Name	Preferred Habitat	Status	Potential Occurrence in the Planning Area
			SE= CA State Endangered ST = CA State Threatened DL = Federally delisted FP = Fully protect in CA BCC=Birds of Conservation Concern CSC = CA Species of Special Concern NL = Not listed	C = Confirmed P = Possible U = Unlikely
<i>Empidonax traillii</i>	Willow Flycatcher	Riparian areas; dense willows.	SE	U
<i>Dendroica petechia brewsteri</i>	Yellow warbler	Riparian areas; chaparral.	CSC	C
<i>Eremophila alpestris actia</i>	California horned lark	Open grasslands or treeless areas.	CSC	C
<i>Falco columbarius</i>	Merlin	Open areas by woods.	CSC	C
<i>F. mexicanus</i>	Prairie falcon	Mountainous grasslands, open hills, plains, cliffs adjacent to open areas; prairies.	CSC, BCC	C
<i>F. peregrinus anatum</i>	American peregrine falcon	Forages over a variety of habitats with aerial prey; nests on cliffs or ledges.	SE, FP, DL, BCC	P
<i>Haliaeetus leucocephalus</i>	Bald eagle	Large bodies of open water, such as lakes, marshes, coasts, and rivers. Also need tall trees for nesting and roosting.	SE	C
<i>Icteria virens</i>	Yellow-breasted chat	Riparian areas; willow thickets.	CSC	U
<i>Lanius ludovicianus</i>	Northern loggerhead shrike	Open habitat with scattered perches.	CSC	C
<i>Nycticorax nycticorax</i>	Black-crowned night heron	Dense trees and vegetated wetlands.	CSC	U
<i>Pandion haliaeetus</i>	Osprey	Large water bodies.	CSC	C
<i>Phalacrocorax auritus</i>	Double-crested cormorant	Large water bodies.	CSC	C
<i>Progne subis</i>	Purple martin	Wooded habitats; riparian areas.	CSC	U
<i>Riparia riparia</i>	Bank swallow	Riparian areas; stream banks.	ST	C
<i>Strix nebulosa</i>	Great gray owl	Old growth coniferous forests.	SE	U

Table 3-8: Special Status Species* That Occur in or May Be Affected by Projects in Calaveras and Tuolumne Counties (*continued*)

Scientific Name	Common Name	Preferred Habitat	Status	Potential Occurrence in the Planning Area
			SE= CA State Endangered ST = CA State Threatened DL = Federally delisted FP = Fully protect in CA BCC=Birds of Conservation Concern CSC = CA Species of Special Concern NL = Not listed	
<i>Tyto alba</i>	Barn owl	Open habitats, including grassland, chaparral, riparian, and wetlands.	NL	C
Mammals				
<i>Antrozous pallidus pacificus</i>	Pallid bat	Grasslands, shrublands, woodlands; roosts in locations protected from general disturbance.	CSC	C
<i>Aplodontia rufa californica</i>	Sierra Nevada mountain beaver	Dense riparian areas.	CSC	U
<i>Corynorhinus (=Plecotus) townsendii townsendii</i>	Townsend's western big-eared bat	Rocky areas with caves.	CSC	C
<i>Euderma maculatum</i>	Spotted bat	Roosts in caves, crevices and cracks, and canyons.	CSC	U
<i>Eumops perotis californicus</i>	Western mastiff bat	Primarily roosts in high buildings and cliff faces, also trees.	CSC	C
<i>Gulo gulo</i>	California wolverine	High-elevation habitats; open terrain above timberline.	ST	U
<i>Lepus americanus tahoensis</i>	Sierra Nevada snowshoe hare	Boreal zones, riparian communities with thickets of deciduous trees and shrubs.	CSC	U
<i>Martes pennanti (pacifica) DPS</i>	Pacific fisher	Mature and old growth forests; use large areas of primarily coniferous forests with fairly dense canopies and large trees, snags, and down logs.	CSC	U
<i>Taxidea taxus</i>	American badger	Dry open grasslands, fields, and pastures.	CSC	U

Table 3-8: Special Status Species* That Occur in or May Be Affected by Projects in Calaveras and Tuolumne Counties (*continued*)

Scientific Name	Common Name	Preferred Habitat	Status	Potential Occurrence in the Planning Area
			SE= CA State Endangered ST = CA State Threatened DL = Federally delisted FP = Fully protect in CA BCC=Birds of Conservation Concern CSC = CA Species of Special Concern NL = Not listed	
<i>Vulpes vulpes necator</i>	Sierra Nevada red fox	Forest openings, meadows, and barren rocky areas associated with its high elevation habitats.	ST	U

Notes: *Special Status species in this table include state-listed threatened and endangered species and California special concern species, USFWS Birds of Conservation Concern (USFWS 2002b) that appear in the California Department of Fish and Game Natural Diversity Database (CDFG 2007) for Tuolumne or Calaveras County, or those otherwise documented in the planning area, such as in the Draft RMP (Reclamation 1995).

Sources: CDFG 2007; USFWS 2006a; Reclamation 1995

Other Special Status Plant Species

A list of other special status plant species that may occur within the planning area was compiled from USFWS, CNDDDB, and CNPS lists for Tuolumne and Calaveras Counties (USFWS 2007b; CDFG 2007; CNPS 2007).

The PWMA has documented occurrences of special status plant species. Other planning areas may have suitable habitat for several special status species but have not been surveyed. In addition, special status plants have been documented on lands near, but not within, the planning area. These species may occur within the planning area, particularly in areas that have not been surveyed.

Table Mountain. On Table Mountain, *Allium jepsonii* occurs near Rawhide Flat (Reclamation 1995). In addition, *Eryngium spinosepalum* is found in vernal pools of the Sierra Nevada foothills and may occur on Table Mountain (Reclamation 1995).

Peoria Wildlife Management Area. In the Peoria Wildlife Area management area, several occurrences of *Lupinus spectabilis* and one occurrence of *Packera clevelandii* and *Monardella douglasii* ssp. *venosa* have been documented (Ayres 2005; Vasquez 2007). Populations of *Allium tuolumnense* and *A. jepsonii* have been identified in the lower Peoria basin (Ayres 2005; Vasquez 2007), and this species also occurs on Rawhide Hill and in the BLM Red Hills Management Area adjacent to the planning area (Reclamation 1995). *Chlorogalum grandiflorum* is endemic only to the Red Hills of Tuolumne County, as well as El Dorado and Placer Counties, south of the planning area (Reclamation 1995).

Potential populations of this species have been found in the Peoria basin (Ayres 2005; Evens et al. 2004). The species was found adjacent to the PWMA access road (Reclamation 2007a). *Lomatium congdonii* can be found in the Red Hills Management Area (Reclamation 1995) and has been recorded throughout the Peoria basin (Ayres 2005; Evens et al. 2004).

3.2.10 General Land Management

General Land Use

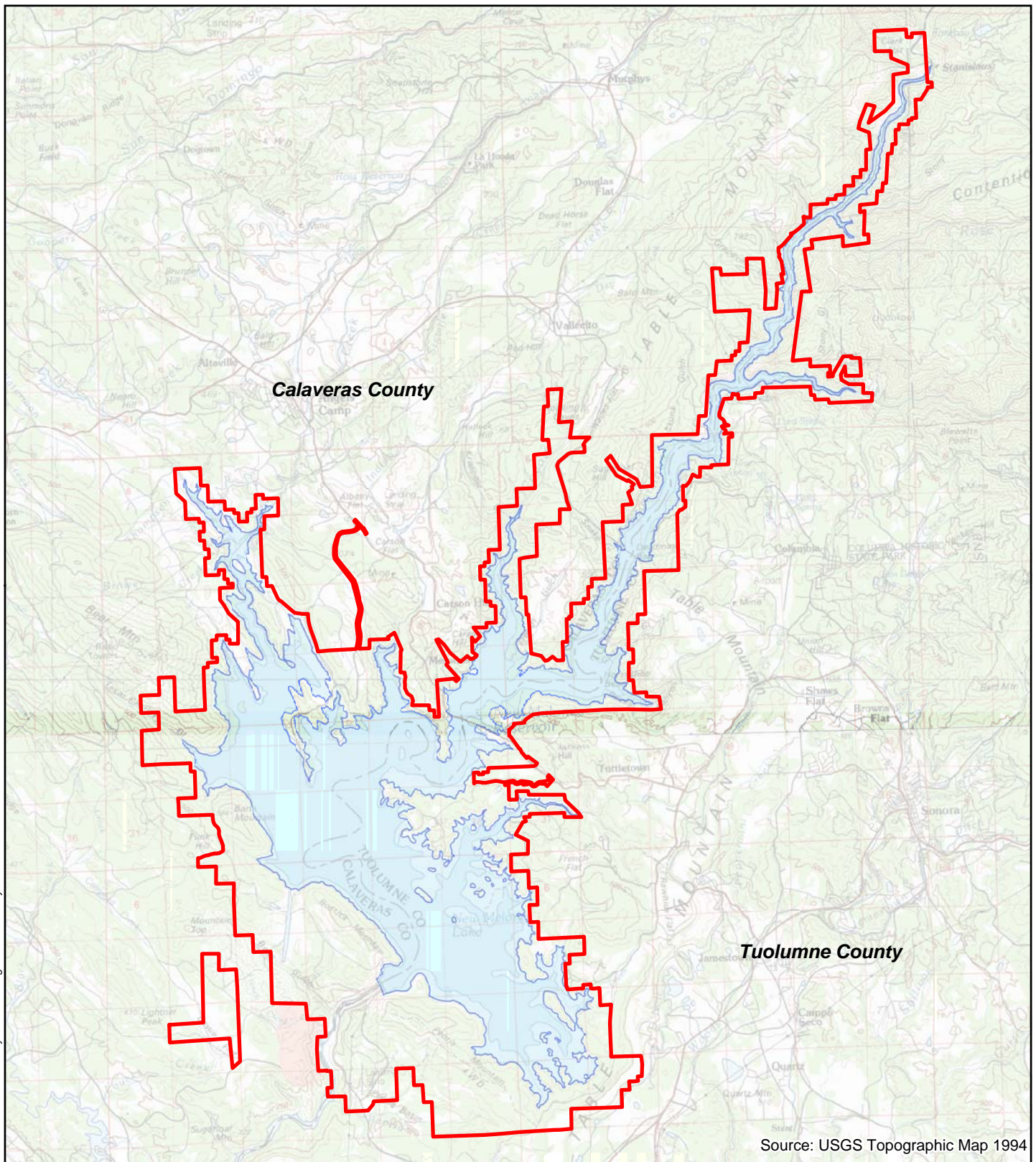
Reclamation administers approximately 15,168 acres (6,140 hectares) of land above the gross pool reservoir level (1,088 feet [330 meters] above mean sea level) surrounding the New Melones Lake area (Figure 3-6). Approximately 5,405 acres (2,190 hectares) of the surrounding lands are designated for recreation and wildlife purposes, and 4,065 acres (1,650 hectares) are held as operations or open space lands.

Included in the 5,405 acres (2,190 hectares) of land designated for recreation and wildlife purposes, 2,520 acres (1,020 hectares) encompass the PWMA. The USACE acquired the PWMA to partially mitigate for loss of approximately 10,000 acres (4,050 hectares) of fish and wildlife habitat associated with expanding New Melones Lake.

Within Reclamation resource area lands, both Reclamation and adjacent landowners manage easements. Pacific Gas and Electric (PG&E) maintains a transmission line easement along the southwestern edge of the Reclamation boundary at the base of Table Mountain. Also, PG&E operates and has an easement for an afterbay dam that is related to the Stanislaus Powerhouse near Camp Nine. Also in the Camp Nine Management Area, Northern California Power Agency and Calaveras County Water District jointly operate the Collierville Powerhouse, which is also partially located on Reclamation lands near Clarks Flat. Tuolumne County Irrigation District (TCID) also maintains a permanent easement for a water intake structure, pumping plant, switchyard, 100,000-gallon (380,000-liter) storage tank, 16-inch (40-centimeter) pipeline, and roadway access to the pump station. The TCID easement is off of Old Abbeyes Ferry Road, approximately two miles north of Parrotts Ferry Bridge.

Adjacent Land Management and Uses. Lands adjacent to the project boundary are mostly undeveloped and are used primarily for grazing and for open space values. The largest adjacent landowners are the BLM and USFS. Adjacent BLM lands are managed primarily for watershed protection and for preserving and improving forage and wildlife habitat. Six grazing allotments and twenty-two mining claims are held on BLM lands that adjoin Reclamation lands. The grazing allotments are categorized as custodial allotments with a year-round season of use. Of the 22 mining claims adjacent to the New Melones Lake Area, only one is actively mined near French Flat on the southeastern side of New Melones Lake.

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Planning Area Boundary

New Melones Lake Area, California
Central California Area Office

Figure 3-6

The Stanislaus National Forest adjoins Reclamation lands at Clarks Flat and near the South Fork area of the New Melones Lake Area. The USFS has one grazing allotment adjacent to Reclamation lands in Clarks Flat. The 480-acre (190 hectare) allotment has a season of use from May 1 through September 15.

Residential development continues to encroach on Reclamation lands as population in the area increases, causing increased trespass and land management issues. Rural residential development has expanded around existing clusters, such as areas along Jackass Hill and French Flat Road.

Trespass

Prohibited acts on federal land include grazing or watering livestock, trespass into areas specified as off limits to public access (e.g., operations facilities and areas with sensitive ecological or cultural resources), using motorized vehicles in any areas other than on paved or specified roads, constructing, placing, or maintaining any kind of road, trail, structure, fence, enclosure, communication equipment, pump, well, or other improvement without a permit.

Trespassing, vandalism, illegal dumping, and illegal mining and mineral extraction are common problems within the New Melones Lake Area, especially in areas that are difficult to access or patrol. Adjacent grazing livestock often access Reclamation lands through poorly maintained fencing or areas where fencing has been taken out illegally.

The following areas within the New Melones Lake area have been closed and will remain closed until further notice; note that the type of closure varies by location (Brooks 2007a):

- New Melones Power Plant and vicinity, including outlet works and river downstream to buoy line, and visitor overlook, and area leased to and occupied by California Division of Forestry, Baseline Conservation Camp. Closed to public vehicles, hunting, and fishing;
- Mark Twain Recreation Area, closed to launching trailered boats and launching by hand boats with motors over ten horsepower (effective April 1, 2008);
- New Melones Dam and Powerhouse, closed to public vehicles, hunting, and fishing below the dam to the buoy line;
- Spillway, closed to all public access;
- Old Parrotts Ferry Road, closed to public vehicles;
- PWMA, closed to public vehicles;
- Melones Recreation Area, closed to public vehicles;

- French Flat Recreation Area, closed to public vehicles; and
- Bear Creek Recreation Area, closed to public vehicles.

Reclamation will continue to enforce policies related to trespass onto or the unauthorized use of the land and water under its jurisdiction. Trespass and unauthorized use, when permitted to continue, deprive the public of its rightful use and enjoyment of the public lands. It is the general policy of Reclamation to facilitate and ensure the proper use of land resources. Benefits to the public as a whole resulting from nonexclusive uses of federal lands is the primary management emphasis.

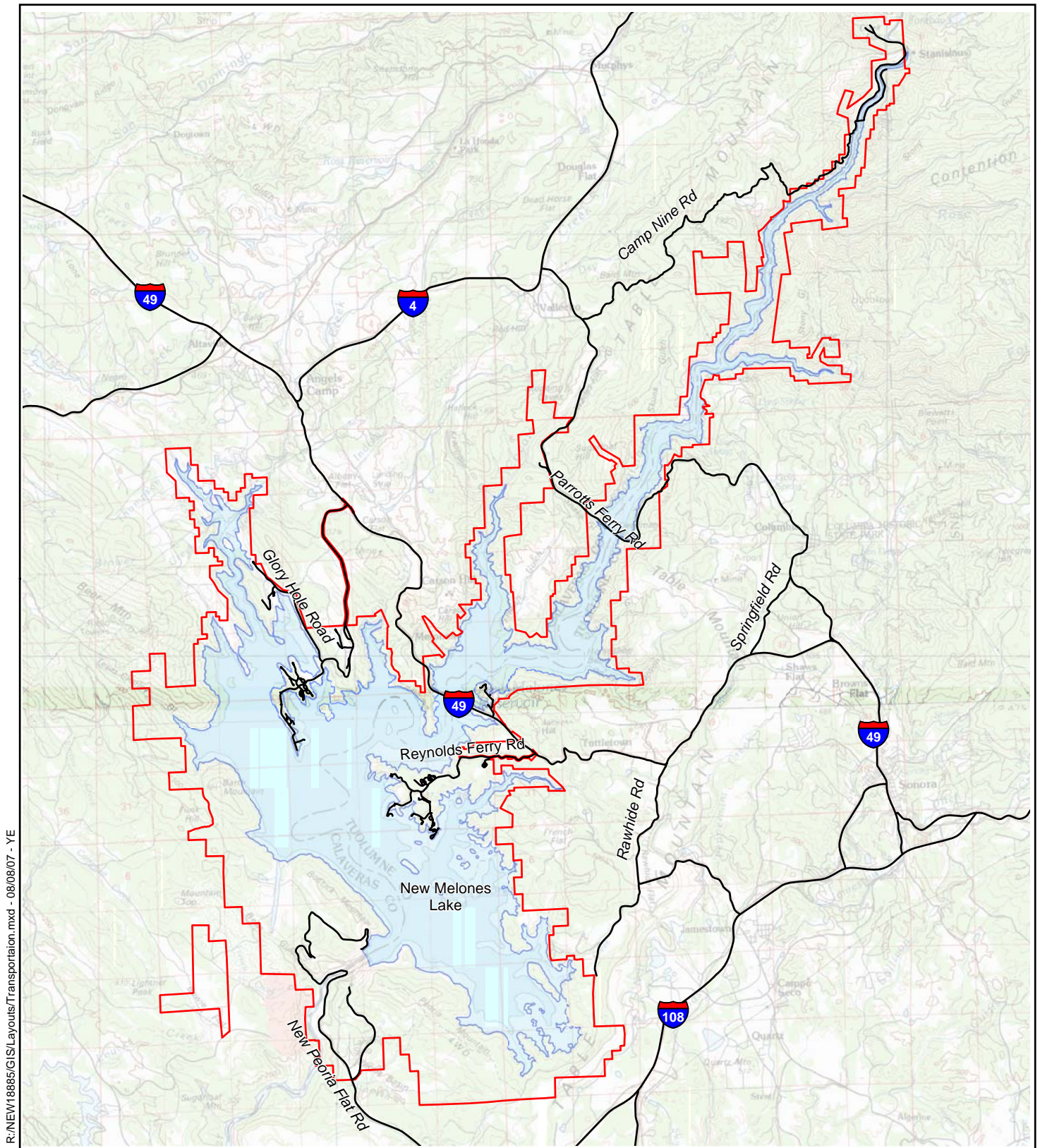
3.2.11 Access and Transportation

Road Access. The road system serving the project area consists of the state highways, county roads, and private roads, as seen in Figure 3-7.

State Route (SR) 49. SR 49 provides access to the recreational areas of the New Melones Lake area from Angels Camp in the north and Sonora in the south. Both commuters and tourists use the highway, as it is the primary access roadway between Tuolumne County and Calaveras County. The highway links communities in the Sierra foothills and acts as “Main Street” for the City of Angels (Angels Camp). SR 49 meets with SR 4 at the north end of Angels Camp. Both state routes are owned and maintained by Caltrans.

Annual Average Daily Traffic (AADT) volume is defined as the total two-way traffic volume on a roadway over the year divided by 365 days. Caltrans traffic counts reflect an estimate of AADT by compensating for seasonal fluctuation, weekly variation, and other variables. Recording AADT is necessary for presenting a comprehensive picture of traffic flow, evaluating traffic trends, computing accident rates, and planning and designing highways. Roads surrounding the New Melones Lake area include SR 49, Highway 108/120, O’Byrnes Ferry Road, Glory Hole Road, Rawhide Road, Tuttletown Road, Springfield Road, Parrotts Ferry Road, Camp Nine Road, New Peoria Flat Road, and Peoria Flat Road. The highest AADT volume in Calaveras County in 2006 was 17,200, observed on SR 49 in Angels Camp on Murphy’s Grade Road. The highest AADT volume in Tuolumne County in 2006 was 25,500 on SR 49 in Sonora at the East Junction of SR 108 (Caltrans 2008). AADT data for 2004, 2005, and 2006 are presented in Table 3-9 for SR 49, Table 3-10 for SR 108, Table 3-11 for SR 108, and Table 3-12 for SR 120.

Whittle Ranch Road turnoff to Glory Hole Recreation Area. Reclamation owns and maintains Whittle Ranch Road, which consists of two lanes and is in good condition. Circulation and roadways within the campground areas are generally well positioned and adequately signed and maintained. Access to the marina from Whittle Ranch Road is well marked, but the road leading down to the marina is somewhat hazardous due to its steep incline and composition of loose gravel material at lower lake levels. Access to the boat ramps is generally good.



Roads and Access

New Melones Lake Area, California
Central California Area Office

Figure 3-7

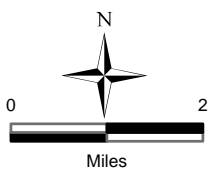


Table 3-9: Calaveras County Annual Average Daily Traffic SR 49

SR 49	2004	2005	2006
<i>Calaveras County</i>			
Angels Camp, south junction Route 4, North	15,600	15,900	16,100
Angels Camp, Murphys Grade Road, south	16,700	17,000	17,200
Angels Camp, north junction Route 4, south	11,900	12,100	12,200
Tuolumne/Calaveras County Line	5,900	6,000	6,100
<i>Tuolumne County</i>			
Tuttletown, north	5,600	5,700	5,800
Rawhide Road, south	5,800	5,900	6,000
Sonora, Washington Street/Shaws Flat Road, north	16,200	16,500	16,700

Source: Caltrans 2008

Table 3-10: Calaveras County Annual Average Daily Traffic SR 4

SR 4	2004	2005	2006
O'Byrnes Ferry Road, west	5,100	5,200	5,200
Angels Camp, east junction, Rt. 49 East	6,800	6,900	7,000
Rolleri Bypass Road, south	6,500	6,600	6,700

Source: Caltrans 2008

Table 3-11: Tuolumne County Annual Average Daily Traffic SR 108

SR 108	2004	2005	2006
East Jct. Rte. 120, Yosemite junction	12,500	13,000	13,200
West Jct. Rte. 49, Montezuma Rd.	12,500	13,000	13,200
East jct. Rte 49, Sonora jct.	18,500	19,500	19,600

Source: Caltrans 2008

Table 3-12: Calaveras County Annual Average Daily Traffic SR 120

SR 120	2004	2005	2006
Keystone, La Grange Road	13,000	15,200	15,200
East jct. Rte. 108, Yosemite jct.	15,000	3,600	3,200
Chinese Camp, north jct. Rte 49, Montezuma Road	17,000	3,600	3,200

Source: Caltrans 2008

Reclamation facilities are accessible from SR 49 at the locations described below.

Reynolds Ferry Road turnoff to Tuttle town Recreation Area. Reclamation owns and maintains Reynolds Ferry Road at about a mile from SR 49 to its terminus. This road is in excellent condition. Boat ramp access is generally good at the Tuttle town Recreation Area.

Minor paved road to Reclamation Headquarters and Mark Twain Unimproved Day Use Recreation Area. The two-lane paved road from SR 49 to the lake access/recreation area is the former SR 49, now called Melones Court, and is owned and maintained by Reclamation. It is in good condition to the park administration office and visitor center gate but deteriorates from the gate to the lake access/unimproved recreation area. In 2008, vehicle access has been limited to within 100 to 200 feet (30 to 60 meters) of the water's edge, and trailered boat launching is no longer permitted due to deteriorated road conditions and user conflicts in this narrow lake access corridor. The park administration office and visitor center are accessed by turning right from Melones Court onto Studhorse Flat Road. The facilities are approximately a quarter mile from the intersection on well-maintained roads.

Minor paved road to Old Town (Melones) Unimproved Day use Recreation Area. The two-lane paved road from SR 49 to the recreation area is gated approximately 0.1 mile (160 meters) from the SR 49 junction. However, there is nonmotorized public access to Old Town (Melones) Unimproved Day Use Recreation Area.

Rawhide Road (Tuolumne County Road E5) turnoff to Shell Road to Table Mountain and PWMA. Rawhide Road is a well-maintained, paved, two-lane county road that is accessible from two points along SR 49. Shell Road, a county road for the first 2.59 miles (4.2 kilometers) from its intersection at Rawhide Road, starts as a well-maintained two-lane then one-lane paved road. At the 1.6 mile (2.5 kilometer) mark, the pavement ends and the road becomes a poorly maintained, two-track dirt road through private property and across a county road easement. It is used for public vehicles, emergency vehicles, and Reclamation staff and contractors to access Reclamation's Table Mountain Trailhead staging area of the PWMA. After the 2.59 mile (4.2 kilometer) point, the road crosses onto Reclamation property, where it is gated to prevent public vehicle access. The road continues through the PWMA as a service road for authorized vehicles only. This road is open to public equestrian use, hiking, biking, and hunting. PWMA is closed to public vehicles, a change called for in the PWMA EA (Reclamation 2007a). Another way to access Bear Creek Management Area, an unimproved recreation area, would be to travel to the PWMA, as described, then to travel north and west of the public parking along Shell Road. No vehicle access into the Bear Creek Management Area is permitted.

Rawhide Road (Tuolumne County Road E5) turnoff to French Flat Road to French Flat Unimproved Day Use Recreation Area. Rawhide Road is a well-maintained, paved, two-lane county road that is accessible from two points along SR 49. French Flat Road, a county road, is a well-maintained two-lane paved road, which at two miles (3.2 kilometers) enters gated BLM land. This half-mile-long, unpaved road crosses BLM

land, and connects with Reclamation property. No public vehicles are permitted on Reclamation property in French Flat.

Rawhide Road (Tuolumne County Road E5) turnoff to Old Melones Road to Bear Creek Unimproved Day Use Recreation Area. Rawhide Road is a well-maintained, paved, two-lane county road that is accessible from two points along SR 49. Old Melones Dam Road, a county road, is a well-maintained, two-lane paved road, which at approximately half a mile, is gated to restrict nonmotorized vehicle access to Bear Creek Recreation Area.

Parrotts Ferry Road. Reclamation facilities are accessible from Parrotts Ferry Road at the locations described below.

The two-lane paved road from Parrotts Ferry Road to the recreation area is gated approximately 0.1 mile (160 meters) from the Parrotts Ferry Road junction. However, motorized vehicles are not allowed into the Old Parrotts Ferry Unimproved Day Use Recreation Area and New Melones Lake.

Camp Nine Unimproved Day Use Recreation Area. Approximately three miles of Camp Nine Road is on land owned by Reclamation, which also owns this portion of the road. However, this portion is maintained via a road maintenance agreement with the Collierville Power Plant, which the Calaveras County Water District owns and the Northern California Power Authority (NCPA) operates under a Federal Energy Regulatory Commission (FERC) licensing agreement. The remainder of Camp Nine Road is privately owned by 22 landowners, with easements to PG&E and NCPA. In exchange for access rights, the power companies are responsible for maintaining the road. Reclamation's access rights across the privately owned portion of Camp Nine Road are based on prescriptive easement. PG&E's Stanislaus Power Plant is across the New Camp Nine Bridge and at the end of the road, along the Tuolumne County side of the river. This road is on Reclamation property until it reaches land owned by PG&E for the power plant. PG&E has easement rights to access the power plant across Reclamation land, and Reclamation has easement rights to access across PG&E land. The road is in fair to poor condition, with numerous potholes, eroded shoulders, and deteriorated guardrails. It has two lanes, which in some places, have deteriorated to one lane. PG&E operates the power plant under a FERC licensing agreement.

Coyote Creek Nature Trail and Natural Bridges. Reclamation owns and maintains the paved two-lane turnoff and dead end public road from Parrotts Ferry Road to the trailhead. The road is in fair condition. Designated parking stalls are not available, and the Natural Bridges area has limited parking.

Peoria Flat Road. Reclamation facilities are accessible from SR 108/ SR120 at the locations described below.

Minor paved road to Peoria Equestrian Staging Area to Peoria Wildlife Area. From SR108/SR120 to get to the Peoria Equestrian Staging Area, one turns west onto county road E15/O'Byrne's Ferry Road for approximately .2 mile (320 meters) and then turns north onto New Peoria Flat Road for approximately three miles (five kilometers), until

the Baseline Conservation Camp entrance. At this point, a public parking lot is available to the right, approximately .2 mile (320 meters) down an access road. The parking lot provides access for nonmotorized vehicles to the PWMA and the radio-controlled flyers facility.

Minor paved road to Dam Overlook. From SR108/SR 120 to get to the Overlook, one turns west onto county road E15/O’Byrne’s Ferry Road for approximately 0.2 mile (320 meters) and then turns north onto New Melones Dam Road/New Peoria Flat Road for approximately three miles. From this point, public motorized vehicle access to the Overlook is restricted, but nonmotorized access to the Overlook is possible by following the paved former Overlook access road on foot.

Lake Only Access. Public access to the Dam and Spillway Management Area, Westside Management Area, and Bowie Flat Management Area is only via New Melones Lake.

Boat and Personal Watercraft Use. Motorized boats are the principal means to access and enjoy many of the recreation opportunities at the New Melones Lake area. Motorboats support such activities as waterskiing, fishing, sightseeing, and powerboating. Houseboating and using personal watercraft are other popular motorized boating activities on New Melones Lake. Boat launch ramps with courtesy docks are located in the Glory Hole and Tuttletown Recreation Areas. Motorboats must be equipped with personal flotation devices, a fire extinguisher, a backfire flame arrestor, muffling and ventilation systems, a sound signaling device, and navigation lights onboard, as required by the US Coast Guard and California Department of Boating and Waterways (California Department of Boating and Waterways 2007). Kayaks, canoes, and sailboats used in public waters are expected to have similar safety equipment.

Projected increases in population will result in increased demand on roads within the project area; use of the New Melones Lake area is expected to increase 20 percent over the planning period. The increase in travel demand on the roadway system will require increased costs for roadway maintenance and rehabilitation. Because the roadways and facilities were not designed to carry large amounts of traffic, roadway improvements will be required to keep up with this growth. Reclamation is working with county planning departments to ensure proposed development projects have legal access across Reclamation land before approving the projects.

3.2.12 Public Health and Safety

Reclamation provides that staff levels be commensurate with recreation visitation. This is to fully implement policies and management actions and to maintain the level and quality of safety and services expected by visitors to the New Melones Lake area. All Reclamation employees take safety training to identify public safety hazards. Reclamation’s employees provide interpretive programs and public contact to educate the public about safety issues relating to boating, firearms use, fire use, and natural hazards, such as poisonous snakes. There is also a visitor center to inform and educate the public about safety matters at the New Melones Lake area. Additionally, campground hosts

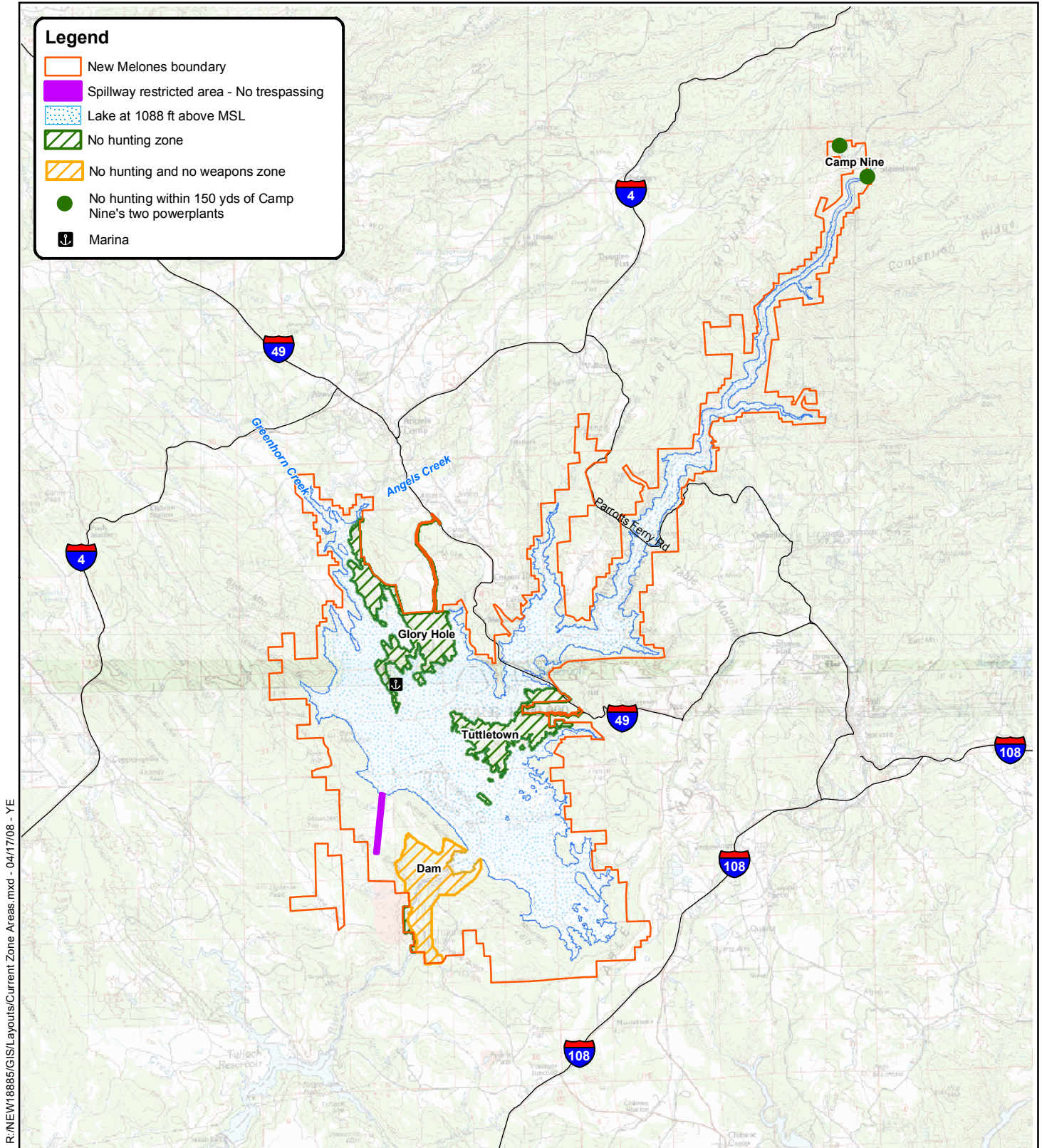
provide information to campers and report public safety issues to Reclamation staff (Laird 2007); campground hosts monitor the campground three times a day.


Use Permits. Permits are issued to regulate the allocation and intensity of use for activities that are in high demand or that have significant safety or environmental concerns (Reclamation 1995). Reclamation regulates the following activities through special use permits, contracts, and other rights of use processes (Laird 2007):

- White-water rafting;
- Fishing derbies;
- Model aircraft use;
- Houseboat launching and retrieving;
- Mountain bike races;
- Triathlons;
- Search and rescue dog trials;
- California Department of Forestry and Fire Protection (CAL FIRE) fire training;
- Large group camping events;
- Group events involving 8 to 12 rented houseboats that are operated together;
- Horseback trail ride events;
- Slalom water ski course events (right-of-use permit);
- Commercial recreation gold panning access to private gold panning area (right-of-use permit); and
- Others.

Concessionaire Agreements. Concessionaire agreements are prepared with private entities that are permitted to operate businesses at the New Melones Lake area. Reclamation uses these agreements to achieve needed recreational support services, programs, public safety features, and facilities and as a means for disseminating public use information (Reclamation 1995). Concessionaire agreements include adequate water quality protection measures, public safety requirements, medical and emergency response requirements, and environmental protection standards. New Melones has one concessionaire agreement at the New Melones Lake Marina, located in the Glory Hole Recreation Area.

Recreation. There are a number of recreation zones for regulating the type of and intensity of use to protect sensitive resources and maintain public safety (Reclamation 1995). The various zones include the following (Figure 3-8):



 No hunting within 150 yds of any developed recreation area, campgrounds, or other facilities, boat ramp parking area, day use area, neighboring residences, or within 150 yds of Camp Nine's two powerplants

Dam zone - No weapons

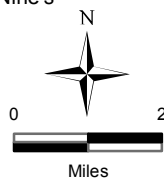


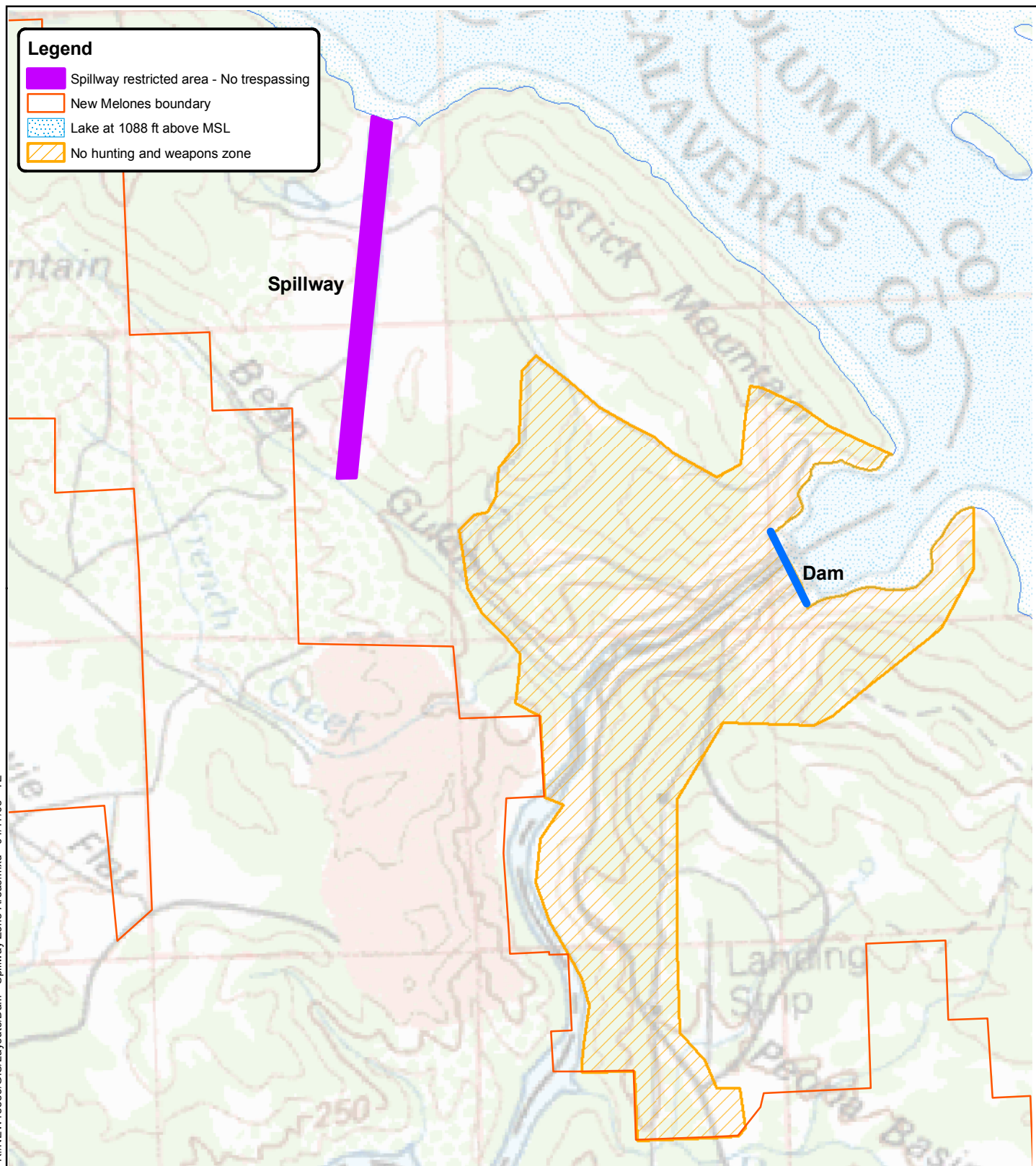
Figure 3-8

- No Hunting Zones—
 - It is unlawful for any person, other than the owner, person in possession of the premises, or a person having the express permission of the owner or person in possession of the premises, to hunt or to discharge while hunting, any firearm or other deadly weapon within 150 yards (135 meters) of any occupied dwelling house, residence, or other building or any barn or other outbuilding used in connection therewith. The 150-yard (135-meter) area is a “safety zone”;
 - It is unlawful for any person to intentionally discharge any firearm or release any arrow or crossbow bolt over or across any public road or way open to the public, in an unsafe manner (Fish and Game Code 3004);
- No hunting is permitted within 150 yards (135 meters) of other recreational uses;
- No hunting or weapons allowed within the restricted dam-spillway zone (Figure 3-9);
- No hunting is permitted within the boundaries of the Tuttletown and Glory Hole Recreation Areas;
- No fishing is permitted below the dam to the buoy line;
- No Swimming Zones—No swimming is allowed at marina and launch ramps;
- Reservoir Management Zone A—All boating uses are allowed;
- Reservoir Management Zone B—Five mph “no wake zone” provides for slow boating and fishing areas. This protects the health and safety of others in the marinas, docks, and boat launch areas and helps minimize shoreline erosion; and
- Reservoir Management Zone C— No boating is allowed in designated swimming areas and in areas off limits for operations, such as the dam and spillway areas.

Boaters must have the required safety equipment on their boats, such as lifejackets, a ski flag, and a fire extinguisher, as required by the US Coast Guard and California Department of Boating and Waterways. (Reclamation 2007b). Specific boating equipment requirements are outlined in the “ABCs of the California Boating Law” (California Department of Boating and Waterways 2007). Reclamation seeks to comply with boating laws and regulations, such as the California Boating Law of 2006 and the Harbors and Navigation Code.

Caves. Caves in the New Melones Lake area are concentrated along the Stanislaus River near the South Fork confluence, in Coyote Creek, Grapevine Gulch, and Skunk Gulch, and in all areas of soluble limestone terrain (Reclamation 1995). The caves are important components of the natural and cultural systems, with an impressive range of resource values. Reclamation provides limited entry to caves in the Stanislaus River canyon due to safety hazards, such as flooding.

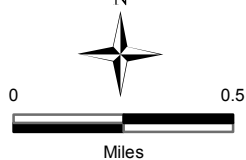
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Current New Melones Restricted Land Use - Dam - Spillway Zone

New Melones Lake Area, California
Central California Area Office

Figure 3-9



According to the New Melones Lake Revised Cave Management Plan, caves can present a hazard to the untrained public (Reclamation 1996), such as falling or getting lost. Because many of the caves are on steep rock faces, access to them may be hazardous. Depending on a variety of factors, caves in the New Melones Lake area may be gated, ungated, or partially or wholly submerged by water due to the reservoir.

Abandoned Mines. Reclamation closes unsafe or potentially hazardous areas in a manner compatible with ecological concerns (Reclamation 1995). These areas include caves, old mine shafts, exposed steep areas, and high fire hazard areas.

The exact number and location of abandoned mines is not centrally cataloged (Laird 2007). The USACE filled in some mines at the beginning of the New Melones project. In an effort to avoid attracting visitors to potentially hazardous abandoned mines, these features are not signed or identified on public materials.

Illegal Drugs. Illegal drug use, sales, and manufacturing present potential public health and safety hazards at the New Melones Lake area. Drugs, such as methamphetamine, are manufactured and marijuana is grown in isolated areas on Reclamation lands (Laird 2007). As a result, illegal drug manufacturing material and hazardous waste is abandoned on New Melones lands, drug manufacturing areas are contaminated, and waste products may be dumped on the roadways. The presence of people involved in production, use, or sale of illegal drugs may present a hazard to other lake users who happen upon such activities.

Illegal Dumping. Municipal solid waste is more commonly known as trash or garbage and consists of everyday items requiring disposal. Municipal solid waste can include leftover household products that contain corrosive, toxic, ignitable, or reactive ingredients. This type of waste is known as household hazardous waste. Such products as paints, cleaners, oils, batteries, and pesticides that contain potentially hazardous ingredients require special care during disposal.

Illegal dumping of municipal solid waste is a problem at New Melones. This is especially true on Reclamation land in Tuolumne County (Laird 2007), where the public must pay to dispose of household hazardous waste, providing them with an incentive to dump household waste illegally. In Calaveras County, disposal of household hazardous waste is covered by landowners' taxes.

Public Services

Park Ranger services. Reclamation has a staff of 15 permanent and seasonal Park Rangers. Park Rangers' titles include Chief Park Ranger/Concession Specialist, Park Ranger, Park Ranger for Natural Resources, and Park Ranger Visitor Center Specialist. Examples of Park Ranger duties include traffic and crowd control, concession oversight, campground maintenance, special use permit issuance, natural resources maintenance and planning, volunteer management, education and outreach, interpretation, fee collection, and patrol. Reclamation Park Rangers are not authorized to perform law enforcement duties (see next section).

Reclamation Park Rangers perform safety inspections and encourage lake visitors to comply with state and federal safety laws and regulations. Reclamation Park Rangers also patrol recreational facilities, monitor compliance with permits and concessionaire agreements, and check on the condition of natural and cultural resources (Reclamation 1995).

Law enforcement services. Management of resources on Reclamation land emphasizes interagency coordination with federal, state, and local agencies, including the USFS, BLM, Tuolumne County, Calaveras County, USFWS, CAL FIRE, US Marshall's office, CDFG, and the City of Angels Camp.

Federal, state, and local laws are enforced by the Sheriffs Department's of Tuolumne and Calaveras Counties in their respective areas of jurisdiction (Reclamation 1995). Reclamation contracts with Tuolumne and Calaveras County Sheriffs to provide enhanced law enforcement services. The Calaveras County contract provides a 40-hour per week, year-round deputy. The Tuolumne County contract provides additional law enforcement services on weekends through the summer recreation season. When needed, Reclamation Park Rangers contact the Sheriffs Departments by radios that are carried in all ranger vehicles and kept at Reclamation headquarters. The California Highway Patrol is responsible for enforcing the vehicle code. In general, the level of the sheriff patrols and presence at the New Melones Lake area is limited, particularly given the size of New Melones Lake and its surrounding lands. Outside of the sheriff contracts, these agencies respond to the law enforcement needs at New Melones Lake on a case-by-case basis as their resources permit, with each case considered according to the nature of the particular violation and available resources. There have been incidents when county law enforcement officials have been unable to respond to Reclamation's law enforcement needs. Requests for law enforcement services are increasing because the number of visitors to New Melones is increasing (Laird 2007).

Tuolumne and Calaveras County Sheriff boat patrols share responsibility for enforcing boating laws at New Melones Lake and at Tulloch Reservoir, which is also on the Stanislaus River, just south of New Melones Lake (Reclamation 1995). Because both counties have many lakes they are responsible to patrol, staffing levels are inadequate to provide effective patrols on New Melones Lake (Laird 2007).

Reclamation has three boats available for use on New Melones Lake most of the year and provides regular boating safety patrols on the lake during the summer (Reclamation 1995; Laird 2007). One of the boats is designated for patrolling the lake. The focus of this patrol is to advise boaters of unsafe acts, to inspect boating safety equipment, and to provide boaters with current safe boating regulations and safety information. In addition, Reclamation patrol boats are used to assist disabled boaters and to mark boating waterways and hazards (Appendix F). Due to a lack of enforcement power and staffing limitations, boat patrols by Reclamation are inadequate at New Melones Lake to manage safety issues, such as speeding and reckless operations.

The New Melones Lake area is within the CDFG Sierra District and Tuolumne County Region (Reclamation 1995). The CDFG issues fishing and hunting permits and is

empowered to enforce the State Fish and Game Code, including issuing violations and revoking sport fishing and hunting privileges at the New Melones Lake area. The CDFG also regulates catch from fishing tournaments and issues dredging permits as needed.

The PWMA access road crosses approximately 1.8 miles (3 kilometers) of the PWMA (Reclamation 2007a). This section of road was temporarily closed to public vehicles on December 15, 2002, as a preventative measure to stop increasing damage to natural resources from illegal and inappropriate uses by both local and visiting recreationists. Illegal actions, including target shooting, poaching, off-road driving, fire building, littering, dumping large debris and hazardous materials, vandalizing, and illegal camping, have resulted in soil erosion, habitat degradation, and widespread damage to the natural resources. Illegal activities also have compromised the safety of the public and adjacent landowners in the area. Closing the road to public vehicles has minimized further degradation of this area.

The animal control units of the respective counties are called approximately ten times a year, usually for a vicious dog, distressed animal, or livestock trespass (Laird 2007). However, the animal control units typically respond to only two of the ten calls.

Fire Protection Services. Reclamation evaluates and maps fire hazards throughout its lands, with a focus on current and proposed recreational facilities and adjacent residences and structures (Reclamation 1995). Hazard analysis is based on fire behavior, fuel load, slope, probable location and rate of ignition, potential loss of life and valuable property, and access restrictions.

CAL FIRE is the primary agency responsible for wildland fire suppression at New Melones Lake (Reclamation 1995). The agency maintains a fire unit facility on Reclamation lands on Peoria Flat Road within the PWMA. Inmates from the minimum security facility Baseline Conservation Camp provide fire protection in exchange for housing its facility on Reclamation land. The Altaville Melones Fire District provides fire protection within the Glory Hole Recreation Area. The Altaville Melones Fire District provides fire protection for the New Melones Lake Marina through an MOU between Reclamation, the marina, and Altaville Melones Fire District. Columbia Fire District provides fire protection within the Tuttletown Recreation Area.

Reclamation provides some initial fire response on its lands at New Melones Lake (Reclamation 1995). The primary firefighting equipment that Reclamation has access to consists of the following (Laird 2007):

- Hydrants in campgrounds and day use areas;
- Hydrant system around administration buildings;
- Visitor center and maintenance building with burglar alarms but no fire hydrant systems;
- A shaded fuel break on the visitors center side of SR 49;

- Marina with fire alarms in the store and covered area of docks, water storage tanks, and a Trimex 30 Fire Foam System;
- Marina with hand-held fire extinguishers on open docks;
- Marina fireboat;
- Fire hydrant system on land around the marina;
- Helitack base at Columbia airport;
- Two Park Ranger vehicles with slide in firefighting units; and
- Park Rangers carrying hand tools and five-gallon water backpacks to put out campfires in case of emergency.

Reclamation's responsibility for fire suppression ends when a CAL FIRE fire unit or any fire unit having a mutual aid agreement with CAL FIRE arrives at the fire. Requests for fire protection services remain constant (Laird 2007).

Reclamation takes a proactive approach to preventing fires by clearing vegetation along roads and clearing overgrown vegetation from campgrounds and other areas that people are likely to use (Reclamation 1995). A shaded fuel break is on the visitor center side of SR 49; another fuel break will be installed on the other side of SR 49 (Holsapple 2007). In addition, Reclamation participates in the Highway 108 Fire Safety Council, which prepares cooperative fire management strategies with other local fire control entities.

Vegetation is cleared by mechanical means (bulldozers, tractors), chemical application (herbicides), and by hand with the assistance of the California Department of Corrections (Sierra Conservation Corps inmate labor). Caltrans also carries out similar vegetation removal activities along SR 49.

Medical Services. Reclamation Park Rangers on permanent status are required to have first responder certification (Reclamation 1995). Temporary employees receive basic first aid and CPR training. Reclamation Park Rangers respond to most medical emergencies and provide emergency medical assistance commensurate with their training until an ambulance or the fire department arrives. In an emergency, Park Rangers call 911, which dispatches the fire department for assistance. The responding fire department is decided by the coordinated 911 system (Laird 2007). Requests for medical services are increasing because the number of visitors to New Melones is increasing (Laird 2007).

Reclamation's New Melones Park Ranger staff do not have the appropriate emergency medical response training necessary to carry out cave or cliff-face (rock climbing) rescues, nor do they have the authority to obtain this type of training (Reclamation 1995). Reclamation is responsible for managing the activities on lands under its jurisdiction and is thereby liable for the potential consequences of activities that occur on Reclamation lands.