

# 1 5. Affected Environment

## 2 5.1 Introduction

3 This chapter is a description of the biological, physical, and socioeconomic  
4 characteristics, including human uses that could be affected by implementing the action  
5 alternatives for this RMP/EIS (see Chapter 3). Where possible, the information and  
6 direction for Reclamation resources has been further broken down into fine-scale  
7 assessments and information. Specific aspects of each resource discussed in this section  
8 were raised during the public and agency scoping process. The level of information  
9 presented in this chapter is commensurate with and sufficient to assess potential effects  
10 of the action alternatives in Chapter 6.

## 11 5.2 Resources

12 This section contains a description of the biological and physical resources of the New  
13 Melones Lake Area and generally follows the order of topics addressed in Chapter 3, as  
14 follows:

- |    |                              |    |                             |
|----|------------------------------|----|-----------------------------|
| 15 | • Air quality;               | 30 | • Fire management;          |
| 16 | • Noise;                     | 31 | • Cultural resources;       |
| 17 | • Climate;                   | 32 | • Indian Trust Assets;      |
| 18 | • Geology;                   | 33 | • Socioeconomic and         |
| 19 | • Topography;                | 34 | environmental justice;      |
| 20 | • Hydrology/water quality;   | 35 | • General recreation;       |
| 21 | • Visual Resources;          | 36 | • Facilities, land use, and |
| 22 | • Vegetation;                | 37 | management areas;           |
| 23 | • Fish and wildlife;         | 38 | • Aquatic recreation;       |
| 24 | • Special status species;    | 39 | • Land-based recreation;    |
| 25 | • General land management;   | 40 | • Interpretive services and |
| 26 | • Access and transportation; | 41 | visitor information; and    |
| 27 | • Public health and safety;  | 42 | • Utilities.                |
| 28 | • Invasive species control;  |    |                             |
| 29 |                              |    |                             |

1 **5.2.1 Air Quality**

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

7 Air quality management programs in California are the responsibility of local air  
8 pollution control districts (APCDs), the California Air Resources Board (CARB), and the  
9 US EPA. The local air pollution control districts for the New Melones Lake Area are the  
10 Calaveras County APCD and the Tuolumne County APCD.

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

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

22 Both the EPA and CARB have adopted ambient air quality standards for various  
23 pollutants. Federal ambient air quality standards have been adopted for ozone, suspended  
24 particulate matter, carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. State  
25 ambient air quality standards have been adopted for these same pollutants, plus sulfates,  
26 hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Federal and state  
27 ambient air quality standards for suspended particulate matter have been established for  
28 two different size ranges of suspended particles: inhalable particles (designated as  
29 particulate matter less than 10 microns in equivalent aerodynamic diameter [PM<sub>10</sub>]), and  
30 fine particles (designated as particulate matter less than 2.5 microns in equivalent  
31 aerodynamic diameter [PM<sub>2.5</sub>]).

32 Ambient air quality in Tuolumne County is monitored in Sonora, specifically ozone,  
33 PM<sub>10</sub>, PM<sub>2.5</sub>, and carbon monoxide; ambient air quality in Calaveras County is monitored  
34 in San Andreas, specifically ozone and carbon monoxide. There is no PM<sub>10</sub> or PM<sub>2.5</sub>  
35 monitoring in Calaveras County.

36 High ozone levels in Calaveras and Tuolumne Counties are due almost entirely to  
37 pollutant transport from the Central Valley and the San Francisco Bay Area (CARB  
38 2001a). Air quality management programs for Calaveras and Tuolumne Counties rely

1 primarily on emission control programs in upwind source areas to provide for eventual  
2 attainment of state and federal ozone air quality standards.

3 Ozone monitoring data from Sonora and San Andreas show that the state and federal  
4 ozone standards typically are exceeded several times each year, with considerable year-  
5 to-year variation (CARB 2007a). Ozone monitoring data from Sonora and San Andreas  
6 show no clear trend in either the frequency of violations or the maximum measured  
7 ozone levels. PM<sub>10</sub> monitoring data from San Andreas in Calaveras County do not show  
8 any clear trends in annual average PM<sub>10</sub> levels (CARB 2007a).

9 Most hazardous air pollutant regulations relate to specific industrial sources and  
10 operations, but California has identified naturally occurring asbestos as a toxic air  
11 contaminant. Naturally occurring asbestos is found in serpentine rock and in some types  
12 of ultramafic rocks (those most often found in fault zones). CARB has adopted  
13 regulations for limiting the amount of naturally occurring asbestos in aggregate material  
14 used for surfaces, including those for roads, road shoulders, parking areas, trails, and  
15 playgrounds (CARB 2000). CARB also has adopted separate regulations for  
16 construction, grading, quarrying, and surface mining that disturb areas of serpentine,  
17 ultramafic rocks, or other areas found to have naturally occurring asbestos (CARB  
18 2001b). The local APCDs enforce these regulations.

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

## 26 **5.2.2 Noise**

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

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

1 The highest overall noise levels are expected to be in the vicinity of campgrounds, the  
 2 marina, boat launching facilities, and occupied day use areas. In general, noise conditions  
 3 in the New Melones Lake Area would not interfere with recreational activities and  
 4 experiences. However, in a 1993 survey during the Independence Day holiday, some  
 5 visitors complained about excessive nighttime noise in campgrounds and high noise  
 6 levels from boats. Boats and personal watercraft with underwater engine exhaust and at  
 7 full throttle generally produce noise levels of 75 to 85 dBA at a distance of 50 feet (15  
 8 meters) (Lanpheer 2000).

9 **5.2.3 Climate**

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

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

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

**Table 5-1: 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

31 Source: WRCC 2006

1 More annual precipitation is expected in some of the higher watersheds that ultimately  
2 contribute to New Melones Lake. Most precipitation in the immediate vicinity of the lake  
3 falls as rain, with a very small amount falling as snow, and occurs primarily between  
4 November and April (WRCC 2006). Although the dry season at New Melones is long,  
5 hot, and dry, lake levels are maintained during this time by melting snowpack. Other  
6 climatic variables, such as global warming, drought, or long-term regional changes in  
7 precipitation, may affect resources over the next 15 to 20 years.

## 8 **5.2.4 Geology**

### 9 ***Overall Geology***

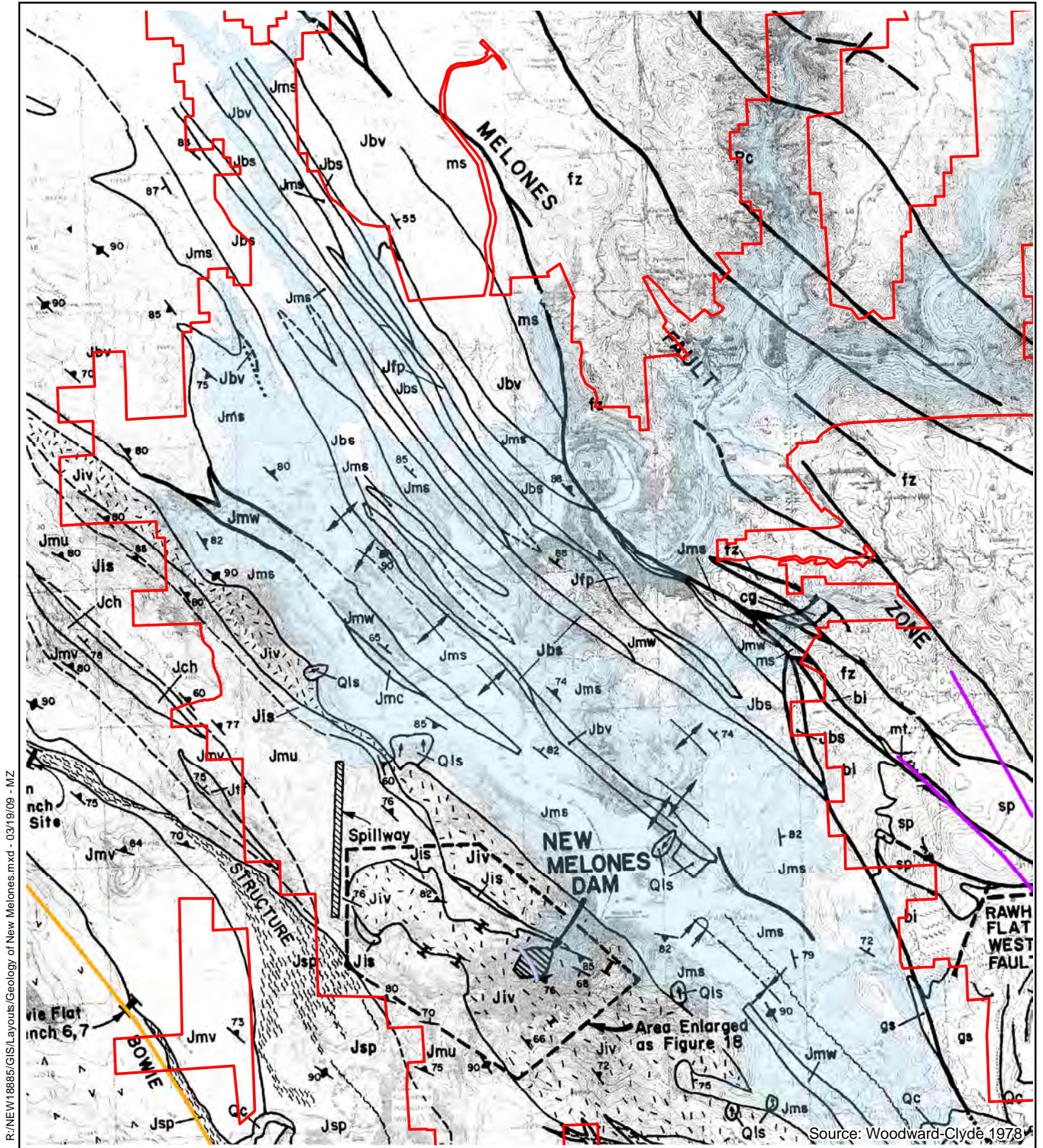
10 This section has been organized into the following subsections:

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

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

25 One of the noteworthy features of the study area that is apparent in Figure 5-1 is a  
26 general tendency of the mapped units and of lines representing structural features to have  
27 a northwest trend. In fact, it is clear that the main body of New Melones Lake is similarly  
28 oriented. This northwest trend is produced by the Foothills Metamorphic Belt (FMB),  
29 which extends about 150 miles (240 kilometers) from the Modoc Plateau in the north to  
30 about the latitude of Merced in the south. In the study area, the FMB is bounded on the  
31 east by the Calaveras Formation (also referred to as the Calaveras Complex) and on the  
32 west by sedimentary rocks of the Great Valley sequence. The two most prominent  
33 structural features within the FMB are the Melones Fault Zone and the Bear Mountain  
34 Fault Zone.

35 The Sierra Nevada is the result of relatively recent uplift of the range by faulting. The  
36 block containing the Sierra Nevada batholith was pushed up to the east and tilted down to  
37 the west. As this happened, the rocks into which the batholith had intruded eroded away,



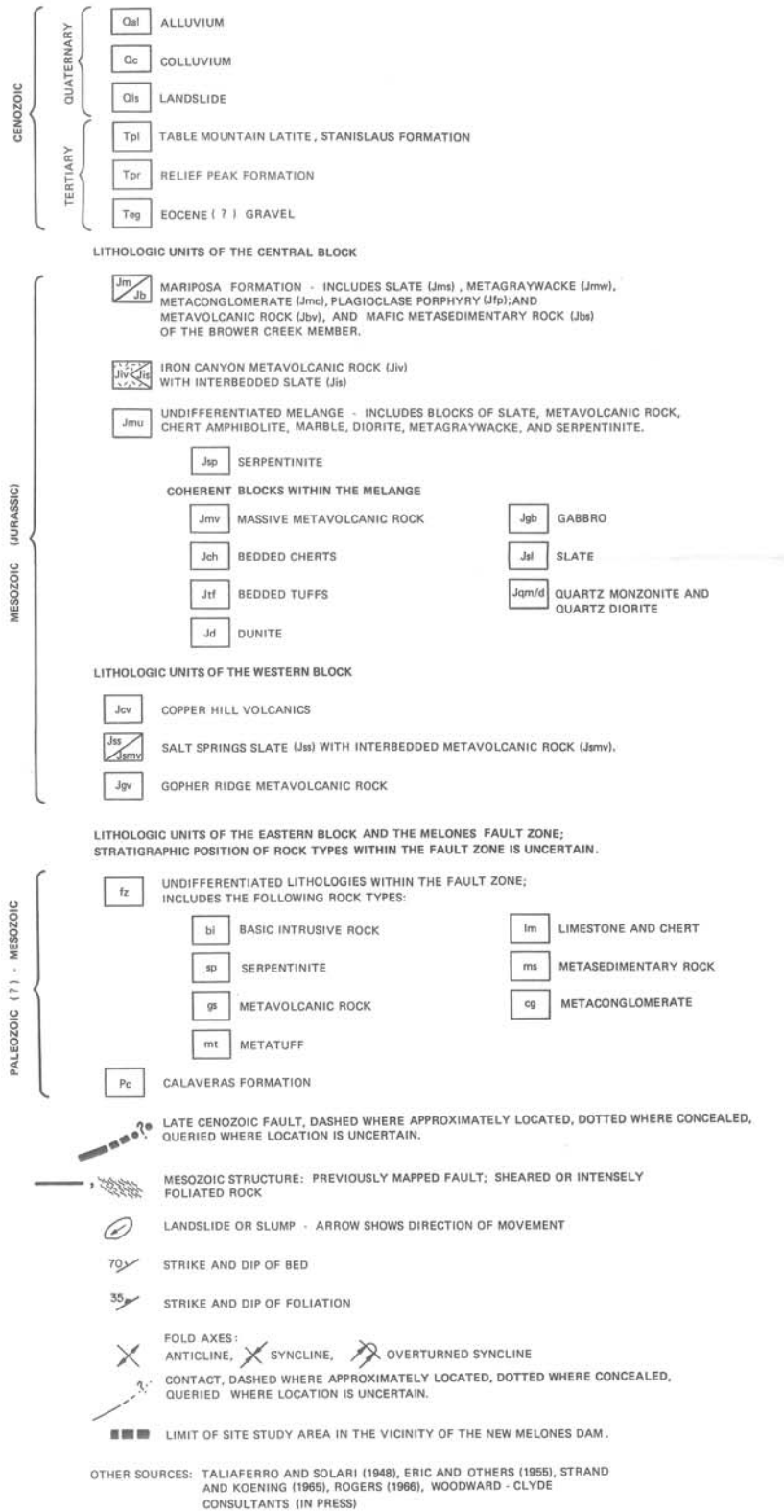
# Geology of New Melones

- Legend**
- Project Boundary
  - New Melones Lake
  - Late Quaternary Fault Segments** (Jennings 1994)
  - Bear Mountain
  - Melones

New Melones Lake Area, California  
 Central California Area Office

**Figure 5-1**

EXPLANATION



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Figure 5-1 Legend

New Melones Lake Area, California  
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1 exposing its younger and more resistant granitic rocks. However, small remnants of the  
2 original continental rocks were preserved, including bodies of limestone that belong to  
3 the Calaveras Formation.

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

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

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

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

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

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



1 The Carson Hill (Melones) Mine is the largest recently active lode mining operation  
2 adjacent to New Melones Lake Area. It is between State Route (SR) 49 Stevenot  
3 Stanislaus River Bridge and Coyote Creek, just outside the study area boundary. The  
4 Jamestown Mine is on the southeast side of Table Mountain, outside the study area.

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

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

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

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

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

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

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

36 As part of an effort to classify the ecological regions of the United States into  
37 successively smaller units, the US Forest Service (USFS) has produced a map of the  
38 ecological subregions of California. Among other elements, the map identifies the broad  
39 categories of soils within the subregions (USFS 1997). The study area is in the Lower

1 Sierra Nevada Foothills Metamorphic Belt Ecological Subregion, where the soils are well  
2 drained. Bicarbonate weathering and leaching and clay accumulating in subsoils are the  
3 main processes driving soil formation. Soil temperature regimes are mostly thermic, and  
4 soil moisture regimes are xeric (requiring little moisture).

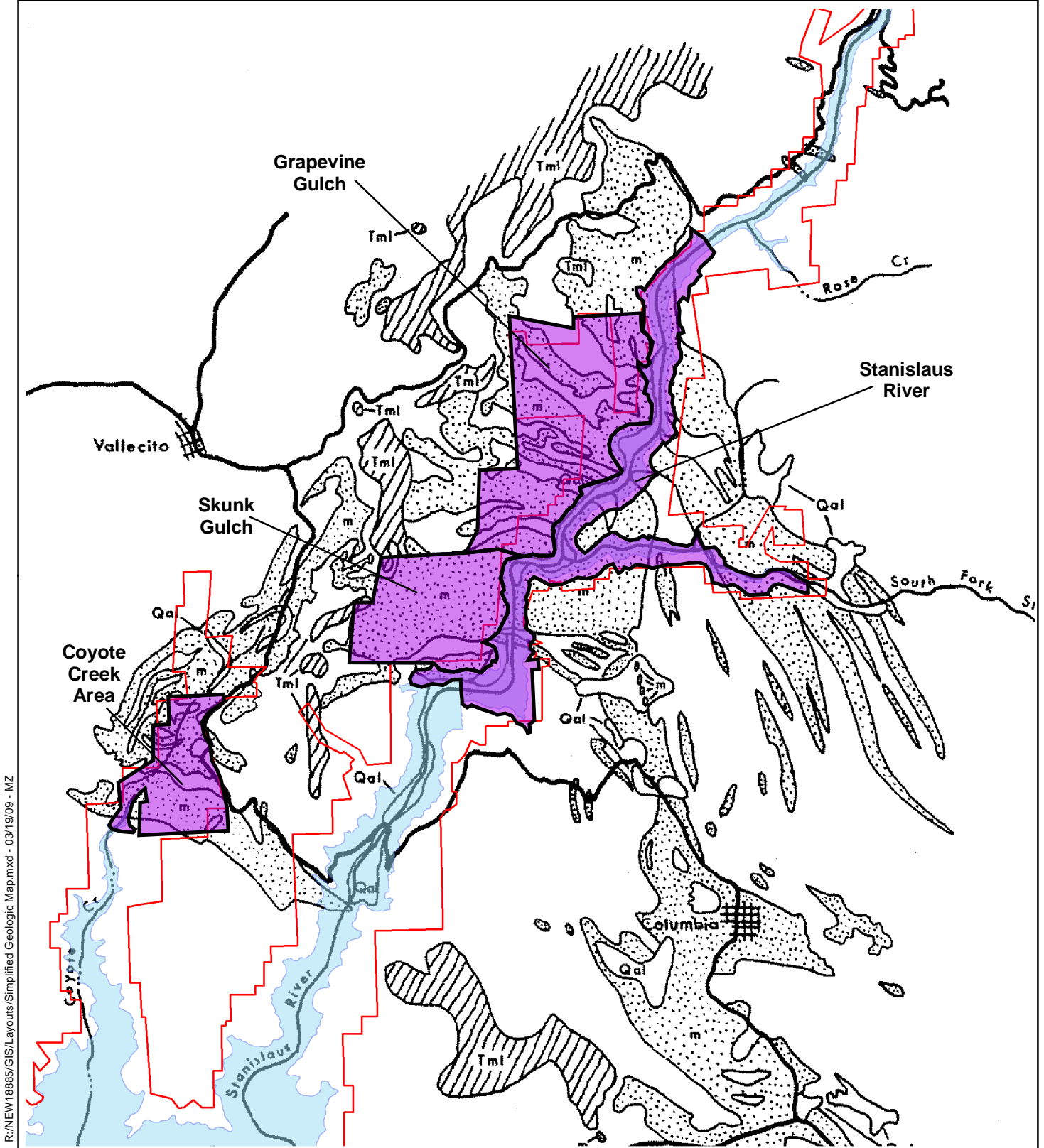
5 Serpentine soils are derived from serpentine, a type of rock with high magnesium to  
6 calcium ratios that was pushed up onto the continent during the subduction of the oceanic  
7 crust from the west. Serpentine rock weathers to soils which are often chemically  
8 different than the surrounding soils, with high amounts of magnesium, nickel, cobalt,  
9 chromium, and iron, while being poor in other plant nutrients (e.g., nitrogen,  
10 phosphorus). Therefore, the plants found on serpentine soils vary from those found on the  
11 surrounding soils. While serpentine soils occupy only 1 percent of the land area in  
12 California, 10 percent of native plant species are adapted to these soils. In California,  
13 these soils largely occur in the foothills of the Sierra Nevada and the Coast Ranges from  
14 San Luis Obispo County north to the Oregon border. These soils can also include  
15 naturally occurring asbestos derived from the serpentine source rock. The asbestos can be  
16 a hazard to public health and is considered in fire management plans.

17 Soils are most vulnerable where they have been denuded. In the New Melones Lake  
18 Area, this is most apparent where there has been a very hot wildfire or a landslide or  
19 below the top of the “bathtub ring” that is found beneath the high water mark of New  
20 Melones Lake. Soils in the bathtub ring are vulnerable to runoff from precipitation and  
21 also erode readily as a result of boat wakes or where vehicles have been driven across  
22 them.

23 Soil management measures are most apparent in the Shell Road and Peoria Wildlife  
24 Management Areas. Reclamation attempts to control illegal grazing and inappropriate  
25 vehicle use by fencing sensitive areas, installing educational or warning signs, closing  
26 access roads, maintaining roads and trails, and creating stormwater pollution prevention  
27 plans for areas where construction or other use may occur. Reclamation also limits the  
28 construction season to minimize soil disturbance, initiates park ranger patrols, and creates  
29 no-wake zones to minimize shoreline erosion.

30 **Caves.** This section addresses cave conditions in the Calaveras Terrain bordering the  
31 Stanislaus River, the South Fork Stanislaus River, and the headwaters of Coyote Creek.  
32 The cave area is north of the Melones Fault Zone, and most of it is north of the Parrotts  
33 Ferry Bridge (Figure 5-2). Limestone deposits within the Calaveras Formation consist of  
34 isolated blocks of recrystallized limestone and dolomite, which have been identified in  
35 some reports as marble. About 11,000 acres (4,450 hectares), or roughly half of the  
36 known marble and limestone within the Calaveras Formation, is found in the vicinity of  
37 the New Melones Lake Area, although most of these deposits are outside the  
38 management area.

39 The limestone and dolomite within the Calaveras Formation, known as the Calaveras  
40 Karst, is one of the most important karst areas in the state. Over 100 caves have been  
41 identified in the limestone of the Calaveras Formation. Before New Melones Lake was  
42 filled, the New Melones Reservoir Project (BLM 1978) studied cave resources, dividing



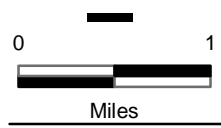
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### Simplified Geologic Map of Columbia Area

**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  
 Central California Area Office



**Figure 5-2**

1 the study area into four subareas: the Stanislaus River Canyon, Coyote Creek, Skunk  
2 Gulch, and Grapevine Gulch. These areas overlap the New Melones Lake Area, as shown  
3 in Figure 5-2.

4 The 1978 study identified 87 caves in the inventory area. Thirty of the forty-four caves  
5 identified in the Stanislaus River Canyon are below the current spillway elevation of  
6 1,088 feet (330 meters) above mean sea level and therefore are now inundated or subject  
7 to inundation by the lake. Nineteen caves were identified in the Coyote Creek Canyon.  
8 All but one of these (Lower Natural Bridges Cave) are above the current spillway  
9 elevation. Upper and Lower Natural Bridges caves are popular destinations for day hikers  
10 and have been since the Gold Rush. Coyote Creek flows through both caves. An early  
11 description of the Natural Bridges is included in a traveler's guide written by James  
12 Hutchings (Hutchings 1862). Moaning Caves, a large commercial cave, is in the Coyote  
13 Creek watershed upstream of the study area. Fifteen caves were identified in the Skunk  
14 Gulch Recreation Area (now part of the Parrotts Ferry Management Area), none of which  
15 are below the spillway elevation. Northeast of Skunk Gulch, the Grapevine Gulch  
16 Recreation Area (now part of the Stanislaus River Canyon Management Area) contains  
17 nine known caves, all above spillway elevation.

18 Table 5-2 gives a summary of the study areas and the numbers of caves in each.  
19 Appendix F lists the caves identified in the 1978 study and summarizes information on  
20 each cave. The specific locations of the caves are not provided in the report in order to  
21 protect fragile resources. The study ranked each cave based on priority for implementing  
22 mitigation recommendations for various resource values. The ranking criteria included  
23 geological, paleontological, archaeological, biological, aesthetic, and recreational  
24 significance. Also included was a taphonomic rating, which is concerned with the  
25 processes that affect animal and plant remains as they become fossilized. Caves 9, 16, 25,  
26 43, 51, and 54 received the highest geological resource rankings. Of these, caves 25 and  
27 54 are below the 1,088-foot (330-meter) elevation.

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

1

**Table 5-2: Summary of Pertinent Cave Study Area Information**

<b>Study Area</b>	<b>Elevation Range of Caves in Study Area (feet above sea level)</b>	<b>Number of Caves</b>	<b>Caves above High Water (1,088 feet)</b>	<b>Significant Caves*</b>
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

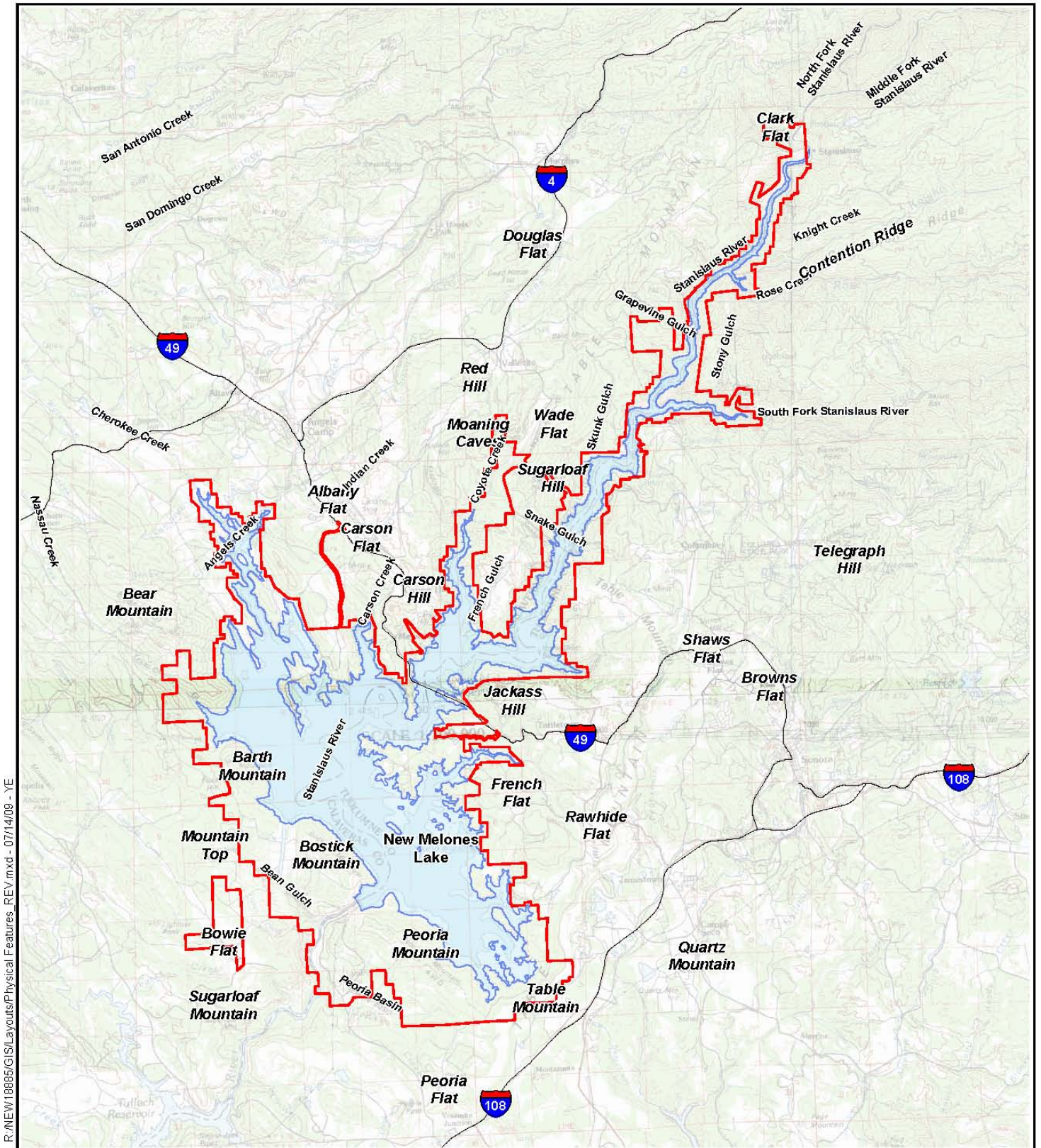
2 Notes: \*Caves that have been nominated as "significant" and therefore eligible for protection under the  
3 Federal Cave Resources Protection Act of 1988.  
4 Source: BLM 1978

### 5 **5.2.5 Topography**

6 Topographical features of the New Melones Lake Area include steep, rolling hills,  
7 incised river canyons, and distinct cliff and plateau features formed by unique geological  
8 processes. This variety of features contributes to a dramatic visual setting and provides  
9 for many recreational opportunities and habitat types. The lake itself is situated primarily  
10 along the historic canyon of the Stanislaus River, which was first flooded on completion  
11 and closure of Melones Dam and later by the much larger New Melones Dam. The  
12 orientation of the main stem of the Stanislaus River follows a general heading from  
13 northeast to southwest, with the canyons of several tributaries joining at different angles.  
14 The main body of the lake, stretching between Table Mountain in the south and Angels  
15 Arm in the north, follows a northwest-to-southeast bearing. The various ridges appear as  
16 islands as the lake is drawn down over the dry season or during a period of below-  
17 average precipitation.

18 Figure 5-3 shows the physical details of the planning area as well as the major  
19 topographical features. The main stem of the Stanislaus River between the Clark Flat and  
20 Mark Twain planning units is dominated by very steep canyon walls that make much of  
21 the lakeshore inaccessible except by boat. The original streambed of the Stanislaus River  
22 is evident upstream of Clark Flat, which is above the flooded zone. The northeast side of  
23 the main body of the lake, which includes the Tutletown, Carson, and Glory Hole  
24 planning units as well as lake headquarters, has more gently rolling and accessible  
25 terrain. The south end of the main body of the lake is dominated by Table Mountain,  
26 which is within the Table Mountain planning unit and exhibits dramatic topographical  
27 relief provided by fluted cliffs and a flat top. Sheer cliff faces of up to 300 vertical feet  
28 (90 meters) are found on the north side of Table Mountain, which is composed of more  
29 erosion-resistant bedrock than the surrounding area and thus was exposed as fluvial  
30 processes eroded softer materials around it. The mesa top slopes gently downward to the  
31 west and ranges between 1,500 and 1,800 feet (450 to 550 meters). Both the cliffs and the  
32 flat top provide unique opportunities for recreation, as the cliffs offer climbing and bird-  
33 watching opportunities and the mesa top offers scenic views.

34 The topography of the top of Table Mountain, being flat and exposed to few eroding  
35 features, such as rockfalls or streams, creates conditions conducive to vernal pools. Such  
36 pools form where rainwater is trapped in impervious depressions and dissipates solely by



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## Physical Features

New Melones Lake Area, California  
Central California Area Office

Figure 5-3

1 evaporation, allowing concentric rings of vegetation to become established. Plant and  
2 animal species that colonize vernal pools are often rare and endemic only to vernal pools.

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

## 18 **5.2.6 Hydrology/Water Quality**

### 19 ***Overall Hydrology***

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

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

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

37 The maximum storage volume of the lake is 2,420,000 acre-feet (2.9 million megaliters),  
38 and the maximum surface area is 12,500 acres (5,000 hectares). The lake has a shoreline  
39 of approximately 100 miles (160 kilometers) when filled to capacity. Between 2000 and  
40 2006, storage in New Melones Lake ranged from approximately 1.1 to 2.1 million acre-

1 feet (1.3 to 2.6 million megaliters), with the highest levels typically in early summer and  
 2 the lowest levels at the beginning of the water year in October. According to  
 3 Reclamation’s rating curve for the lake, this translates into a maximum water level  
 4 elevation of 1,061 feet (320 meters) above mean sea level. Water levels vary as a result  
 5 of drought, varying amounts of precipitation, and discharge requirements for flood  
 6 control, power generation, irrigation, municipal requirements, and maintenance of  
 7 aquatic habitat. Surface levels may also vary as a result of managed releases from storage  
 8 facilities on streams above New Melones Lake. At least 10 reservoirs, with storage  
 9 capacities ranging from 250 acre-feet (310 megaliters) to 189,000 acre-feet (233,000  
 10 megaliters), store water above New Melones. Those facilities and their storage capacities  
 11 are shown in Table 5-3. The New Melones Lake Area’s position in the regional  
 12 watershed is shown on Figure 5-4, and the watershed draining directly to the New  
 13 Melones Lake Area is shown on Figure 5-5.

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

18 **Table 5-3: Existing Storage Above New Melones Lake**

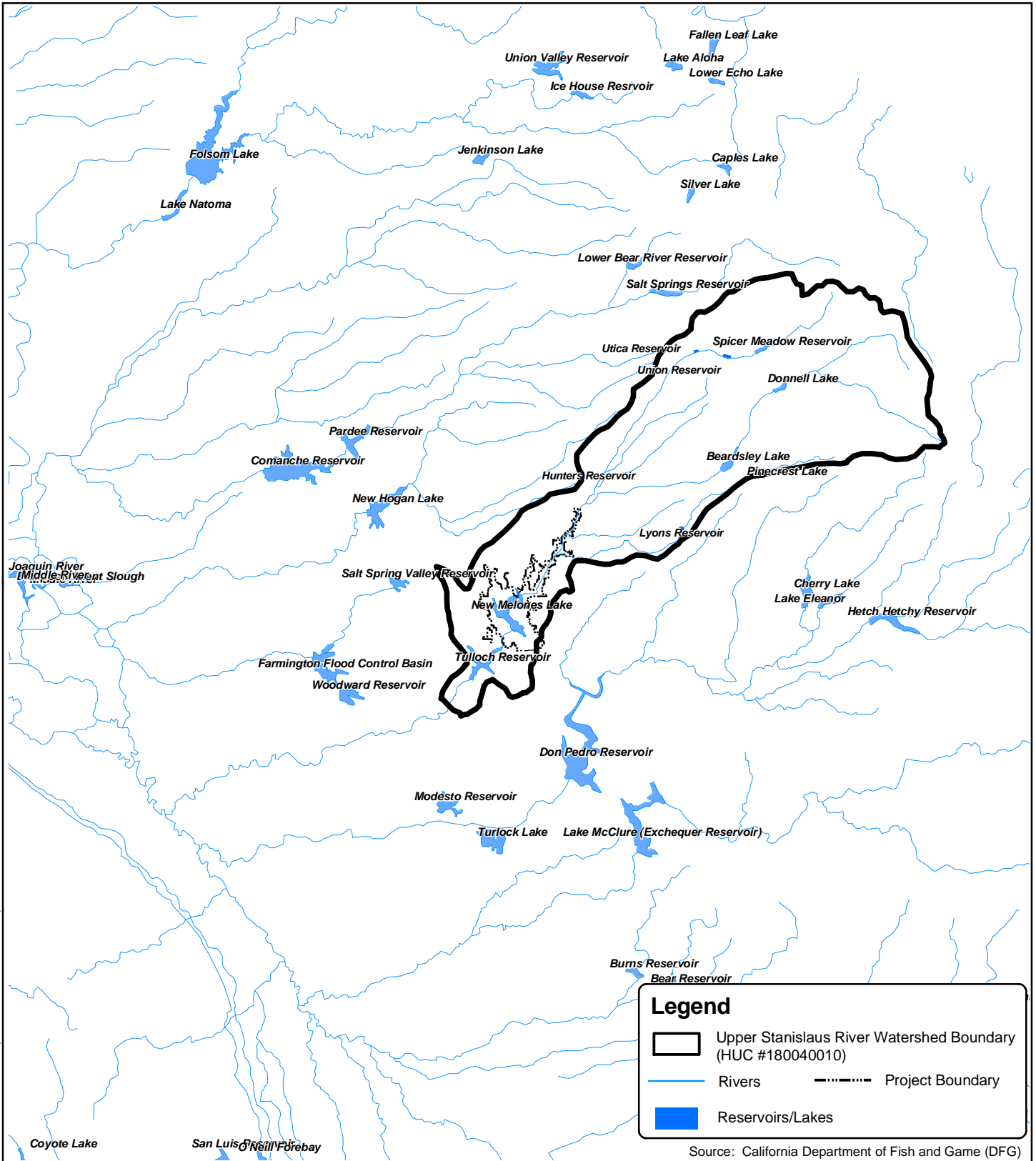
<b>Fork of the Stanislaus River</b>	<b>Reservoir</b>	<b>Storage Capacity (acre-feet)</b>
North		
	Lake Alpine	4,120
	Union Reservoir	3,130
	Utica Reservoir	2,330
	Spicer Meadows Reservoir	189,000
	Hunters Reservoir	250
Middle		
	Relief Reservoir	15,500
	Donnel Lake	64,300
	Beardsley Lake	97,800
South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

19 Source: Moore 1994

20  
 21 *Streams.* All three forks of the Stanislaus River originate in the Sierra Nevada. There are  
 22 also a number of small creeks, both ephemeral (flowing only a portion of the year) and  
 23 perennial (flowing year round), that discharge into New Melones Lake, including Coyote  
 24 Creek, Carson Creek, and Angels Creek; however, the Stanislaus River is the main  
 25 source of water for New Melones Lake. The main factor that determines whether streams  
 26 within the planning area maintain perennial or ephemeral characteristics is their place of  
 27 origin. In general, streams originating higher in the Sierra Nevada and fed by melting  
 28 snowpack are more likely to flow year round than streams fed primarily by rainfall. The



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## Watershed Boundary Overview

New Melones Lake Area, California  
Central California Area Office

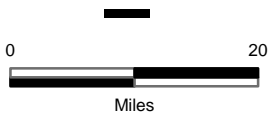
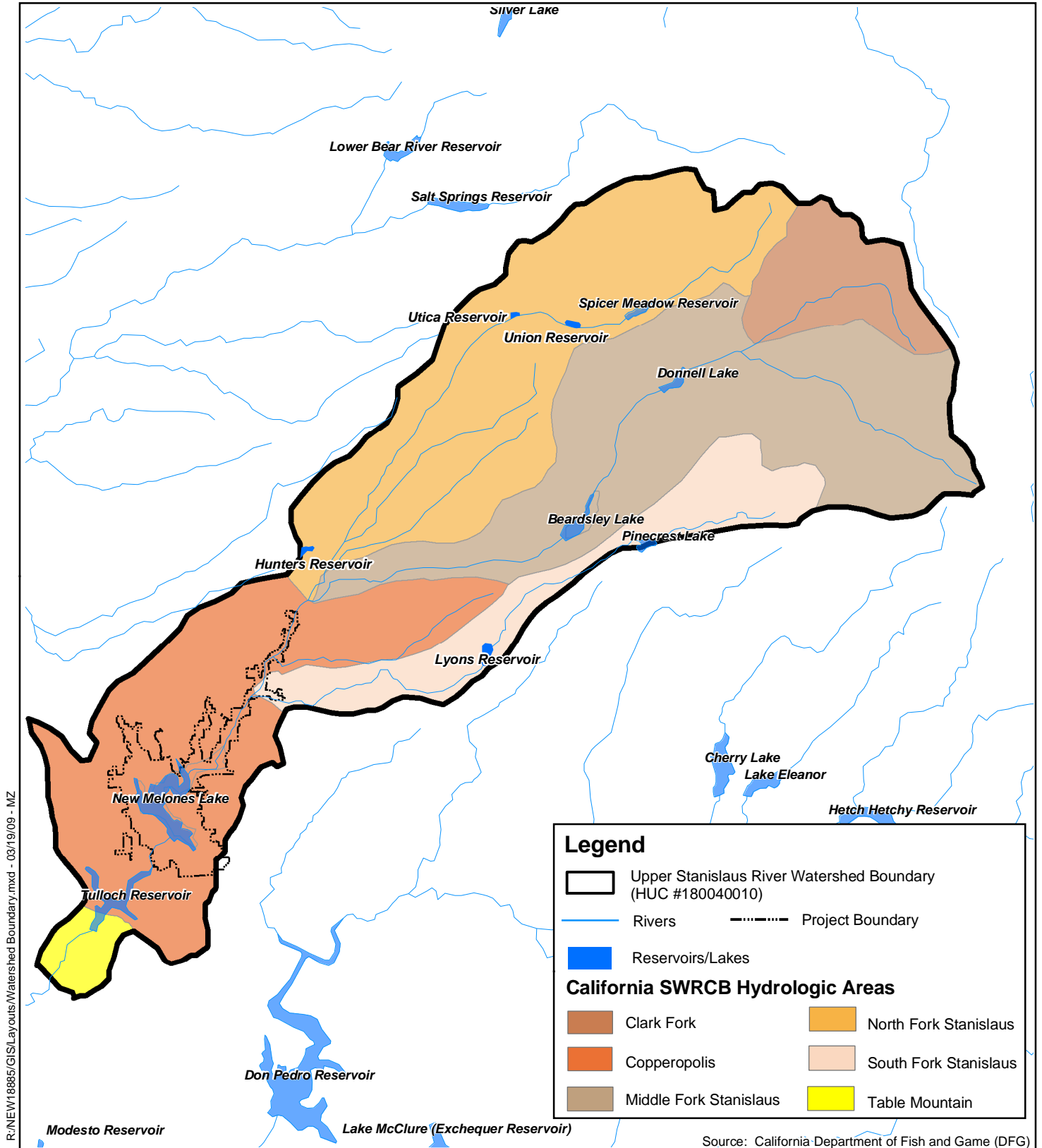
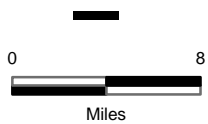


Figure 5-4



## Watershed Boundary

New Melones Lake Area, California  
Central California Area Office



**Figure 5-5**

1 exception to this is Coyote Creek, which is spring fed and maintains year-round flows of  
2 cold clear water.

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

9 *Watersheds and Drainage.* New Melones Dam is on the Stanislaus River below the  
10 confluence of its North, Middle, and South Forks, forming New Melones Lake. Most of  
11 the water comes from the North and Middle Forks, with a lesser amount coming from the  
12 South Fork drainage. New Melones Lake is in the Upper Stanislaus River watershed,  
13 USGS hydrologic unit code 18040010. (This watershed is called the Stanislaus River  
14 Hydrologic Unit in the SWRCB hydrologic code system.) Figure 5-5 shows the location  
15 of New Melones Lake within the Upper Stanislaus River watershed and several subbasins  
16 that have been delineated by the SWRCB. The Upper Stanislaus River watershed has a  
17 drainage area of approximately 980 square miles (250 hectares). Over 90 percent of this  
18 area (approximately 904 square miles [230 hectares]) drains into New Melones Lake.  
19 Those areas draining directly to the lake include the following:

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

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

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

10 Water quality issues at New Melones Lake are typical of those found in most reservoirs.  
11 Compared to natural lakes or streams, reservoirs may have elevated surface water  
12 temperatures in shallow areas or areas with poor circulation, high incidence of suspended  
13 sediments from shoreline erosion, high nutrient levels, and diminished dissolved oxygen.  
14 Localized water quality problems may occur as a result of recreational boaters,  
15 particularly in refueling areas or in areas where boaters congregate.

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

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

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

39 A revision to the 303 (d) list for California is in progress. The contributors to the draft  
40 revision recommend retaining diazinon, group A pesticides, and mercury on the 303 (d)  
41 list for the Lower Stanislaus River. In addition, chlorpyrifos and water temperature are

1 proposed to be added. A TMDL for diazinon was expected to be established in 2008, but  
2 has not yet been approved (CVRWQCB 2009).

### 3 **5.2.7 Visual Resources**

4 The New Melones Lake Area is in Calaveras and Tuolumne Counties among the foothills  
5 of the west slope of the Sierra Nevada. The primary dominant visual elements are the  
6 hills, ridges, small valleys, the patterns created by the vegetation on the hills, and the  
7 surface of the lake (Reclamation 1995, 2007a).

8 The landscape within this region is characterized by relatively steep-sided and rolling  
9 hills that range from a few hundred to a thousand feet high (Photographs 1 and 2 in  
10 Appendix H) (Reclamation 1995, 2007a). Occasional rock outcrops are also visible  
11 (Photograph 3 in Appendix H). Visual contrast is provided by Table Mountain, which  
12 forms the watershed boundary to the south and is a long flat-topped ridge of volcanic  
13 origin (Photograph 4 in Appendix H).

14 The dominant natural vegetation is annual grassland and native oak woodlands occurring  
15 in varying densities (Photographs 5 to 8 in Appendix H) (Reclamation 2007a). The tree  
16 canopy cover and species diversity increases in small draws and valley bottoms where  
17 the moisture is more readily available. Gray pine and lower shrub masses are found in  
18 drier locations, mixed with oaks in some areas (Reclamation 1995). In summer, the  
19 grasses become dry and turn from bright rich green to soft golden yellow.

20 The New Melones Lake Area occupies two fairly distinct areas contained within the  
21 Stanislaus River Canyon: a long, narrow upper reach and the wider main body of the lake  
22 (Reclamation 1995). The upper reach of the lake extends north-northeast from the SR 49  
23 Stevenot Stanislaus River Bridge across the middle fork of the Stanislaus River  
24 (Photograph 9 in Appendix H) (Reclamation 1995). This part of the lake becomes  
25 increasingly narrow from the bridge northward and is characterized by steep-sided slopes  
26 which give way to near vertical limestone cliffs in the canyon's far upper reaches. The  
27 Camp Nine, Stanislaus River Canyon, Parrotts Ferry, Carson, and Coyote Creek planning  
28 units are in this area. Also, the Mark Twain and Carson planning units straddle the SR 49  
29 Stevenot Stanislaus River Bridge. In contrast to the main body of the lake, most of the  
30 upper reach resembles an enlarged river rising up the sides of the steep canyon walls  
31 (Photograph 10 in Appendix H).

32 The main body of the lake is south of the SR 49 Stevenot Stanislaus River Bridge. This  
33 area of the lake is relatively open, providing expansive views of the lake's primary body  
34 of water and the surrounding hillsides (Photograph 11 in Appendix H). Because of the  
35 many convolutions in the hills and their steep sides, the shoreline along this part of the  
36 lake is quite irregular. It features many fingers that project inward, and branches that  
37 extend back for varying distances from the main body of water (Photograph 12 in  
38 Appendix H). This configuration prohibits views of the entire main body of the lake  
39 surface at one time from any single location. Many areas of the lake are somewhat hidden  
40 from view until approached directly by boat. In a few areas, small hills that stood near the  
41 original river channel have been surrounded by water with the construction of the lake,

1 forming islands. These visual features are found in the vicinity of Tuttle town French Flat,  
2 Bear Creek, Peoria Wildlife Area, Dam and Spillway, Westside, Greenhorn Creek, and  
3 Glory Hole planning units.

4 In general, the qualities of the scenic landscape increase with distance from the lake. The  
5 long, narrow upper reaches have dramatic aesthetic qualities. Farther down the river and  
6 around the main body of the lake, the aesthetic qualities of the landscape are  
7 compromised by greater development, including administration and recreational  
8 facilities, homes in the upper watershed, and a large mine that is visible from the visitor  
9 center and other areas (Photographs 13 and 14 in Appendix H).

10 Due to the orientation of the lake in the river canyon, views of the water and surrounding  
11 shoreline are possible only from locations within the basin itself, and usually only from  
12 points relatively close to the lake (Reclamation 1995). Views of the upper reach of the  
13 lake are generally limited to a vehicular turnout and scenic overlook on the east side of  
14 Highway 49 near the west end of the bridge, from recreation areas, from Parrotts Ferry  
15 Road, and from Camp Nine Road. In general, views of the main body of the lake are  
16 limited to the developed recreation facilities associated with the lake (Tuttle town and  
17 Glory Hole Recreation Areas), from the lake surface itself, and to a lesser extent from the  
18 SR 49 Stevenot Stanislaus River Bridge.

19 From some of the higher elevation points near the main body of the lake, such as at the  
20 admission/park ranger booth on the entrance road to the Glory Hole Recreation Area,  
21 more distant, open, and panoramic views of the basin and portions of the lake are  
22 available (Reclamation 1995). Distant features are often the focus of attention, even  
23 though details are not readily perceptible (Photograph 15 in Appendix H). From points  
24 that are mid-range in terms of elevation with respect to the lake surface and the  
25 surrounding ridges, such as some of the day use areas and parking lots above the boat  
26 ramps, views become somewhat confined by the surrounding topography and are more  
27 focused on the lake and the hillsides that rise from the edge of the water (Photograph 16  
28 in Appendix H). From the shore of the lake and the water's surface, views become  
29 oriented out across the water, which is by far the most dominant element of the scene,  
30 and up the hillsides to the ridgetops that form the skyline. At these locations, views are  
31 relatively confined and tend to be focused on foreground details.

32 **Fluctuation Zone.** One of the most striking visual characteristics of the lake basin is the  
33 band-like scar created by the high water mark of the lake and zone of former inundation  
34 (the area between the present water level and the high water mark), referred to as the  
35 fluctuation zone (Photograph 17 in Appendix H) (Reclamation 1995). The fluctuation  
36 zone forms a wide horizontal band that completely encircles the lake and stands out in  
37 sharp contrast with the hillsides immediately above it. The contrast is created by an  
38 abrupt and complete absence of shrubs and trees on the hills below the high water mark  
39 resulting in significant differences in texture and color above and below the high water  
40 mark. Above the mark, the hillsides appear to be in a relatively natural state with respect  
41 to vegetation and land surface. Some portions of the fluctuation zone contain stands of

1 dead trees and shrubs that were originally inundated but have since been exposed as the  
2 water has receded.

3 Within the upper reach of the lake, riparian vegetation becomes established as the lake  
4 recedes (Reclamation 1995). This area begins to resemble its former river corridor as the  
5 water course narrows and the shoreline vegetation thickens. However, as water levels  
6 rise, it forces the inundation zone farther up into this section of the lake, thereby  
7 inundating the reestablished vegetation.

8 Below the high water mark, and within the main body of the lake, few live trees or shrubs  
9 occur (Reclamation 1995). Live vegetation in this zone is limited to grasses and some  
10 riparian vegetation, which have become established as the water has receded to its  
11 present levels and the area has remained dry. In some locations, minor rock outcrops are  
12 visible within this barren zone and in a few areas evidence of erosion can be seen.

13 **Development.** The overall visual character of the lake basin is distinctly rural and  
14 undeveloped, although there are numerous indicators that the landscape has been strongly  
15 affected in several ways by human influence (Reclamation 1995). In general, the most  
16 noticeable developed features are the various recreation facilities at the Tuttletown and  
17 Glory Hole Recreation Areas (Photograph 18 in Appendix H). However, these features  
18 appear relatively minor in scale within the overall visual context of the basin, particularly  
19 when viewed from a distance. Widely scattered private residential development within  
20 the basin, for the most part, is quite unobtrusive. Communications facilities that exist  
21 within the basin, such as hillside microwave towers and antennae, are minor features that  
22 do not attract the viewer's attention. Overhead utility lines, while present and noticeable  
23 in a few locations, seem to attract little attention.

24 Prominent human-made features within the basin, aside from the lake, are the spillway  
25 situated along the ridge on the west side of the main body of the lake (Photograph 19 in  
26 Appendix H) and the Marble Quarry. Also noticeable are the mined hillsides at Carson  
27 Hill (Photograph 20 in Appendix H) (Reclamation 1995). The abrupt, strong contrast in  
28 color and landform created by the stepped benches, together with their very large scale,  
29 are readily evident from many locations and are capable of attracting and holding the  
30 viewer's attention. In this way, the features compete for visual dominance with the  
31 surrounding hillsides and with the lake itself.

32 The Tuttletown and Glory Hole Recreation Areas are the two primary locations within  
33 the basin where land-based recreation occurs (Reclamation 1995). Both feature a network  
34 of roadways providing public access to a host of facilities that serve the needs of visitors.  
35 Together, they include campgrounds and boat launch areas consisting of concrete ramps  
36 and extensive parking for cars and trailers.

37 At both Tuttletown and Glory Hole, boat ramps were designed to provide service under  
38 differing lake surface elevations (Reclamation 1995). In these cases, the ramps appear on  
39 the hillsides as large abandoned slabs of concrete. The New Melones Marina complex is  
40 in an inlet within the Glory Hole Recreation Area. The marina complex is contained far

1 enough back in the inlet that it can be seen only from a few relatively nearby locations or  
2 from Tuttle town (across the lake).

3 Many of the recreation facilities—that is, most campsites and the day use areas—are  
4 located among groves of trees, taking advantage of topography to screen views of these  
5 uses from other areas (Reclamation 1995). Some facilities, particularly the boat launch  
6 ramps and adjacent parking areas, are fully exposed to view.

7 Some of the smaller recreation areas appear as little more than roadways that disappear  
8 beneath the surface of the lake (Reclamation 1995). The Camp Nine Recreation Area at  
9 the north end of the lake’s upper reach is rustic, and here the water body takes on the  
10 appearance of a flowing river corridor rather than a lake, particularly during times of low  
11 lake levels.

## 12 **5.2.8 Vegetation**

### 13 ***General Plant Species and Communities***

14 Five broad categories of vegetation are found within the planning area: woodlands,  
15 grasslands, wetlands, serpentine, and other. These are subdivided into more specific  
16 vegetation associations. The most common plant communities, as well as their acreage  
17 and percentage of the planning area can be found in Table 5-4.

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

**Table 5-4: Plant Communities Found in the Planning Area**

<b>Plant Community</b>	<b>Acreage</b>	<b>Percentage of Study Area</b>
<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%



**Table 5-4: Plant Communities Found in the Planning Area**

<b>Plant Community</b>	<b>Acreage</b>	<b>Percentage of Study Area</b>
<i>Other land use designations</i>		
Not classified	203	1%
Barren land	148	1%
Residential or park	18	< 1%
<b>Total</b>	<b>15,168</b>	

1 Source: Reclamation 1997  
 2

3 Montane hardwood and montane hardwood-conifer woodlands are the dominant  
 4 vegetative communities in the northeasterly portion of the planning area. Wetland  
 5 vegetation is found in some locations along the edges of the lake and in moist canyons.  
 6 There are many riparian communities, seeps, and wet meadows in the upper reaches of  
 7 streams that are tributaries of the lake (Reclamation 1995). Each vegetation community is  
 8 described in detail below.

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

24 Blue oak woodland is a common community type within the Tuttle town, Dam and  
 25 Spillway, Glory Hole, Greenhorn Creek, and Westside Management Areas. It is also the  
 26 most extensive plant community in the Peoria Wildlife Management Area (PWMA),  
 27 where it occurs along the southern two-thirds of the access road and is also present at the  
 28 Peoria Basin trailhead site (Reclamation 2007a). Within the PWMA, blue oak woodlands  
 29 are particularly prevalent where steep rock outcrops and fields with boulders occur,  
 30 including the talus slopes of Table Mountain and the rocky slopes overlooking the lake  
 31 and the dam output. Stands of blue oak woodland also occur in a riparian corridor in the  
 32 PWMA (Evens et al. 2004).

33 Blue oak woodlands are common but are under considerable development and grazing  
 34 pressure in the California foothills (Reclamation 1995). Other activities threatening oaks  
 35 in the planning area, particularly along the PWMA access road, include illegal OHV

1 traffic and unregulated camping, fire building, trash dumping, and woodcutting  
2 (Reclamation 2007a). Soil compaction from concentrated recreational use, such as  
3 camping, also threatens oak trees. In addition, fluctuating levels in New Melones Lake  
4 impact oaks because high water levels occasionally inundate and kill lower growing  
5 oaks.

6 *Blue oak-foothill pine woodland* (Sawyer and Keeler-Wolf 1995: blue oak series). In this  
7 community, mixed stands of oak and pine occur. The open oak canopy ranges from 20 to  
8 40 feet (6 to 12 meters) high, with occasional less open pine canopies above. Frequent  
9 fire favors blue oak over pine. This community occurs between 500 and 3,000 feet (150  
10 and 920 meters) in elevation (Verner *in* GWH 1988 *in* Reclamation 1995) on steep,  
11 rocky, or exposed, largely north-facing sites along ridges or canyons with poor or  
12 shallow soils (Holland 1986 *in* Reclamation 1995). Dominant species in this woodland  
13 are foothill pine and blue oak, with associated species, including California buckeye,  
14 coast live oak (*Quercus agrifolia*), scrub oak, valley oak, interior live oak, poison oak  
15 (*Toxicodendron diversilobum*), woodland star (*Lithophragma heterophylla*), sugar cups  
16 (*Saxifraga californica*), shooting stars (*Dodecatheon hendersonii*), Chinese houses  
17 (*Colinsia heterophylla*), and gooseberry (*Ribes quercetorum*) (Reclamation 1997).

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

24 *Montane hardwood woodland* (Sawyer and Keeler-Wolf 1995: Interior live oak series).  
25 Vegetation in this community is broad-leaved and grows up to 50 feet (15 meters), where  
26 dense canopy closure and abundant, persistent leaf litter preclude an herbaceous  
27 understory (Holland 1986 *in* Reclamation 1995). It occurs on north-facing hillsides  
28 farther upstream and at higher elevations (300 to 3,000 feet [91 to 910 meters]) than the  
29 blue oak woodland, above the reservoir's historic high water mark (GWH 1988 *in*  
30 Reclamation 1995). Slopes where this vegetation occurs are steep to very steep.  
31 Dominant plant species include interior live oak, blue oak, buckeye, and California bay  
32 laurel (*Umbellularia californica*). Species that are less abundant in the montane  
33 hardwood woodland include canyon oak (*Quercus chrysolepis*), elderberry (*Sambucus*  
34 *mexicana*), western redbud (*Cercis occidentalis*), redberry (*Rhamnus crocea*), buck brush  
35 (*Ceanothus cuneatus*), and poison oak. Special status plant species that may occur in this  
36 woodland include Layne's butterweed (*Packera layneae*) and Red Hills soaproot  
37 (*Chlorogalum grandiflorum*) (Reclamation 1995). A more detailed discussion of special  
38 status plants can be found in Section 5.2.10 below.

39 This community type can be found in the Camp Nine Management Area at elevations  
40 ranging from 1,500 to 2,000 feet (450 to 610 meters). Upstream of Camp Nine, the  
41 Stanislaus River flows through very narrow steep canyons. Montane hardwood woodland  
42 vegetation, such as interior live oak, canyon oak, and black oak, is found along the

1 canyon walls. Stands of this community type occur throughout the PWMA, usually on  
2 somewhat steep cool slopes with moderately high rockiness. In particular, it is found on  
3 the north-facing slope of Table Mountain and on the metavolcanic slopes overlooking the  
4 lake (Evens et al. 2004). In addition, montane hardwood woodland is present along the  
5 northern third of the PWMA access road and on the slopes between the road and Table  
6 Mountain.

7 *Montane hardwood-conifer woodland* (Sawyer and Keeler-Wolf 1995: Black oak series  
8 or canyon live oak series). This community occurs most commonly on north-facing  
9 slopes (between 25 and 66 percent grade) in canyons upstream of the lake between 1,000  
10 and 2,400 feet (300 and 730 meters) in the planning area. It occurs mainly on soils having  
11 sandstone parent material, but metamorphic and igneous parent materials are also known  
12 to support this community (Allen et al. 1989 in Reclamation 1995). Species of this  
13 community are less tolerant of dry conditions than montane hardwood woodland and are  
14 adapted to regular but light ground fires (Holland 1986 in Reclamation 1995). Dominant  
15 species are black oak, canyon oak, interior live oak, and coast live oak. Species that may  
16 associate with this community type include foothill pine, California buckeye, mariposa  
17 manzanita (*Arctostaphylos viscida*), deer brush (*Ceanothus intergerrimus*), toyon  
18 (*Heteromeles arbutifolia*), redbud, mountain mahogany (*Cercocarpus betuloides*), and  
19 poison oak (Reclamation 1997).

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

26 *Annual grassland* (Sawyer and Keeler-Wolf 1995: California annual grassland series).  
27 This vegetation type is characterized by dense to sparse cover of annual grasses and some  
28 perennial bunchgrasses. Flower heads are generally one to two feet high, although they  
29 may be as tall as eight feet in a moist year. Annual grasslands occur between 800 and  
30 3,000 feet (240 and 910 meters) on relatively flat plains and rolling hills of valleys or on  
31 steep slopes of foothill regions. Perennial grasslands are often found on finely textured  
32 moist soils. Common annual plant species include wild oats, soft chess (*Bromus mollis*),  
33 ripgut (*B. diandrus*), fiddleneck (*Amsinckia* sp.), longbeak stork's bill (*Erodium botrys*),  
34 and redstem stork's bill (*E. cicutarium*). Dominant perennial grasses may include triple-  
35 awned grass (*Aristida* spp.), wheat grass (*Agropyron* spp.), bent grass (*Agrostis* spp.),  
36 wild-rye (*Elymus triticoides*), melic grass (*Melica* spp.), needle-grass (*Stipa pulchra*, *S.*  
37 *cernua*, *S. lepida*), and muhly (*Muhlenbergia* spp.). Other plant species that may be  
38 associated with grasslands are foothill pine, blue oak, California poppy (*Eschscholzia*  
39 *californica*), and lupines (*Lupinus* spp.) (Reclamation 1997).

40 Annual grasslands are found within the PWMA and the Bowie Flat and Glory Hole  
41 Management Areas. It is the principal plant community on the top of Table Mountain.  
42 Throughout these areas, grasslands are often correlated with areas burned in the mid-

1 1990s or along roads and power lines where native shrub vegetation has been cleared.  
2 They are also found on relatively gentle volcanic and serpentine substrates, particularly  
3 the long narrow draws on the ridgetop of Table Mountain that collect more soil than the  
4 surrounding, more exposed rocky areas of the ridgetop (Evens et al. 2004). Annual  
5 grassland also occurs in a narrow band along the PWMA access road and is a component  
6 of the understory of the oak woodlands along the PWMA access road corridor. In this  
7 area, the characteristic grasses are soft chess, ripgut brome, medusahead (*Taeniatherum*  
8 *caput-medusae*), and Italian ryegrass (*Lolium multiflorum*). The forb component is  
9 diverse, composed of both native and nonnative species, including winecup clarkia  
10 (*Clarkia purpurea*), popcornflower (*Plagiobothrys* sp.), yellowflower tarweed  
11 (*Holocarpha virgata*), sky lupine (*Lupinus nanus*), winter vetch (*Vicia villosa*), and  
12 clover (*Trifolium* sp.) (Reclamation 2007a).

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

18 *Chamise chaparral* (Sawyer and Keeler-Wolf 1995: Chamise series). This community  
19 type is dominated by the chamise shrub (*Adenostoma fasciculatum*), generally three to  
20 ten feet tall. Vegetation can be very dense, reaching 50 percent cover in 10 years. This  
21 community is adapted to frequent fires by stump sprouting, and plants will reach maturity  
22 in 25 to 60 years in the absence of fire. Chamise chaparral occurs between 1,000 and  
23 2,000 feet (300 and 610 meters) in elevation on dry, south- or west-facing slopes and  
24 ridges. Limestone soils in the middle basin above the reservoir but not far upstream in the  
25 lake area support chamise. Species that may co-occur with chamise in this community  
26 include several manzanitas (*Arctostaphylos glauca*, *A. tomentosa*, *A. viscida*), ceanothus  
27 species (*Ceanothus cuneatus*, *C. papillosus*), mountain mahogany, buckwheat  
28 (*Eriogonum fasciculatum*), yerba santa, deer brush, holly-leaf cherry, and scrub oak  
29 (Reclamation 1997).

30 Chamise chaparral occurs on various substrates throughout the PWMA (Evens et al.  
31 2004). This community type is intermixed with oak woodland in the PWMA access road  
32 corridor (Reclamation 2007a). In addition, several stands were located on the volcanic  
33 ridgetop of Table Mountain (Evens et al. 2004).

34 *Valley and foothill riparian woodland* (Sawyer and Keeler-Wolf 1995: California  
35 sycamore series). Vegetation in this community consists of tall, dense, winter-deciduous,  
36 broad-leafed, riparian forest whose canopy may be closed with a shade-tolerant  
37 understory. It grows on relatively fine-textured alluvium, somewhat receded from river  
38 channels, in the floodplains of low gradient streams and rivers. Dominant species in this  
39 community include box elder (*Acer negundo californica*), sycamore (*Platanus*  
40 *racemosa*), Fremont cottonwood, and several willow species (*Salix gooddingii variabilis*,  
41 *S. laevigata*, *S. lasiandra*). White alder (*Alnus rhombifolia*) and big-leaf maples (*Acer*  
42 *macrophylla*) are less common species (Reclamation 1997). California vervain (*Verbena*

1 *californica*) is a special status plant species that may grow in valley and foothill  
2 woodlands, particularly near streams that run through serpentine areas, as in the  
3 northernmost reach of the north fork of the Stanislaus River (Reclamation 1997).

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

11 *Wet meadow* (Sawyer and Keeler-Wolf 1995: Sedge series). This community is  
12 composed of generally grass (or grasslike) species and forbs, ranging from six inches to  
13 three feet (15 cm to 1m) high. Cover may be sparse to dense, depending on the intensity  
14 of grazing, if any. In the planning area, wet meadows are found at elevations between  
15 800 and 2,000 feet (240 to 610 meters). This natural community develops on flats or in  
16 bowl-like basins, which may have rapid drainage or none at all. Soils may vary from 20  
17 percent organic material to sandy loam with almost no organic material. In wet meadows,  
18 water is at or near the soil surface most of the growing season, rather than having  
19 standing water (Holton Associates 1987 in Reclamation 1997). They may dry up in the  
20 summer or stay ponded all year. Meadow-type indicator species include short-hair sedge  
21 (*Carex exserta*), shorthair (*Calamagrostis breweri*), gentian-aster (*Gentian newberryi*  
22 *aster* sp.), few-flowered spikerush (*Heleocharis pauciflora*), carpet clover (*Trifolium*  
23 *monathum*), bentgrass (*Agrostis scabra*), pull-up muhly (*Muhlenbergia filiformis*),  
24 beaked sedge (*Carex rostrata*), Nebraska sedge (*C. nebrascensis*), Kentucky bluegrass  
25 (*Poa pratensis*), longstalk clover (*Trifolium longipes*), and tufted hairgrass (*Deschampsia*  
26 *caespitosa*) (Ratliff 1982 in Reclamation 1995). Special status plant species that grow in  
27 wet meadows are California vervain and Ahart's dwarf rush (*Juncus leiospermus* var.  
28 *aharti*).

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

36 *Vernal pool* (Sawyer and Keeler-Wolf 1995: Northern basalt flow vernal pools). Vernal  
37 pools are an ephemeral wetland vegetative community with predominantly low-growing  
38 ephemeral herbs. Germination and early growth occur in winter and early spring, often  
39 while plants are submerged, and pools dry out by summer. Flowering is often in bands at  
40 the margins of the pools. This community type occurs in shallow depressions, ranging  
41 from a few meters to tens of meters in diameter. Characteristic plant species found in  
42 vernal pools are Pacific foxtail (*Alopecurus saccatus*), common blennosperma

1 (*Blennosperma nanum*), Cleveland's shooting star (*Dodecatheon clelandii* var.  
2 *patulum*), toothed downingia (*Downingia cuspidata*), spiny-sepaled button-celery  
3 (*Eryngium spinosepalum*), hedge-hyssop (*Gratiola ebracteata*), Fremont's goldfields  
4 (*Lasthenia fremontii*), Douglas' meadowfoam (*Limnanthus douglasii* var. *rosea*), white-  
5 headed navarretia (*Navarretia leucocephala* ssp. *leucocephala*), adobe popcorn flower  
6 (*Plagiobothrys acanthocarpus*), miniature popcorn flower (*P. stipitatus* var. *micranthus*),  
7 Sacramento pogogyne (*Pogogyne zizyphoroides*), Delta woolly marbles (*Psilocarphus*  
8 *brivissimus* var. *multiflorus*), greater duckmeat (*Spirodela polyrrhiza*), and Wildenov's  
9 clover (*Trifolium willdenovii*) (Stone et al. 1993 in Reclamation 1995). Special status  
10 plant species that may grow in the planning area vernal pools include Tuolumne button-  
11 celery (*Eryngium pinnatisectum*), spiny-sepaled button-celery (*Eryngium spinosepalum*),  
12 and pincushion navarretia (*Navarretia myersii* ssp. *myersii*).

13 Within the planning area, ephemeral pools appear after rainfall or snowmelt on top of  
14 Table Mountain, between 1,200 feet (360 meters) in elevation in the south and 2,600 feet  
15 (790 meters) in the north. Although these pools share some of the characteristics of some  
16 vernal pools in the Central Valley, they are not true vernal pools in that they do not have  
17 a clay under layer that prevents percolation. Instead, they form in swales in the rocky  
18 surface of Table Mountain. The soil is poorly drained and the parent material on Table  
19 Mountain is a Pliocene lava flow (andesite). Intermittent pools occur on Table Mountain  
20 in seasonally wet to saturated rocky meadows that have slight soil development (Evens et  
21 al. 2004). They are interspersed within the annual grassland (Reclamation 2007a).  
22 Intermittent pools at Table Mountain do not support the range of species found in vernal  
23 pools in the Central Valley, possibly due to differences in substrate (primarily shallow,  
24 rocky substrate versus clay substrate in valley vernal pools). Although vernal pool  
25 habitats are very delicate and easily disturbed in general, this is even more pronounced  
26 on Table Mountain, where soils are poor, shallow, and loose.

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

33 *Serpentine foothill pine-chaparral* (Sawyer and Keeler-Wolf 1995: Foothill pine series).  
34 This natural community consists of an open woodland with some chaparral on Redhills  
35 soils derived from serpentine. Serpentine soils are high in magnesium, iron, silicates, and  
36 asbestos and low in nitrogen and phosphorus (Reclamation 1997). Serpentine soils in the  
37 planning area are of the Delpiedra and Henneke Series. The Redhills form a rounded  
38 rolling terrain and occur at elevations between 800 and 2,000 feet (240 and 610 meters).  
39 Characteristic plant species on Delpiedra soils are foothill pine and buckbrush, while on  
40 Henneke soils manzanitas (*Arctostaphylos manzanita* and *A. viscida*), chamise, and toyon  
41 are prevalent. A number of special status plant species prefer serpentine foothill-pine  
42 chaparral habitat, including Rawhide hill onion (*Allium tuolumnense*), Chinese Camp  
43 brodiaea (*Brodiaea pallida*), Red Hills soaproot, Congdon's lomatium (*Lomatium*

1 *congdonii*), shaggyhair lupine (*Lupinus spectabilis*), Layne's butterweed, and California  
2 vervain.

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

10 *Blue oak woodland and serpentine foothill pine-chaparral* (Sawyer and Keeler-Wolf  
11 1995: foothill pine series). This type of chaparral is similar to serpentine foothill pine-  
12 chaparral, with blue oaks interspersed throughout. It occurs upland on gentle to steep  
13 slopes. Soils are shallow, infertile, moderately to excessively drained. The soil surface  
14 may be covered with stones and rock outcrops. Foothill pine emerges from a shrub  
15 canopy composed of blue oak, black oak, California buckeye, coast live oak, Coulter  
16 pine, interior live oak, valley oak, and western juniper. Vegetation height is less than 70  
17 feet (20 meters) and occurs at elevations of between 1,000 and 7,000 feet (300 and 2,100  
18 meters).

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

### 21 ***Sensitive Habitat Types***

22 Several sensitive habitat types, as listed by the CDFG due to their rarity and threat, occur  
23 in the planning area. These are serpentine communities and wetlands, such as vernal  
24 pools and valley and foothill riparian woodlands.

25 **Serpentine communities.** Serpentine is considered an ultramafic rock formation,  
26 meaning that it is high in ferromagnesian silicate minerals (Kruckberg 1984, USFWS  
27 2002 *in* Ayres 2005). These minerals produce soils with several unique characteristics,  
28 including low calcium levels, high magnesium levels, high concentrations of heavy  
29 metals (especially iron, chromium, and nickel), and nitrogen, potassium, and phosphorus  
30 levels below that needed to grow agricultural crops (Kruckberg 1984 *in* Ayres 2005).  
31 These chemical characteristics usually co-occur with a distinctive vegetation pattern of  
32 sparse amounts of plant biomass, even in areas known for their productivity, such as  
33 coastal forests. The sparse vegetation in these environments contributes to low turnover  
34 of nitrogen and phosphorus, high temperatures, high water stress, and low soil stability  
35 (Kruckberg 1984, USFWS 2002 *in* Ayres 2005). The coexistence and interdependence of  
36 these biochemical factors in the same environment has been dubbed the serpentine effect  
37 (Kruckberg 1984 *in* Ayres 2005). However, this sparse vegetation is also characterized  
38 by a high degree of endemic plant species (found only in California or only on West  
39 Coast serpentine). In California, endemic serpentine species make up ten percent (215  
40 species) of the total endemic flora of California (2,125 species), while serpentine soils  
41 make up only 0.6 percent of the area of California (Raven and Axelrod 1978; Kruckberg

1 1984, *in* Ayres 2005). In addition, many of these endemic species are endangered,  
2 threatened, or rare. Of the five federally listed plant species potentially occurring in the  
3 planning area, three are found on serpentine soils. This community's small land area and  
4 high proportion of endemic plant species makes it particularly important to the  
5 preservation of biodiversity. Further, the barren appearance of serpentine communities  
6 falsely indicates that they lack ecological value; as a result, they are threatened by  
7 disturbance and degradation (e.g., grazing or mining) (Reclamation 1997). Serpentine  
8 communities are found within the Westside, Peoria Wildlife Area, and Dam and Spillway  
9 planning units.

10 **Wetlands.** In California's Mediterranean climate, with hot dry summers, wetlands have  
11 always been scarce and limited in size. These small isolated areas are very productive  
12 because associated plants have longer growing periods. Further, wetlands are valuable to  
13 animals because they provide abundant food and water. Since the distribution of wetlands  
14 has generally declined, associated plants and animals have, in some cases, become rare  
15 and endangered (Reclamation 1995). Further, wetlands play a critical role in the  
16 watershed as the most productive of all ecosystems, as habitat for many sensitive plant  
17 and wildlife species, as flood control areas, as natural water quality purification systems,  
18 and as buffers against erosion (Reclamation 1995). Wetlands are found in all planning  
19 areas.

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

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

37 **Valley and foothill riparian woodland.** Riparian areas along larger streams that are  
38 tributaries of New Melones Lake provide important habitat for a diverse array of species,  
39 including nesting habitat for a great variety of birds. More than 225 species of mammals,  
40 birds, reptiles, and amphibians rely on riparian areas. These shaded, moist, and typically  
41 well-vegetated corridors serve as escape cover and facilitate movement and dispersal of  
42 several species, such as black-tailed deer. Perennial stream courses also provide a year-



1 long source of water for mammals, reptiles, and amphibians; a large range of species  
 2 require riparian zones for breeding and foraging needs (Reclamation 1995).

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

12 **5.2.9 Fish and Wildlife**

13 ***Fish***

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

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

**Table 5-5: Fish Species of New Melones Lake**

Common Name	Scientific Name	Origin	Comments
<b>Minnows and Carps</b>	<b>Cypriniformes</b>		
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
<b>Catfish</b>	<b>Siluriformes</b>		
White catfish	<i>Ictalurus catus</i>	I	C
Brown bullhead	<i>I. nebulosus</i>	I	C

**Table 5-5: Fish Species of New Melones Lake**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Origin</b>	<b>Comments</b>
Channel catfish	<i>I. punctatus</i>	I	C
<b>Trout and Salmon</b>	<b>Salmoniformes</b>		
Rainbow trout	<i>Oncorhynchus mykiss</i>	N	C
Kokanee salmon	<i>O. nerka</i>	I	C
Brown trout	<i>Salmo truna</i>	I	C
<b>Livebearers</b>	<b>Cyprinodontiformes</b>		
Western mosquitofish	<i>Gambusia affinis</i>	I	P
<b>Scorpion Fish</b>	<b>Scorpaeniformes</b>		
Prickly sculpin	<i>Cottus asper</i>	N	P
Riffle sculpin	<i>C. gulosus</i>	N	P
<b>Perch, Freshwater Sunfish</b>	<b>Perciformes</b>		
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

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 truna*), 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 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

1 drowned trees, logs, and marsh areas. Shorelines from which trees and brush have been  
2 cleared for aesthetic or other purposes are much less important to these species.

3 Rainbow trout, brown trout, and the large channel catfish are generally restricted to  
4 colder, deeper water during the summer when New Melones Lake has two distinct  
5 thermal layers of water, although large brown trout and channel catfish are often caught  
6 in shallow water near steep banks at night, when they ascend in search of food. Rainbow  
7 trout generally feed in deep water during the daytime and feed in shallower areas at night.  
8 In fall, when the lake “turns over,” thermal stratification disappears and both species of  
9 trout may be caught in shallower water through winter and spring. Trout are also  
10 vulnerable to shallow-water fishing in tributary arms in late summer, when they enter  
11 tributaries to spawn.

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

## 16 **Wildlife**

17 The planning area contains a diverse range of wildlife habitats typical of the lower Sierra  
18 Nevada foothills, including open water, riparian, and oak woodland communities in the  
19 lower lake area to montane hardwood and montane hardwood-conifer woodlands in the  
20 upstream canyon area. Consequently, a diverse range of bird, mammal, reptile,  
21 amphibian, and invertebrate species are also present. Numbers and species of birds vary  
22 by season, habitat, weather, and migration patterns. Section 5.2.8 (Vegetation) contains  
23 additional information on vegetation communities that make up wildlife habitats. The  
24 following sections describe wildlife resources by habitat type.

25 *Open Water and Riparian Areas.* The open water of New Melones Lake, along with  
26 associated shoreline vegetation, provides foraging and resting habitat for a variety of  
27 waterfowl and shorebirds, such as ruddy duck (*Oxyura jamaicensis*), ring-necked duck  
28 (*Aythya collaris*), and mallard ducks (*Anas platyrhynchos*), grebes, and coots. Several  
29 fish-eating bird species, such as grebes, forage in the open water; other species, such as  
30 ducks, herons, and egrets, dabble along the shoreline foraging on seeds and small fish in  
31 shallow areas.

32 Trees along the shoreline provide nesting substrate adjacent to preferred foraging habitat  
33 for some of these species, such as osprey. Riparian areas along larger tributaries to New  
34 Melones Lake provide important habitat for a diverse species assemblage. These shaded,  
35 moist, and typically densely vegetated corridors provide food, cover, water, and nesting  
36 habitat, and they serve as travel corridors for species such as black-tailed deer  
37 (*Odocoileus hemionus columbianus*). Perennial streams provide a year-long source of  
38 water for mammals, reptiles, and amphibians. A large assortment of species, including  
39 several bird species, require riparian zones for breeding and foraging needs.

1 *Oak woodlands.* Oak woodlands are interwoven with grasslands at lower elevations and  
2 more conifer-dominated woodlands at higher elevations. In association with a grassy  
3 understory, oak woodlands cover virtually all of the gently rolling hills that surround  
4 New Melones Lake. Where oak woodland occurs adjacent to open grasslands, many  
5 species move between and use resources provided by both communities. Oak woodlands  
6 provide important food resources, such as acorns, fungi, lichens, galls, and mistletoe.  
7 They also provide shelter, shade, and nesting sites for numerous species, including mule  
8 deer (*Odocoileus hemionus californicus*), which winter in the Railroad Flat area, black-  
9 tailed deer, which winter in the Stanislaus River Canyon and Parrotts Ferry areas,  
10 western grey squirrel (*Sciurus griseus*), gray fox (*Urocyon cinereoargenteus*), raccoon  
11 (*Procyon lotor*), feral pig (*Sus scrofa*), striped skunk (*Mephitis mephitis*), mountain lion  
12 (*Felis concolor*), bobcat (*F. rufus*), California quail, wild turkeys, woodpeckers, and  
13 mourning doves. Tree cavities provide nesting opportunities for several species. The  
14 PWMA contains large areas of representative high quality oak woodlands.

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

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

28 *Table Mountain.* The Table Mountain area, located primarily to the west and south of  
29 New Melones Lake, includes unique habitat conditions and opportunities not found  
30 elsewhere in the vicinity. The relatively steep cliffs and ledges (including caves and  
31 crevices) associated with Table Mountain provide nesting and roosting substrate required  
32 by several bird and bat species, several of which are special status species described in  
33 Section 5.2.10. On the top of Table Mountain, vernal swales are interspersed with  
34 grassland and rock. Due to their short-lived nature, vernal swales provide habitat for  
35 short-lived invertebrates and breeding habitat for amphibians, such as Pacific tree frog  
36 (*Hyla regilla*). Species that inhabit surrounding grasslands may also use the pools as a  
37 temporary water source. An extremely seasonal water regime in this habitat type provides  
38 foraging habitat for waterfowl and other birds in the spring, as well as habitat for  
39 endemic species specifically adapted to vernal swale conditions.

40 *Montane hardwood.* Once established, the montane hardwood community is relatively  
41 stable, with a dense canopy and supporting wildlife species that rely on acorns as a  
42 primary food source or that browse on hardwood foliage. The forest floor, as opposed to

1 lower elevation oak woodlands, is covered by a persistent leaf litter that provides habitat  
2 for many species of amphibians and reptiles. Representative wildlife species found in this  
3 community include gray fox, coyote (*Canis latrans*), striped skunk, opossum (*Didelphis*  
4 *virginiana*), quail, wild turkey, band-tailed pigeon (*Patagioenas fasciata*), Nuttall's  
5 woodpecker (*Picoides nuttallii*) and acorn woodpecker (*Melanerpes formicivorus*), scrub  
6 jay (*Aphelocoma californica*) and Steller's jay (*Cyanocitta stelleri*), titmouse, western  
7 gray squirrel, dusky-footed woodrat (*Neotoma fuscipes*), black-tailed deer, black bear  
8 (*Ursus americanus*) in the Camp Nine region, mountain lion, bobcat, California mountain  
9 kingsnake (*Lampropeltis zonata*), and western rattlesnake (*Crotalus viridis*). Special  
10 status species that use this habitat type are described in Section 5.2.10.

11 *Montane hardwood-conifer*. This typically climax community supports a variety of  
12 wildlife species and is transitional between dense coniferous forests and montane  
13 hardwood, mixed chaparral, or open oak woodlands and savannahs. Mature trees provide  
14 nest cavities and acorns for some birds and mammals. Variability in canopy cover and  
15 understory vegetation provides structural diversity within this community. Representative  
16 wildlife species include mule deer, mountain lion, bobcat, pine siskin evening grosbeak  
17 (*Pinicola enucleator*), Steller's jay, western bluebird (*Sialia mexicana*), western tanager  
18 (*Piranga ludoviciana*), acorn woodpecker, wild turkey, western rattlesnake, and gopher  
19 snake (*Pituophis catenifer*). Special status species associated with this community are  
20 described in Section 5.2.10.

21 *Limestone Caves/Outcrops*. Some limestone caves and outcrops provide temperature,  
22 light, and moisture suitable for endemic invertebrate species. Cave and cavity-dwelling  
23 mammals, such as bats, may also find suitable habitat in these features. Two genera of  
24 bats, *Myotis* and *Corynorhinus* (*Plecotus*), are known to use the caves for roosting and  
25 breeding. The interior of some caves provides unique habitats where over 50 species of  
26 invertebrates have developed adaptations specific to the cave conditions. Several species  
27 of special status bats and invertebrates have been found in this type of habitat in the  
28 region and are described in Section 5.2.10.

29 When New Melones Dam was constructed, many limestone caves were inundated, and  
30 species' habitats were lost. To mitigate these effects on the New Melones harvestman  
31 (*Banksula melones*), a type of rare spider, the USACE transplanted individuals of this  
32 species to other caves that would not be affected by inundation. Monitors of these  
33 transplants have found that they have successfully become established in the caves where  
34 they were transplanted (CDFG 2009).

35 *Game species*. Hunting is permitted in the New Melones Lake Area and is regulated by  
36 the CDFG. Game species include waterfowl, mourning dove (*Zenaida macroura*),  
37 California quail (*Callipepla californica*), wild turkey (*Meleagris gallopavo*), and deer  
38 (See Section 5.2.22 for further discussion of hunting opportunities).

1 **5.2.10 Special Status Species**

2 ***Federally Endangered, Threatened, Proposed, or Candidate Species of Wildlife***

3 There are eleven species or subspecies that are listed as threatened or endangered under  
 4 the federal Endangered Species Act that could occur and be affected by projects in  
 5 Calaveras or Tuolumne Counties (Table 5-6) (USFWS 2009). In addition four species are  
 6 candidates for listing. No species that occur in the counties are currently proposed for  
 7 listing.

**Table 5-6: Federal Threatened, Endangered, Proposed, and Candidate Wildlife Species That Occur in or That May Be Affected by Projects in Calaveras and Tuolumne Counties**

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
<b>Invertebrates</b>				
<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 packardi</i>	Vernal pool tadpole shrimp	Vernal pools	E	U
<b>Fish</b>				
<i>Oncorhynchus clarki henshawi</i>	Lahontan cutthroat trout	Lahontan Basin of northern Nevada, eastern California, and southern Oregon	T	U
<i>O. 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

**Table 5-6: Federal Threatened, Endangered, Proposed, and Candidate Wildlife Species That Occur in or That May Be Affected by Projects in Calaveras and Tuolumne Counties**

Scientific Name	Common Name	Habitat	<b>Status</b> E=Endangered T = Threatened C = Candidate SC = Species of Concern DL = Delisted CH = Critical Habitat		<b>Potential Occurrence in the Planning Area</b> C = Confirmed P = Possible U = Unlikely
<b>Amphibians</b>					
<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	
<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 CH	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	
<i>R. sierrae</i>	Sierra Nevada yellow-legged frog	Rocky and shaded streams with cool waters at high elevation	C	U	
<b>Reptiles</b>					
<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	
<b>Birds</b>					
<i>Coccyzus americanus occidentalis</i>	Western yellow-billed cuckoo	Deciduous riparian woodlands, especially dense stands of cottonwood and willow	C	P	

**Table 5-6: Federal Threatened, Endangered, Proposed, and Candidate Wildlife Species That Occur in or That May Be Affected by Projects in Calaveras and Tuolumne Counties**

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>Synthliboramphus hypoleucus</i>	Xantus's murrelet	Islands off the Pacific coastline	C	U
<b>Mammals</b>				
<i>Martes pennanti (pacifica) DPS</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

1 Source: USFWS 2009,

2

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

8 The California red-legged frog (CRLF) (*Rana aurora draytonii*) inhabits a variety of  
 9 aquatic habitats, usually with submerged and emergent vegetation. CRLF typically  
 10 inhabit the margins of still or very slow water where bordering and aquatic vegetative  
 11 cover is very dense and large populations of forage species occur, including aquatic  
 12 macroinvertebrates, rodents, and Pacific tree frogs (*Hyla [=Pseudacris] regilla*) (Storer  
 13 1925; Hayes and Tennant 1986; Hayes 1989; Jennings and Hayes 1994 in Barry 2007).  
 14 Most of the low gradient riparian stream zones that may have offered this type of habitat  
 15 in the New Melones Lake Area were inundated when the lake was filled, and any such  
 16 habitat in the planning area is remnant and fragmented at best. A 2006-2007 survey of  
 17 Sierra Nevada foothill streams in the counties north of the project area found that the  
 18 nearest extant population of CRLFs was west of New Hogan Lake, approximately 25  
 19 miles (40 kilometers) northwest of the project area (Barry 2007). A valid historical record  
 20 of a CRLF sighting occurred near Columbia, approximately five miles from the lake, but  
 21 this record was not confirmed during the recent survey. The overall results of this survey  
 22 indicated that although CRLFs can and do occupy streams at similar elevations as those  
 23 in the New Melones Lake Area, populations are relatively rare and depend on high-  
 24 quality habitat.



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

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

6 **Federally Endangered, Threatened, Proposed or Candidate Species of Plants**

7 The project area encompasses portions of Tuolumne and Calaveras Counties. Within  
 8 these counties, the six federally listed plant species that may occur include lone  
 9 manzanita (*Arctostaphylos myrtifolia*), Chinese Camp brodiaea (*Brodiaea pallida*),  
 10 succulent owl’s clover (*Castilleja campestris* ssp. *succulenta*), Hartweg’s golden  
 11 sunburst (*Pseudobahia bahifolia*), Layne’s ragwort (*Packera layneae*), and California  
 12 vervain (*Verbena californica*) (USFWS 2009). These are presented in Table 5-7 and are  
 13 described in detail below.

**Table 5-7: Federally Endangered, Threatened, Proposed, or Candidate Plant Species That Occur in or That May Be Affected by Projects in Calaveras and Tuolumne Counties**

Scientific Name	Common Name	Preferred Habitat	Potential Occurrence in the Planning Area	
			Status	
<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>Pseudobahia bahifolia</i>	Hartweg’s golden sunburst	Valley and foothill grasslands at the margins of blue oak woodland	E	P
<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, often on serpentine	T	P

14 Sources: California Native Plant Society (CNPS) 2009; CDFG 2009; Reclamation 2007a; USFWS 2007b;  
 15 Ayres 2005

1 The California Natural Diversity Database (CNDDDB) (CDFG 2009) has no recorded  
2 occurrence of Ione manzanita, Chinese Camp brodiaea, succulent owl's clover, or  
3 Hartweg's golden sunburst within the planning area (CDFG 2009). Further, Ione  
4 manzanita and Chinese Camp brodiaea were not found during surveys conducted in the  
5 planning area for these species (Evens et al. 2004; Reclamation 2007a). As such, these  
6 species are considered unlikely to occur in the planning area and are given no further  
7 consideration in this document.

8 **Layne's ragwort.** This species is federally listed as threatened and is listed as rare in  
9 California (CDFG 2009). It is a perennial herb with yellow flowers (CNPS 2009).  
10 Layne's ragwort has eight to thirteen ray flowers and fewer than 40 disk flowers that  
11 bloom April through July (Reclamation 1995, 2007a).

12 The species can be found on dry serpentine or granular igneous soils in chaparral and  
13 foothill pine/oak woodlands (Ayres 2005). It has been found in the Red Hills area,  
14 approximately 10 miles (16 kilometers) south of the lake area (BLM 2006), and a  
15 possible population was recorded in a drying stream margin in Peoria basin (Ayres 2005).  
16 The CNDDDB does not have a recorded occurrence of this species within the project area  
17 (CDFG 2009).

18 **California vervain.** This species is federally listed as threatened and is found in  
19 Tuolumne County (CNPS 2009). It is a perennial or biennial herb, with violet to purple  
20 flowers that bloom May through September (CNPS 2009; Reclamation 1995).

21 The species is known from ten occurrences in the Red Hills and is threatened by grazing,  
22 mining, development, recreation, and vehicles (CNPS 2009). It is protected in part at Red  
23 Hills Area of Critical Environmental Concern (ACEC) on BLM land (CNPS 2009).  
24 California vervain may grow in cismontane woodland, valley and foothill grassland, and  
25 foothill pine-blue oak woodland (CDFG 2009; Ayres 2005). It has been found on mesic  
26 sites on Delpiedra serpentine, usually seeps, creeks, swales, or in wet meadows at 830 to  
27 1,300 feet (250 to 400 meters) (CDFG 2009; BLM 2006; Ayres 2005). It is often  
28 associated with Cleveland's butterweed, which was observed on Peoria serpentine (Ayres  
29 2005). The CNDDDB does not have a recorded occurrence of this species within the  
30 project area; further, the species was not recorded during surveys conducted on PWMA  
31 serpentine (CDFG 2009; Reclamation 2007a). California vervain has been recorded at  
32 Yosemite Junction, approximately seven miles from the lake area (Reclamation 1995).

### 33 ***Federally Proposed or Designated Critical Habitat for Fish and Wildlife***

34 Two threatened species have critical habitat designated within Calaveras or Tuolumne  
35 Counties, Central Valley steelhead (*Onchorhynchus mykiss*) and California tiger  
36 salamander (*Ambystoma californiense*), central population (USFWS 2009). The planning  
37 area is not within either of these designated areas (NMFS 1999; USFWS 2006).

1 **Federally Proposed or Designated Critical Habitat for Plants**

2 Within Tuolumne County there is designated critical habitat for four special status plant  
3 species: succulent owl's clover (*Castilleja campestris* ssp. *succulenta*), Hoover's spurge  
4 (*Chamaesyce hooveri*), Colusa grass (*Neostapfia colusana*), and Greene's tuctoria  
5 (*Tuctoria greenei*) (USFWS 2009).

6 For all species, critical habitat was designated in FR 68:46683, on August 6, 2003. The  
7 designation was revised in FR 70:46923 on August 11, 2005, and species by unit  
8 designations were published in FR 71:7117 on February 10, 2006 (USFWS 2009). The  
9 critical habitat in Tuolumne County is present as a small band on the western edge of the  
10 county, outside of the planning area.

11 None of the four species have been recorded within the planning area, and Greene's  
12 tuctoria has not been recorded within either Calaveras or Tuolumne County. Due to a  
13 lack of recorded occurrences and distance to the designated critical habitat, these four  
14 species are considered unlikely to occur within the planning area.

15 **All Other Special Status Wildlife**

16 Twenty special status species (state endangered, state threatened, California species of  
17 special concern, state fully protected, and federal birds of conservation concern) have  
18 been documented in the planning area. These species are presented in Table 5-8.

19 The MBTA prohibits the take, harm, or trade of any migratory bird species and requires  
20 that all agencies must have a policy in place to prevent harm to such species as a result of  
21 that agency's actions. Birds protected by the MBTA include raptors, waterfowl,  
22 shorebirds, and neotropical migrants. Due to the large number of MBTA-protected bird  
23 species that could be found within the planning area, this section will not include a  
24 species-specific discussion of MBTA birds. All potentially occurring MBTA species are  
25 not listed in Table 5-8.

26 The USFWS prepared the Birds of Conservation Concern report (USFWS 2008) to help  
27 identify birds that, without additional conservation actions, are likely to become  
28 candidates for listing under the Endangered Species Act. Birds identified in this report  
29 are given no additional legal protection, but are included in this RMP/EIS since they are  
30 species that could potentially be impacted by management actions.

31 Several invertebrates that are tracked by the CNDDDB are included in Table 5-8. This is  
32 because, when New Melones Dam was constructed, many limestone caves were  
33 inundated, and species' habitats were lost. To mitigate these effects on the New Melones  
34 harvestman (*Banksula melones*), a type of rare spider, the USACE transplanted  
35 individuals of this species to other caves that would not be inundated. The invertebrates  
36 listed in Table 5-8 all potentially occur within caves in the planning area, and thus could  
37 be impacted by management actions.

**Table 5-8: Special Status Wildlife Species\* That Occur in or That 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	C = Confirmed
			** = Tracked by the CNDDDB		P = Possible
					U = Unlikely
<b>Invertebrates</b>					
<i>Aphrastochthonius grubbsi</i>	Grubbs' Cave pseudoscorpion	Caves	**		P
<i>Banksula 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.	**		P
<i>B. Tuolumne</i>	Tuolumne cave harvestman	Caves	**		P
<i>B. tutankhamen</i>	King Tut Cave harvestman	Caves	**		P
<i>Larca laceyi</i>	Lacey's Cave pseudoscorpion	Caves	**		P
<i>Pseudogarypus orpheus</i>	Music Hall Cave pseudoscorpion	Caves	**		P
<i>Stygobromus gradyi</i>	Grady's Cave amphipod	Mostly found in caves, but one collection from a spring.	**		P
<b>Fish</b>					
<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
<i>L. symmetricus</i> ssp. 3	Red Hills roach	Small streams in areas with serpentine soil.	CSC		P

**Table 5-8: Special Status Wildlife Species\* That Occur in or That May Be Affected by Projects in Calaveras and Tuolumne Counties**

Scientific Name	Common Name	Preferred Habitat	Status	
			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	
			** = Tracked by the CNDDDB	
				<b>Potential Occurrence in the Planning Area</b>
				C = Confirmed
				P = Possible
				U = Unlikely
<b>Amphibians</b>				
<i>Ambystoma californiense</i>	California tiger salamander, central population	Vernal pools and permanent waters in grasslands; burrows in adjacent upland sites.	CSC	U
<i>Bufo canorus</i>	Yosemite toad	Ponds used as breeding areas and nearby meadows that provide food.	CSC	U
<i>Hydromantes platycephalus</i>	Mount Lyell salamander	Caves, granite exposures, rock fissures, and seepages from springs and melting snow.	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>Rana boylei</i>	Foothill yellow-legged frog	Permanent water.	CSC	C
<i>R. muscosa</i>	Mountain yellow-legged frog	Rocky and shaded streams with cool waters above 4,500 feet (1,460 meters) elevation.	CSC	U
<i>R. sierrae</i>	Sierra Nevada yellow-legged frog	Rocky and shaded streams with cool waters at high elevation.	CSC	U
<i>Scaphiopus hammondi</i> (= <i>Spea hammondi</i> )	Western spadefoot	Grasslands; nests in temporary wetlands.	CSC	U

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<b>Reptiles</b>				
<i>Emys (=Clemmys) marmorata</i>	Western pond turtle	Permanent or near permanent water bodies with logs, vegetation, or mudflats for basking.	CSC	P
<i>E. (=Clemmys) marmorata marmorata</i>	Northwestern pond turtle	Permanent or near permanent water bodies with logs, vegetation, or mudflats for basking.	CSC	P
<i>Phrynosoma coronatum (frontale population)</i>	Coast (California) horned lizard	Lowlands along sandy washes with scattered low bushes.	CSC	P
<b>Birds</b>				
<i>Accipiter 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, BCC	C
<i>Aquila chrysaetos</i>	Golden eagle	Cliffs or isolated trees.	CSC	C
<i>Aphelocoma insularis</i>	Island scrub-jay	Open oak woodland, brushland, and chaparral on Santa Cruz Island.	BCC	U
<i>Athene cunicularia</i>	Burrowing owl	Flat open grasslands.	CSC, BCC	C
<i>Baeolophus inornatus</i>	Oak titmouse	Oak and pine-oak woodlands, tall chaparral, and oak-riparian associations.	BCC	P
<i>Bucephala islandica</i>	Barrow's goldeneye	Open water bodies.	CSC	C
<i>Buteo regalis</i>	Ferruginous hawk	Open grasslands.	CSC	C

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<i>B. swainsoni</i>	Swainson's hawk	Oak savannah; isolated trees or riparian areas.	ST	C
<i>Calidris canutus</i> population 1 ( <i>roselaari</i> type)	Red knot	Sea coasts on tidal flats and beaches.	BCC	U
<i>Calypte costae</i>	Costa's hummingbird	Desert, semi-desert, arid, brushy foothills, and chaparral in southern California.	BCC	U
<i>Campylorhynchus brunneicapillus</i>	Cactus wren	Desert, mesquite, arid scrub, and coastal sage scrub in southern California.	BCC	U
<i>Carduelis lawrencei</i>	Lawrence's goldfinch	Oak woodland, chaparral, riparian woodland, and pinyon-juniper woodland.	BCC	P
<i>Charadrius alexandrinus nivosus</i>	Snowy plover	Beaches, dry mud or salt flats, and sandy shores of rivers, lakes, and ponds.	CSC, BCC	U
<i>C. montanus</i>	Mountain plover	Short-grass plains and fields, plowed fields, and sandy deserts.	CSC, BCC	U
<i>Circus cyaneus</i>	Northern harrier	Marshlands	CSC	C
<i>Coccyzus americanus occidentalis</i>	Western yellow-billed cuckoo	Deciduous riparian woodlands, especially dense stands of cottonwood and willow.	SE, BCC	P
<i>Coturnicops noveboracensis</i>	Yellow rail	Freshwater and brackish marshes and deep grass.	CSC, BCC	U
<i>Cypseloides niger</i>	Black swift	Cliffs near waterfalls.	CSC, BCC	U

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<i>Dendroica petechia brewsteri</i>	Yellow warbler	Riparian areas; chaparral.	CSC, BCC	C
<i>Empidonax traillii</i>	Willow flycatcher	Riparian areas; dense willows.	SE	U
<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.	DL, SE, FP, BCC	C
<i>Gelochelidon nilotica</i>	Gull-billed tern	Coastlines, salt marshes, rivers, and lakes in southern California.	CSC, BCC	U
<i>Geothlypis trichas sinuosa</i>	Saltmarsh common yellowthroat	Salt marsh and coastal areas of California.	CSC, BCC	U
<i>Haematopus bachmani</i>	Black oystercatcher	Pacific coastline.	BCC	U
<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. Three bald eagle nests were recorded in 2006 and 2007 at New Melones Lake. Also use the lake for foraging and roosting in the winter.	DL, SE, BCC	C



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<i>Lanius ludovocianus</i>	Northern loggerhead shrike	Open habitat with scattered perches.	CSC, BCC	C
<i>Laterallus jamaicensis coturniculus</i>	Black rail	Coastal and freshwater marshes.	ST, FP, BCC	U
<i>Limnodromus griseus</i>	Short-billed dowitcher	Salt water wetlands.	BCC	U
<i>Limosa fedoa</i>	Marbled godwit	Marshes and flooded plains.	BCC	U
<i>Melanerpes lewis</i>	Lewis's woodpecker	Open forest and woodland, riparian woodland, and ponderosa pine forest.	BCC	P
<i>Melospiza melodia</i> ssp. <i>graminea</i>	Channel Island song sparrow	Brushy, shrubby, and deep grassy areas along seacoasts and waterways on the Channel Islands.	CSC, BCC	U
<i>M. melodia</i> ssp. <i>maxillaris</i>	Suisun song sparrow	Brushy, shrubby, and deep grassy areas along seacoasts and waterways in the Suisun Bay area.	CSC, BCC	U
<i>M. melodia</i> ssp. <i>pusillula</i>	Alameda song sparrow	Brushy, shrubby, and deep grassy areas along seacoasts and waterways in the San Francisco Bay region.	CSC, BCC	U
<i>M. melodia</i> ssp. <i>samuelis</i>	San Pablo song sparrow	Brushy, shrubby, and deep grassy areas along seacoasts and waterways near San Pablo Bay.	CSC, BCC	U
<i>Numenius americanus</i>	Long-billed curlew	Beaches and mudflats.	BCC	U

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<i>N. phaeopus</i>	Whimbrel	Beaches, tidal mudflats, marshes, and flooded fields and pastures.	BCC	U
<i>Oceanodroma homochroa</i>	Ashy storm-petrel	Islands off the Pacific coastline.	CSC, BCC	U
<i>Otus flammeolus</i>	Flammulated owl	Wooded and open areas in lowlands and mountains.	BCC	P
<i>Pandion haliaeetus</i>	Osprey	Large water bodies.	CSC	C
<i>Phalacrocorax auritus</i>	Double-crested cormorant	Large water bodies.	CSC	C
<i>Phoebastria nigripes</i>	Black-footed albatross	Islands off the Pacific coastline.	BCC	U
<i>Pica nuttalli</i>	Yellow-billed magpie	Oak woodland interspersed with grasslands or cultivated fields; also open riparian woodland.	BCC	P
<i>Picoides albolarvatus</i>	White-headed woodpecker	Conifer woodland at high elevations.	BCC	U
<i>P. nuttallii</i>	Nuttall's woodpecker	Oak woodland, chaparral, and riparian woodland.	BCC	P
<i>Pipilo maculatus clementae</i>	San Clemente spotted towhee	Islands off the central California coast.	CSC, BCC	U
<i>Ptychoramphus aleuticus</i>	Cassin's auklet	Pacific coastline.	CSC, BCC	U
<i>Puffinus creatopus</i>	Pink-footed shearwater	Islands off the Pacific coastline.	BCC	U
<i>P. opisthomelas</i>	Black-vented shearwater	Islands off the Pacific coastline.	BCC	U
<i>Riparia riparia</i>	Bank swallow	Riparian areas; stream banks.	ST	C

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<i>Rynchops niger</i>	Black skimmer	Pacific coastline.	CSC, BCC	U
<i>Selasphorus sasin</i>	Allen's hummingbird	Chaparral, thickets and open coniferous woodlands in coastal and southern California.	BCC	U
<i>Spizella atrogularis</i>	Black-chinned sparrow	Chaparral, sagebrush, and arid scrub.	BCC	P
<i>Strix nebulosa</i>	Great gray owl	Old growth coniferous forests.	SE	U
<i>S. occidentalis</i>	Spotted owl	Dense forest and deep, wooded canyons.	CSC, BCC	U
<i>Synthliboramphus hypoleucus</i>	Xantus's murrelet	Islands off the Pacific coastline.	ST, BCC	U
<i>Toxostoma lecontei</i>	LeConte's thrasher	Sparsely vegetated desert flats and dunes in southeastern California.	CSC, BCC	U
<i>Tyto alba</i>	Barn owl	Open habitats, including grassland, chaparral, riparian, and wetlands.	**	C
<b>Mammals</b>				
<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</i>	Townsend's 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

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<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>Lasiurus blossevillii</i>	Western red bat	Habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	CSC	P
<i>Lepus americanus tahoensis</i>	Sierra Nevada snowshoe hare	Boreal zones, riparian communities with thickets of deciduous trees and shrubs.	CSC	U
<i>Lepus townsendii</i>	Western white-tailed jackrabbit	Open areas with scattered shrubs at high elevations.	CSC	U
<i>Martes pennanti (pacific) 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>Sorex lyelli</i>	Mount Lyell shrew	High elevation riparian areas in the southern Sierra Nevada.	CSC	U
<i>Taxidea taxus</i>	American badger	Dry open grasslands, fields, and pastures.	CSC	U

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<i>Vulpes vulpes necator</i>	Sierra Nevada red fox	Forest openings, meadows, and barren rocky areas associated with its high elevation habitats.	ST	U

1 Notes: \*Special Status species in this table include state-listed threatened and endangered species and  
 2 California special concern species, USFWS Birds of Conservation Concern (USFWS 2008), species that are  
 3 tracked by the CNDDDB (CDFG 2009) for Tuolumne or Calaveras County, or those otherwise documented in  
 4 the planning area. Tracked species are those that do not have special legal protection, but are tracked by  
 5 the CNDDDB due to their rarity, restricted distribution, or threats to the species' survival.

6 Sources: CDFG 2009; USFWS 2006a.

8 **Other Special Status Plant Species**

9 A list of other special status plant species that may occur within the planning area was  
 10 compiled from USFWS, CNDDDB, and CNPS lists for Tuolumne and Calaveras Counties  
 11 and is presented in Table 5-9 (CDFG 2009; CNPS 2009).

**Table 5-9: Special Status Plant Species\* That Occur in or That May Be Affected by Projects in Calaveras and Tuolumne Counties**

Scientific Name	Common Name	Preferred Habitat	Status	
			SE= CA State Endangered	ST = CA State Threatened
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<i>Allium jepsonii</i>	Jepson's onion	Serpentine soils in open areas.	1B.2	P
<i>A. tribracteatum</i>	Three-bracted onion	Chaparral and coniferous forest above 3,300 feet (1,000 meters) elevation.	1B.2	U
<i>A. tuolumnense</i>	Rawhide Hill onion	Serpentine soil in foothill pine chaparral.	1B.2	P
<i>A. yosemitense</i>	Yosemite onion	Chaparral, woodland, and coniferous forest above 1,650 feet (500 meters) elevation.	Rare 1B.3	U
<i>Arctostaphylos myrtifolia</i>	lone manzanita	Chaparral or oak-dominated, open-canopied woodlands.	1B.2	U
<i>A. nissenana</i>	Nissenan manzanita	Coniferous forest and chaparral.	1B.2	P
<i>Brodiaea pallida</i>	Chinese Camp brodiaea	Valley and foothill grassland, vernal swales, or serpentine clay.	SE 1B.1	U
<i>Calochortus clavatus</i> var. <i>avius</i>	Pleasant Valley mariposa lily	Coniferous forest.	1B.2	U
<i>Calycadenia hooveri</i>	Hoover's calycadenia	On exposed, rocky, barren soil in cismontane woodland and valley and foothill grasslands.	1B.3	P
<i>Chlorogalum grandiflorum</i>	Red Hills soaproot	Coniferous forest, woodlands, and chaparral.	1B.2	C
<i>Clarkia australis</i>	Small's southern clarkia	High elevation woodlands and coniferous forest.	1B.2	U

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<i>C. rostrata</i>	Beaked clarkia	Woodlands and valley and foothill grassland.	1B.3	P
<i>Cryptantha crymophila</i>	Subalpine cryptantha	Subalpine coniferous forest	1B.3	U
<i>C. mariposae</i>	Mariposa cryptantha	Serpentine outcrops in chaparral.	1B.3	P
<i>Draba asterophora</i> var. <i>asterophora</i>	Tahoe draba	Subalpine coniferous forest.	1B.3	U
<i>Epilobium howellii</i>	Subalpine fireweed	Subalpine coniferous forest and meadows.	1B.3	U
<i>Eriogonum luteolum</i> var. <i>saltuarium</i>	Jack's wild buckwheat	Coniferous forest at high elevations.	1B.2	U
<i>Eriophyllum nubigenum</i>	Yosemite woolly sunflower	High elevation coniferous forest and chaparral.	1B.3	U
<i>Eryngium pinnatisectum</i>	Tuolumne button-celery	Vernal pools, woodlands, and coniferous forest.	1B.2	P
<i>E. racemosum</i>	Delta button-celery	Seasonally inundated riparian scrub with clay depressions.	SE 1B.1	P
<i>E. spinosepalum</i>	Spiny-sepaled button-celery	Vernal pools and valley and foothill grassland.	1B.2	P
<i>Erythronium taylorii</i>	Pilot Ridge fawn lily	Coniferous forest at high elevations	1B.2	U
<i>E. tuolumnense</i>	Tuolumne fawn lily	Coniferous forest, woodlands, and chaparral above 1,650 feet (500 meters) elevation.	1B.2	U
<i>Horkelia parryi</i>	Parry's horkelia	Openings in chaparral or woodlands.	1B.2	P

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Scientific Name	Common Name	Preferred Habitat	Status	Potential Occurrence in the Planning Area
<i>Hulsea brevifolia</i>	Short-leaved hulsea	High elevation coniferous forest.	1B.2	U
<i>Iris hartwegii</i> ssp. <i>columbiana</i>	Tuolumne iris	Woodland and coniferous forest above 1,300 feet (400 meters) elevation.	1B.2	U
<i>Juncus leiospermus</i> var. <i>aharti</i>	Ahart's dwarf rush	Mesic valley and foothill grassland.	1B.2	U
<i>Lomatium congdonii</i>	Congdon's lomatium	Serpentine soils with serpentine chaparral plants and foothill pines.	1B.2	C
<i>L. stebbinsii</i>	Stebbin's lomatium	Openings in yellow pine forest at high elevation.	1B.1	U
<i>Lupinus gracilentus</i>	Slender lupine	Subalpine coniferous forest.	1B.3	U
<i>L. spectabilis</i>	Shaggyhair lupine	Serpentine chaparral and cismontane woodland.	1B.2	P
<i>Mimulus filicaulis</i>	Slender-stemmed monkeyflower	Coniferous forest and woodlands above 3,000 feet (900 meters) elevation.	1B.2	U
<i>M. pulchellus</i>	Yellow-lip pansy monkeyflower	Moist meadows and coniferous forest.	1B.2	P
<i>M. whipplei</i>	Whipple's monkeyflower	Yellow pine forest above 2,000 feet (600 meters) elevation.	1A	U
<i>Navarretia myersii</i> ssp. <i>myersii</i>	Pincushion navarretia	Vernal pools and valley and foothill grassland.	1B.1	P
<i>Packera layneae</i>	Layne's ragwort	Dry serpentine or granular igneous soils in chaparral and foothill pine/oak woodlands.	Rare 1B.2	P



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<i>Pseudobahia bahifolia</i>	Hartweg's golden sunburst	Valley and foothill grasslands at the margins of blue oak woodland.	SE 1B.1	P
<i>Senecio cleavelandii</i> var. <i>heterophyllus</i>	Red Hills ragwort	Serpentine seeps in cismontane woodland.	1B.2	P
<i>Streptanthus oliganthus</i>	Masonic Mountain jewelflower	Pinyon-juniper woodland at high elevations.	1B.2	U
<i>Verbena californica</i>	California vervain	Cismontane woodland, valley and foothill grassland, and foothill pine-blue oak woodland.	ST 1B.1	P

1 Notes: \*Special Status species in this table include state-listed threatened, endangered, and rare species  
2 and CNPS 1A or 1B list species for Tuolumne or Calaveras County.  
3

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

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

12 **Peoria Wildlife Management Area.** In the Peoria Wildlife Area Management Area,  
13 several occurrences of *Lupinus spectabilis* and one occurrence of *Packera cleavelandii*  
14 and *Monardella douglasii* ssp. *venosa* have been documented (Ayres 2005; Vasquez 2007).  
15 Populations of *Allium tuolumnense* and *A. jepsonii* have been identified in the lower  
16 Peoria basin (Ayres 2005; Vasquez 2007), and this species also occurs on Rawhide Hill  
17 and in the BLM Red Hills Management Area adjacent to the planning area (Reclamation

1 1995). *Chlorogalum grandiflorum* is endemic only to the Red Hills of Tuolumne County,  
2 as well as El Dorado and Placer Counties, south of the planning area (Reclamation 1995).  
3 Potential populations of this species have been found in the Peoria basin (Ayres 2005;  
4 Evens et al. 2004). The species was found adjacent to the PWMA access road  
5 (Reclamation 2007a). *Lomatium congdonii* can be found in the Red Hills Management  
6 Area (Reclamation 1995) and has been recorded throughout the Peoria basin (Ayres  
7 2005; Evens et al. 2004).

## 8 **5.2.11 General Land Management**

### 9 **General Land Use**

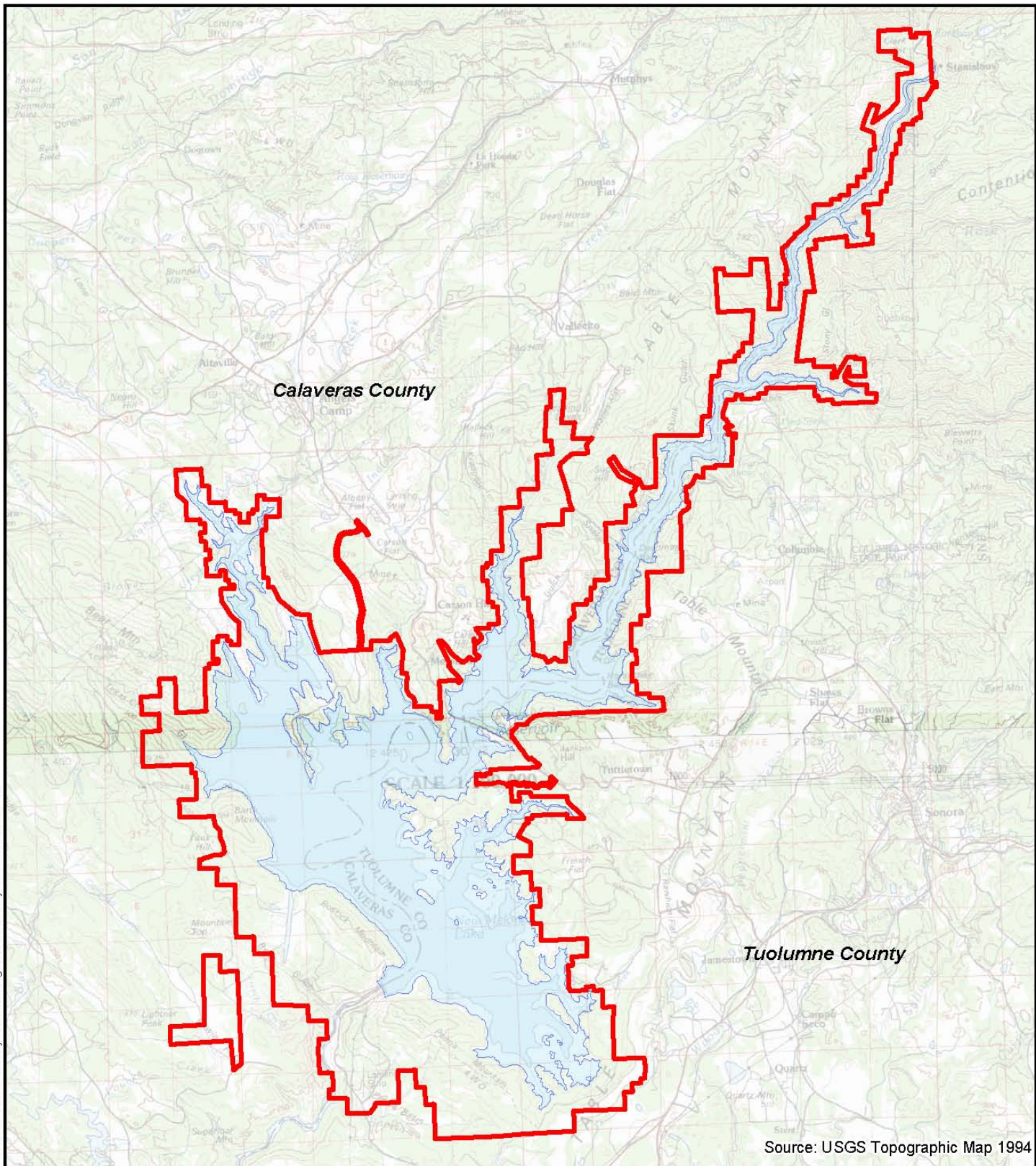
10 Reclamation administers approximately 15,168 acres (6,140 hectares) of land above the  
11 gross pool reservoir level (1,088 feet [330 meters] above mean sea level) surrounding the  
12 New Melones Lake Area (Figure 5-6). Approximately 5,405 acres (2,190 hectares) of the  
13 surrounding lands are designated for recreation and wildlife purposes, and 4,065 acres  
14 (1,650 hectares) are held as operations or open space lands.

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

19 Within Reclamation resource area lands, both Reclamation and adjacent landowners  
20 manage easements. Pacific Gas and Electric (PG&E) maintains a transmission line  
21 easement along the southwestern edge of the Reclamation boundary at the base of Table  
22 Mountain. Also, PG&E operates and has an easement for an afterbay dam that is related  
23 to the Stanislaus Powerhouse near Camp Nine. Also in the Camp Nine Management  
24 Area, Northern California Power Agency and Calaveras County Water District jointly  
25 operate the Collierville Powerhouse, which is also partially located on Reclamation lands  
26 near Clarks Flat. Tuolumne County Irrigation District (TCID) also maintains a permanent  
27 easement for a water intake structure, pumping plant, switchyard, 100,000-gallon  
28 (380,000-liter) storage tank, 16-inch (40-centimeter) pipeline, and roadway access to the  
29 pump station. The TCID easement is off of Old Abbeys Ferry Road, approximately two  
30 miles north of Parrotts Ferry Bridge.

31 **Adjacent Land Management and Uses.** Lands adjacent to the project boundary are  
32 mostly undeveloped and are used primarily for grazing and for open space values. The  
33 largest adjacent landowners are the BLM and USFS (Figure 5-7). Adjacent BLM lands  
34 are managed primarily for watershed protection and for preserving and improving forage  
35 and wildlife habitat. Six grazing allotments and twenty-two mining claims are held on  
36 BLM lands that adjoin Reclamation lands. The grazing allotments are categorized as  
37 custodial allotments with a year-round season of use. Of the 22 mining claims adjacent to  
38 the New Melones Lake Area, only one is actively mined near French Flat on the  
39 southeastern side of New Melones Lake.

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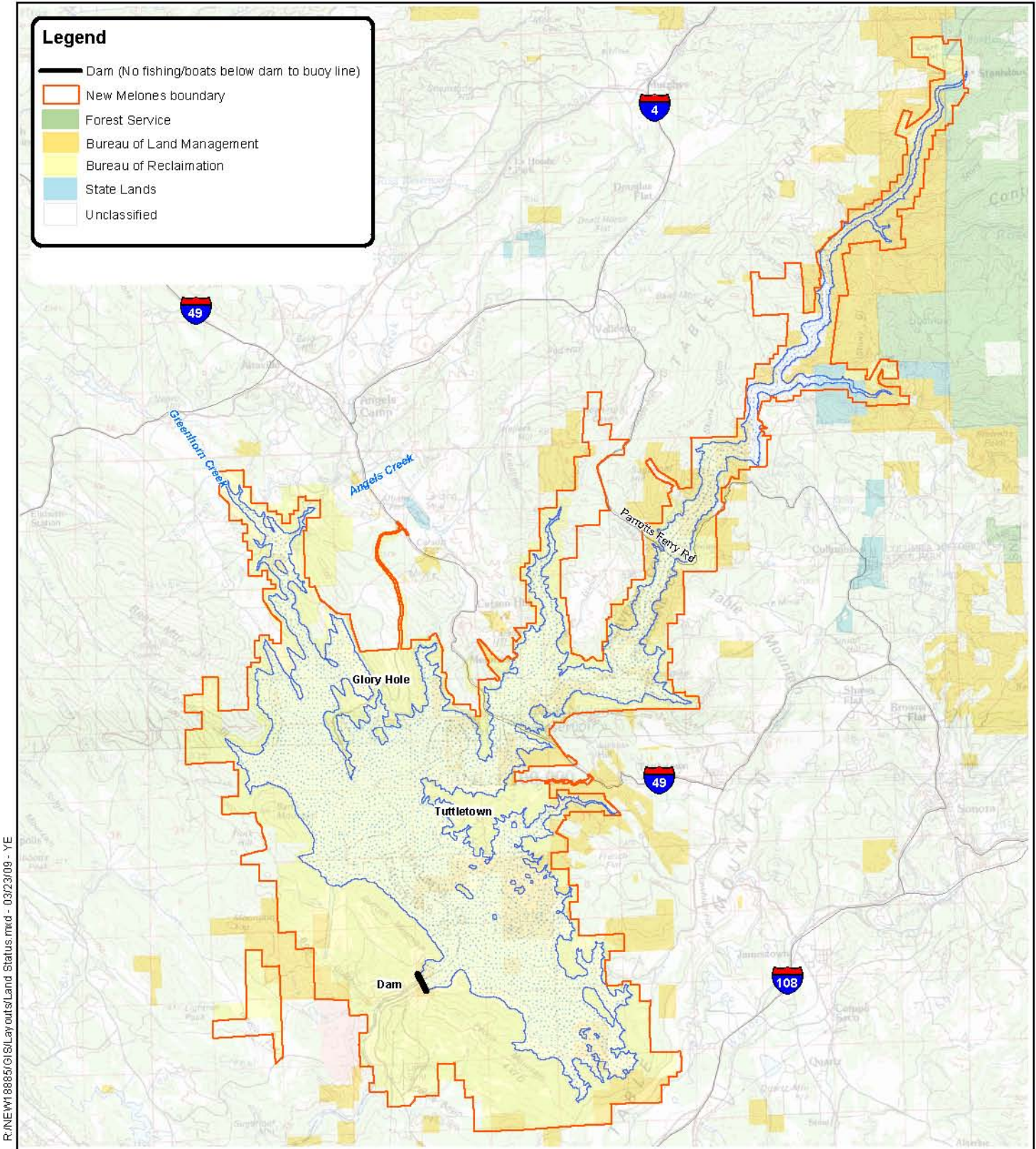


## ***Planning Area Boundary***

New Melones Lake Area, California  
Central California Area Office



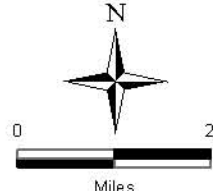
**Figure 5-6**



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**New Melones Land Status**

New Melones Lake Area, California  
Central California Area Office



**Figure 5-7**

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

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

### 9 **Trespass**

10 Certain activities are prohibited on federal land without a special use permit. These  
11 activities include grazing or watering livestock, trespass into areas specified as off limits  
12 to public access (e.g., operations facilities and areas with sensitive ecological or cultural  
13 resources), using motorized vehicles in any areas other than on paved or specified roads,  
14 and constructing, placing, or maintaining any kind of road, trail, structure, fence,  
15 enclosure, communication equipment, pump, well, or other improvements.

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

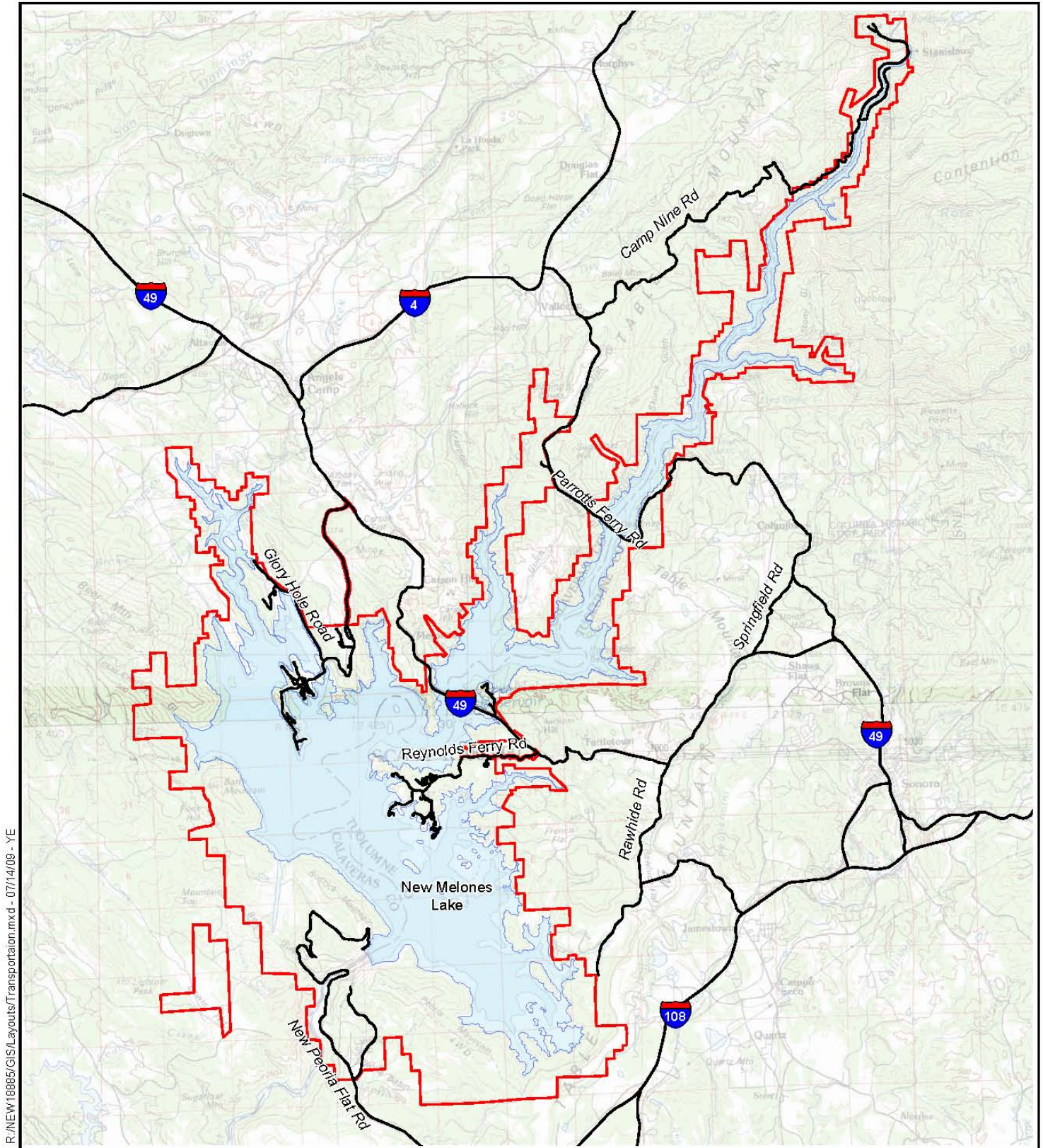
20 Several areas within the New Melones Lake Area have been closed as critical to  
21 infrastructure or due to public health and safety concerns. These closures are presented in  
22 the Current Closures Memorandum in Appendix E.

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

### 29 **5.2.12 Access and Transportation**

30 **Road Access.** The road system serving the project area consists of the state highways,  
31 county roads, and private roads, as seen in Figure 5-8.

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



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## Roads and Access

New Melones Lake Area, California  
Central California Area Office

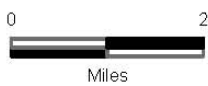


Figure 5-8

1 Annual Average Daily Traffic (AADT) volume is defined as the total two-way traffic  
 2 volume on a roadway over the year divided by 365 days. Caltrans traffic counts reflect an  
 3 estimate of AADT by compensating for seasonal fluctuation, weekly variation, and other  
 4 variables. Recording AADT is necessary for presenting a comprehensive picture of  
 5 traffic flow, evaluating traffic trends, computing accident rates, and planning and  
 6 designing highways. Roads surrounding the New Melones Lake Area include SR 49,  
 7 Highway 108/120, O’Byrnes Ferry Road, Glory Hole Road, Rawhide Road, Tuttletown  
 8 Road, Springfield Road, Parrotts Ferry Road, Camp Nine Road, New Peoria Flat Road,  
 9 and Peoria Flat Road. The highest AADT volume in Calaveras County in 2006 was  
 10 17,200, observed on SR 49 in Angels Camp on Murphy’s Grade Road. The highest  
 11 AADT volume in Tuolumne County in 2006 was 25,500 on SR 49 in Sonora at the East  
 12 Junction of SR 108 (Caltrans 2008). AADT data for 2004, 2005, and 2006 are presented  
 13 in Table 5-10 for SR 49, Table 5-11 for SR 4, Table 5-12 for SR 108, and Table 5-13 for  
 14 SR 120.

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

22 **Table 5-10: 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

23 Source: Caltrans 2008

24

1

**Table 5-11: 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

2

Source: Caltrans 2008

3

4

**Table 5-12: 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

5

Source: Caltrans 2008

6

7

**Table 5-13: 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

8

Source: Caltrans 2008

9 Reclamation lands and facilities are accessible from SR 49 at the locations described  
10 below.

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

15 *Minor paved road to Reclamation Headquarters and Mark Twain Unimproved Day Use*  
16 *Recreation Area.* The two-lane paved road from SR 49 to the lake access/recreation area  
17 is the former SR 49, now called Melones Court, and is owned and maintained by  
18 Reclamation. It is in good condition to the park administration office and visitor center  
19 gate but deteriorates from the gate to the lake access/unimproved recreation area. In  
20 2008, vehicle access has been limited to within 100 to 200 feet (30 to 60 meters) of the  
21 water's edge, and trailered boat launching is no longer permitted due to deteriorated road  
22 conditions and user conflicts in this narrow lake access corridor. The park administration  
23 office and visitor center are accessed by turning right from Melones Court onto



1 Studhorse Flat Road. The lands and facilities are approximately a quarter mile from the  
2 intersection on well-maintained roads.

3 *Minor paved road to Old Town (Melones) Unimproved Day use Recreation Area.* The  
4 two-lane paved road from SR 49 to the recreation area is gated approximately 0.1 mile  
5 (160 meters) from the SR 49 junction. However, there is nonmotorized public access to  
6 Old Town (Melones) Unimproved Day Use Recreation Area.

7 *Rawhide Road (Tuolumne County Road E5) turnoff to Shell Road to Table Mountain and*  
8 *PWMA.* Rawhide Road is a well-maintained, paved, two-lane county road that is  
9 accessible from two points along SR 49. Shell Road, a county road for the first 2.59 miles  
10 (4.2 kilometers) from its intersection at Rawhide Road, starts as a well-maintained two-  
11 lane then one-lane paved road. At the 1.6 mile (2.5 kilometer) mark, the pavement ends  
12 and the road becomes a poorly maintained, two-track dirt road through private property  
13 and across a county road easement. It is used for public vehicles, emergency vehicles,  
14 and Reclamation staff and contractors to access Reclamation's Table Mountain Trailhead  
15 staging area of the PWMA. After the 2.59 mile (4.2 kilometer) point, the road crosses  
16 onto Reclamation property, where it is gated to prevent public vehicle access. The road  
17 continues through the PWMA as a service road for authorized vehicles only. This road is  
18 open to public equestrian use, hiking, biking, and hunting. PWMA is closed to public  
19 vehicles, a change called for in the PWMA EA (Reclamation 2007a). Another way to  
20 access Bear Creek Management Area, an unimproved recreation area, would be to travel  
21 to the PWMA, as described, then to travel north and west of the public parking along  
22 Shell Road. No vehicle access into the Bear Creek Management Area is permitted.

23 *Rawhide Road (Tuolumne County Road E5) turnoff to French Flat Road to French Flat*  
24 *Unimproved Day Use Recreation Area.* Rawhide Road is a well-maintained, paved, two-  
25 lane county road that is accessible from two points along SR 49. French Flat Road, a  
26 county road, is a well-maintained two-lane paved road, which at two miles (3.2  
27 kilometers) enters gated BLM land. This half-mile-long, unpaved road crosses BLM  
28 land, and connects with Reclamation property. No public vehicles are permitted on  
29 Reclamation property in French Flat.

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

35 **Parrotts Ferry Road.** Reclamation lands and facilities are accessible from Parrotts Ferry  
36 Road at the locations described below.

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

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

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

22 **Peoria Flat Road.** Reclamation lands and facilities are accessible from SR 108/ SR120  
23 at the locations described below.

24 *Minor paved road to Peoria Equestrian Staging Area to Peoria Wildlife Area.* From  
25 SR108/SR120 to get to the Peoria Equestrian Staging Area, one turns west onto county  
26 road E15/O'Byrne's Ferry Road for approximately .2 mile (320 meters) and then turns  
27 north onto New Peoria Flat Road for approximately three miles (five kilometers), until  
28 the Baseline Conservation Camp entrance. At this point, a public parking lot is available  
29 to the right, approximately .2 mile (320 meters) down an access road. The parking lot  
30 provides access for nonmotorized vehicles to the PWMA and the radio-controlled flyers  
31 facility.

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

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

40 **Boat and Personal Watercraft Use.** Motorized boats are the principal means to access  
41 and enjoy many of the recreation opportunities at the New Melones Lake Area. However,

1 kayaks, canoes, and sailboats are also used to access the lake. Boat launch ramps with  
2 courtesy docks are located in the Glory Hole and Tuttle town Recreation Areas.

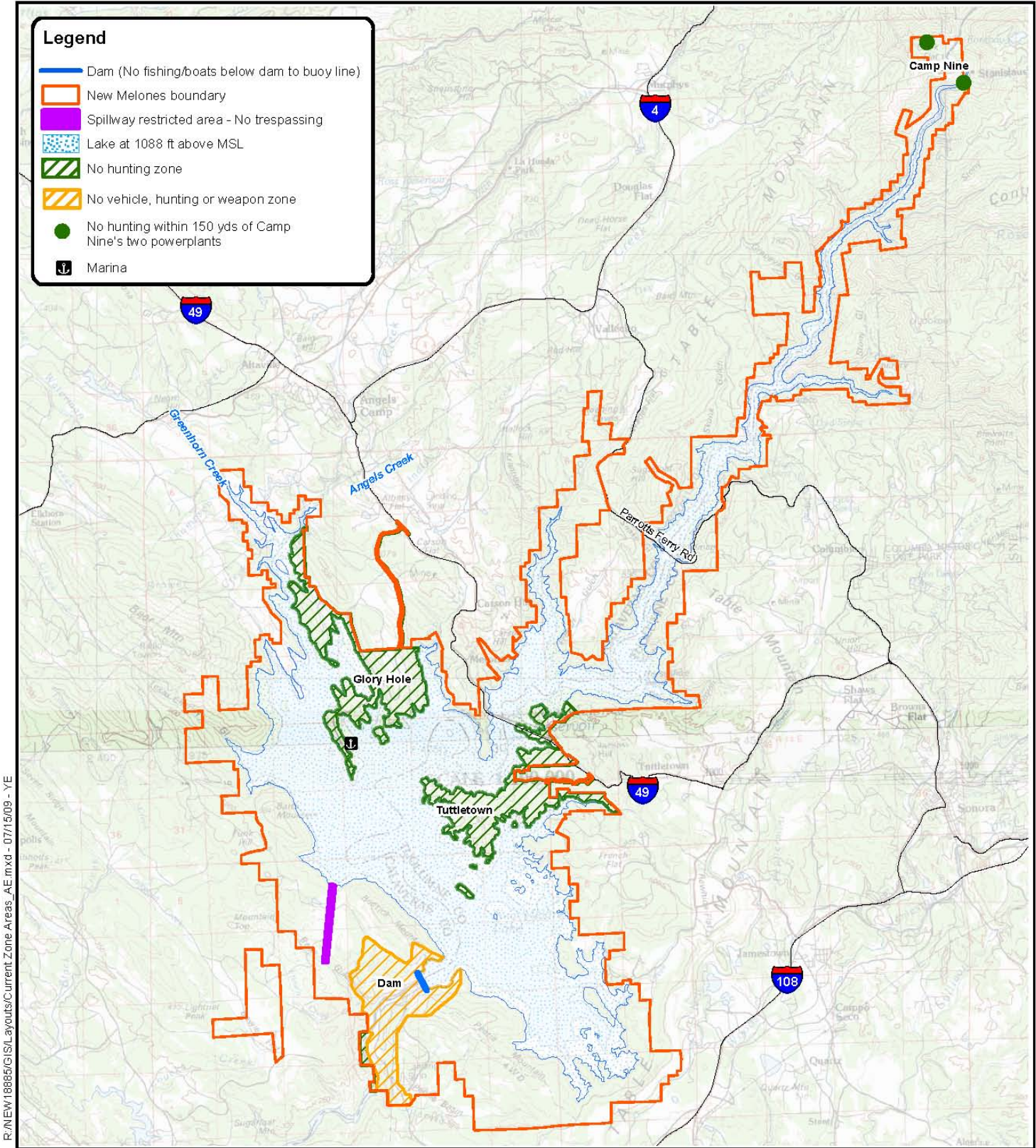
3 Projected increases in population will result in increased demand on roads within the  
4 project area; use of the New Melones Lake Area is expected to increase 20 percent over  
5 the planning period. The increase in travel demand on the roadway system will require  
6 increased costs for roadway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

### 11 **5.2.13 Public Health and Safety**

12 Reclamation provides that staff levels be commensurate with recreation visitation. This is  
13 to fully implement policies and management actions and to maintain the level and quality  
14 of safety and services expected by visitors to the New Melones Lake Area. All  
15 Reclamation employees take safety training to identify public safety hazards.  
16 Reclamation's employees provide interpretive programs and public contact to educate the  
17 public about safety issues relating to boating, firearms use, fire use, and natural hazards,  
18 such as poisonous snakes. There is also a visitor center to inform and educate the public  
19 about safety matters at the New Melones Lake Area. Additionally, campground hosts  
20 provide information to campers and report public safety issues to Reclamation staff  
21 (Laird 2007); campground hosts monitor the campgrounds three times a day.


22 **Recreation.** There are a number of recreation zones for regulating the type of and  
23 intensity of use to protect sensitive resources and maintain public safety (Reclamation  
24 1995). The various zones include the following (Figures 5-9, 5-10, and 5-11):

- 25 • No Hunting Zones—
  - 26 ○ It is unlawful for any person, other than the owner, person in possession of  
27 the premises, or a person having the express permission of the owner or  
28 person in possession of the premises, to hunt or to discharge while  
29 hunting, any firearm or other deadly weapon within 150 yards (135  
30 meters) of any occupied dwelling house, residence, or other building or  
31 any barn or other outbuilding used in connection therewith. The 150-yard  
32 (135-meter) area is a "safety zone";
  - 33 ○ It is unlawful for any person to intentionally discharge any firearm or  
34 release any arrow or crossbow bolt over or across any public road or way  
35 open to the public, in an unsafe manner (Fish and Game Code 3004);
- 36 • No hunting is permitted within 150 yards (135 meters) of other recreational uses;
- 37 • No hunting or weapons allowed within the restricted dam-spillway zone (Figure  
38 5-10);



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## Current New Melones Restricted Land Use Zones

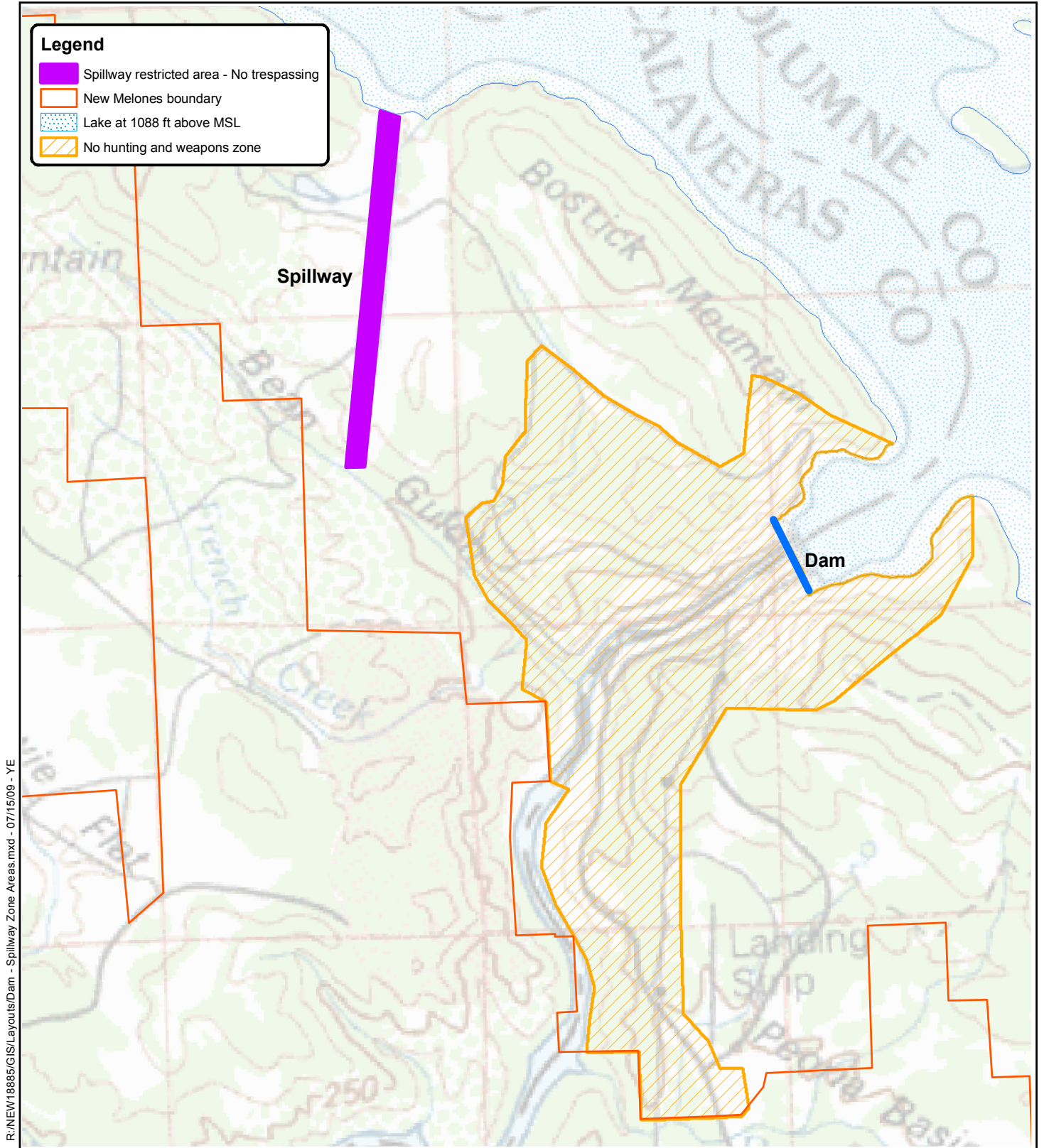
 No hunting within 150 yds of any developed recreation area, campgrounds, or other facilities, boat ramp parking area, day use area, neighboring residences, or within 150 yds of Camp Nine's two power plants


Dam zone - No vehicles, hunting or weapons

New Melones Lake Area, California  
Central California Area Office



Figure 5-9



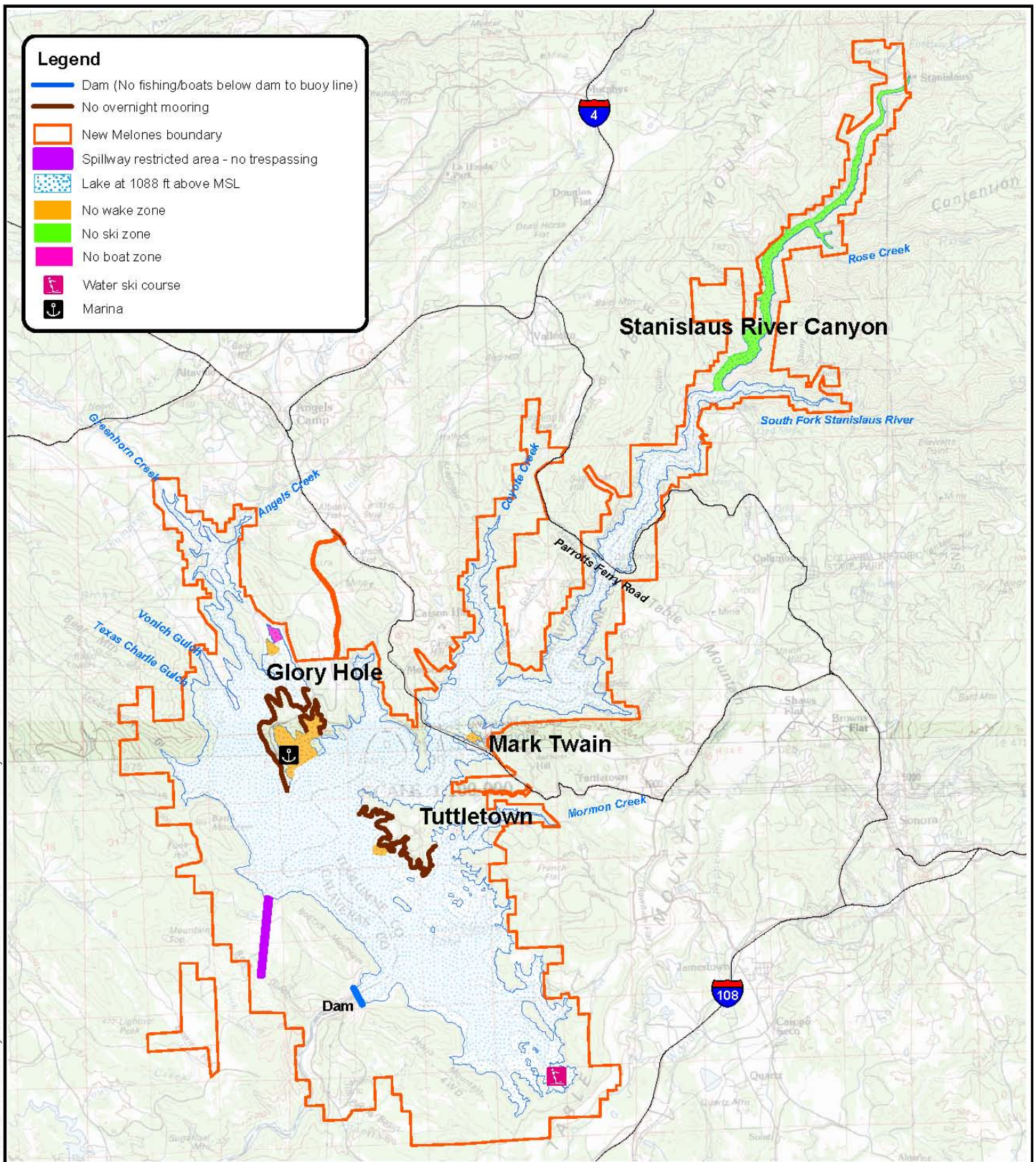
 No hunting within 150 yds of any developed recreation area, campgrounds, or other facilities, boat ramp parking area, day use area, neighboring residences, or within 150 yds of Camp Nine's two power plants





Dam zone - No hunting and weapons zone

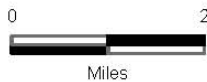
**Current New Melones Restricted Land Use - Dam - Spillway Zone**  
 New Melones Lake Area, California  
 Central California Area Office  
**Figure 5-10**



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-  No wake zone - 200 ft around marina, boat launches, and lake access
-  No ski zone - Areas where it has been determined that, due to the nature of the area, it is too dangerous to tow a person behind a vessel. No waterskiing, tubing, wakeboarding or kneeboarding is permitted.
-  No boat zone - No boats within designated area
-  Marina - No swimming within marina area



## ***New Melones Water Use Zones No Action Alternative***

New Melones Lake Area, California  
Central California Area Office

**Figure 5-11**

- 1 • No hunting is permitted within the boundaries of the Tuttle town and Glory Hole  
2 Recreation Areas;
- 3 • No fishing is permitted below the dam to the buoy line;
- 4 • No Swimming Zones—No swimming is allowed at marina and launch ramps;
- 5 • Reservoir Management Zone A—All boating uses are allowed;
- 6 • Reservoir Management Zone B—Five mph “no wake zone” provides for slow  
7 boating and fishing areas. This protects the health and safety of others in the  
8 marinas, docks, and boat launch areas and helps minimize shoreline erosion  
9 (Figure 5-11); and
- 10 • Reservoir Management Zone C— No boating is allowed in designated swimming  
11 areas and in areas off limits for operations, such as the dam and spillway areas.

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

- 16 • White-water rafting;
- 17 • Fishing derbies;
- 18 • Model aircraft use;
- 19 • Houseboat launching and retrieving;
- 20 • Mountain bike races;
- 21 • Triathlons;
- 22 • Search and rescue dog trials;
- 23 • CAL FIRE fire training;
- 24 • Large group camping events;
- 25 • Group events involving eight to twelve rented houseboats that are operated  
26 together;
- 27 • Horseback trail rides events;
- 28 • Slalom water ski course events (right-of-use permit);
- 29 • Commercial recreation gold panning access to private gold panning area (right-of-  
30 use permit); and
- 31 • Other uses not specified above.

32 **Special Events.** A special event permit is required for short-term special events or  
33 activities that are not inherently commercial activities conducted at the New Melones  
34 Lake Area. Special event permits are issued only for qualifying events, as described in

1 the Schedule of Fees for Special Events included in Appendix E. Fees for special event  
2 permits include expenses incurred for agency administration, processing, and monitoring  
3 of the event, as well as the fair market value or reasonable and customary use fees for  
4 like events, activities, or land uses charged by other agencies or entities in the market  
5 area. Special events or activities must comply with all requirements in 43 CFR, Part 429.  
6 Events that are within the normally occurring and approved range of activities authorized  
7 by concession contracts may not require a permit. Reclamation evaluates the concession  
8 sponsored event or activity and determines the need for permits. Additional guidance for  
9 special events and other activities not covered by the Schedule of Fees for Special Events  
10 is found in 43 CFR, Part 429.

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

20 **Boating.** Motorboats must be equipped with personal flotation devices, a backfire flame  
21 arrester, muffling and ventilation systems, a sound signaling device, navigation lights,  
22 and a fire extinguisher, as required by the US Coast Guard and California Department of  
23 Boating and Waterways (Reclamation 2007c). Kayaks, canoes, and sailboats used in  
24 public waters must be equipped with personal flotation devices, a sound signaling device,  
25 and navigation lights. Specific boating equipment requirements are outlined in the  
26 “ABCs of the California Boating Law” (California Department of Boating and  
27 Waterways 2007). Reclamation seeks to comply with boating laws and regulations, such  
28 as the California Boating Law of 2006 and the Harbors and Navigation Code.

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

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

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



1 The exact number and location of abandoned mines is not centrally cataloged (Laird  
2 2007). The USACE filled in some mines at the beginning of the New Melones project. In  
3 an effort to avoid attracting visitors to potentially hazardous abandoned mines, these  
4 features are not signed or identified on public materials.

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

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

16 Illegal drug use, sales, and manufacturing present potential public health and safety  
17 hazards at the New Melones Lake Area. Drugs, such as methamphetamines, are  
18 manufactured and marijuana is grown in isolated areas on Reclamation lands (Laird  
19 2007). As a result, illegal drug manufacturing material and hazardous waste is abandoned  
20 on New Melones lands, drug manufacturing areas are contaminated, and waste products  
21 may be dumped on the roadways. The presence of people involved in production, use, or  
22 sale of illegal drugs may present a hazard to other lake users who happen on such  
23 activities.

#### 24 **Public Services**

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

33 Reclamation Park Rangers perform safety inspections and encourage lake visitors to  
34 comply with state and federal safety laws and regulations. Reclamation Park Rangers also  
35 patrol recreational facilities, monitor compliance with permits and concessionaire  
36 agreements, and check on the condition of natural and cultural resources (Reclamation  
37 1995).

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

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

18 Tuolumne and Calaveras County Sheriff boat patrols share responsibility for enforcing  
19 boating laws at New Melones Lake and at Tulloch Reservoir, which is also on the  
20 Stanislaus River, just south of New Melones Lake (Reclamation 1995). Due to staffing  
21 limitations, it is difficult to provide effective patrols on New Melones Lake (Laird 2007).

22 Reclamation has three boats available for use on New Melones Lake most of the year and  
23 provides regular boating safety patrols on the lake during the summer (Reclamation  
24 1995; Laird 2007). One of the boats is designated for patrolling the lake. The focus of  
25 this patrol is to advise boaters of unsafe acts, to inspect boating safety equipment, and to  
26 provide boaters with current safe boating regulations and safety information. In addition,  
27 Reclamation patrol boats are used to assist disabled boaters and to mark boating  
28 waterways and hazards (Appendix G).

29 The New Melones Lake Area is within the CDFG Sierra District and Tuolumne County  
30 Region (Reclamation 1995). The CDFG issues fishing and hunting permits and is  
31 empowered to enforce the State Fish and Game Code, including issuing violations and  
32 revoking sport fishing and hunting privileges at the New Melones Lake Area. The CDFG  
33 also regulates catch from fishing tournaments and issues dredging permits as needed.

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

1 landowners in the area. Closing the road to public vehicles has minimized further  
2 degradation of this area.

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

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

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

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

- 23 • Hydrants in campgrounds and day use areas;
- 24 • Hydrant system around administration buildings;
- 25 • Visitor center and maintenance building with burglar alarms but no fire hydrant  
26 systems;
- 27 • A shaded fuel break on the visitors center side of SR 49;
- 28 • Marina with fire alarms in the store and covered area of docks, water storage  
29 tanks, and a Trimex 30 Fire Foam System;
- 30 • Marina with hand-held fire extinguishers on open docks;
- 31 • Marina fireboat;
- 32 • Fire hydrant system on land around the marina;
- 33 • Helitack base at Columbia airport;
- 34 • Two Park Ranger vehicles with slide in firefighting units; and
- 35 • Park Rangers carrying hand tools and five-gallon water backpacks to put out  
36 campfires in case of emergency.

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

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

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

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

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

28 Reclamation provides fliers to educate the public about rattlesnakes and removes  
29 rattlesnakes from campgrounds. Reclamation Park Rangers may provide first aid to  
30 snakebite victims, but more extensive treatment is required and must be provided by area  
31 hospitals. In 2006, there were three rattlesnake bites in the New Melones Lake Area  
32 (Laird 2007).

### 33 **5.2.14 Invasive Species Control**

#### 34 ***Prescribed Fire***

35 The draft Fire Management Plan (draft FMP) provides interim guidance for fire  
36 management in the New Melones Lake Area (Appendix D). This document recognizes  
37 fire as a resource to assist in managing for desired range conditions and proposes  
38 methods to incorporate prescribed fire into its range management program. The draft  
39 FMP incorporates several aspects of the National Fire Plan, including use of the fire

1 regime condition class (FRCC) method. This method uses established reference  
2 conditions created by assessing ecological features and natural fire regimes in healthy  
3 rangelands. Features assessed in the field to determine the FRCC include vegetative and  
4 disturbance attributes, such as the extent of nonnative species invasion. These features  
5 can be used to determine the overall ecological health of a particular study area.  
6 Reclamation and partnering agencies use this data to determine range management  
7 priorities, including making decisions as to when and where prescribed fires may be  
8 appropriate.

### 9 **Weed Control**

10 Most of the grasslands found in the New Melones Lake Area have been converted from  
11 perennial native bunchgrasses to nonnative annual grasses. Tree and shrub communities  
12 show a greater incidence of native species. In the PWMA, which has extensive  
13 rangeland, 74 nonnative species have been recorded (Evens et al. 2004), most of which  
14 are ground layer species. While many of these species have substantially replaced the  
15 role of native grasses in terms of providing forage for wildlife and livestock, others such  
16 as cheatgrass (*Bromus tectorum*) are able to change the fire and hydrologic regimes and  
17 seriously alter range conditions.

### 18 **Grazing**

19 Six grazing allotments, totaling 3,746 acres (1,515 hectares), are on BLM lands adjacent  
20 to the project area. One grazing allotment is permitted on USFS land in the Clark's Flat  
21 area. The allotment encompasses 480 acres (190 hectares) and has a season of use from  
22 May 1 through September 15. Although historically allowed, no grazing is currently  
23 permitted on New Melones lands.

24 Reclamation previously leased 4,394 acres (1,780 hectares) of land in two areas (Bear  
25 Creek and Glory Hole Recreation Areas) for livestock grazing. Subject to a grazing  
26 suitability analysis, grazing may continue, but its purpose and intensity would be directed  
27 by water quality concerns, by vegetation management goals (usually related to invasive  
28 species control and wildfire prevention), and by policies and actions identified in current  
29 Reclamation guidance.

## 30 **5.2.15 Fire Management**

### 31 **Wildland Fire**

32 Fire is an integral part of California's Sierra Foothill landscape. Historically, frequent  
33 low- or mixed-severity fire was common at New Melones. Now, much of this area has  
34 transitioned to stand-replacing fire due to increased fuel loads and overstocking.  
35 Wildland fire fuels consist of live and dead vegetation, including branches (on the tree or  
36 on the ground), leaves, needles, seeds, and cones. Wildland fire fuels continue to  
37 accumulate due to successful fire suppression and a lack of prescribed fire and other fuel  
38 reduction strategies.

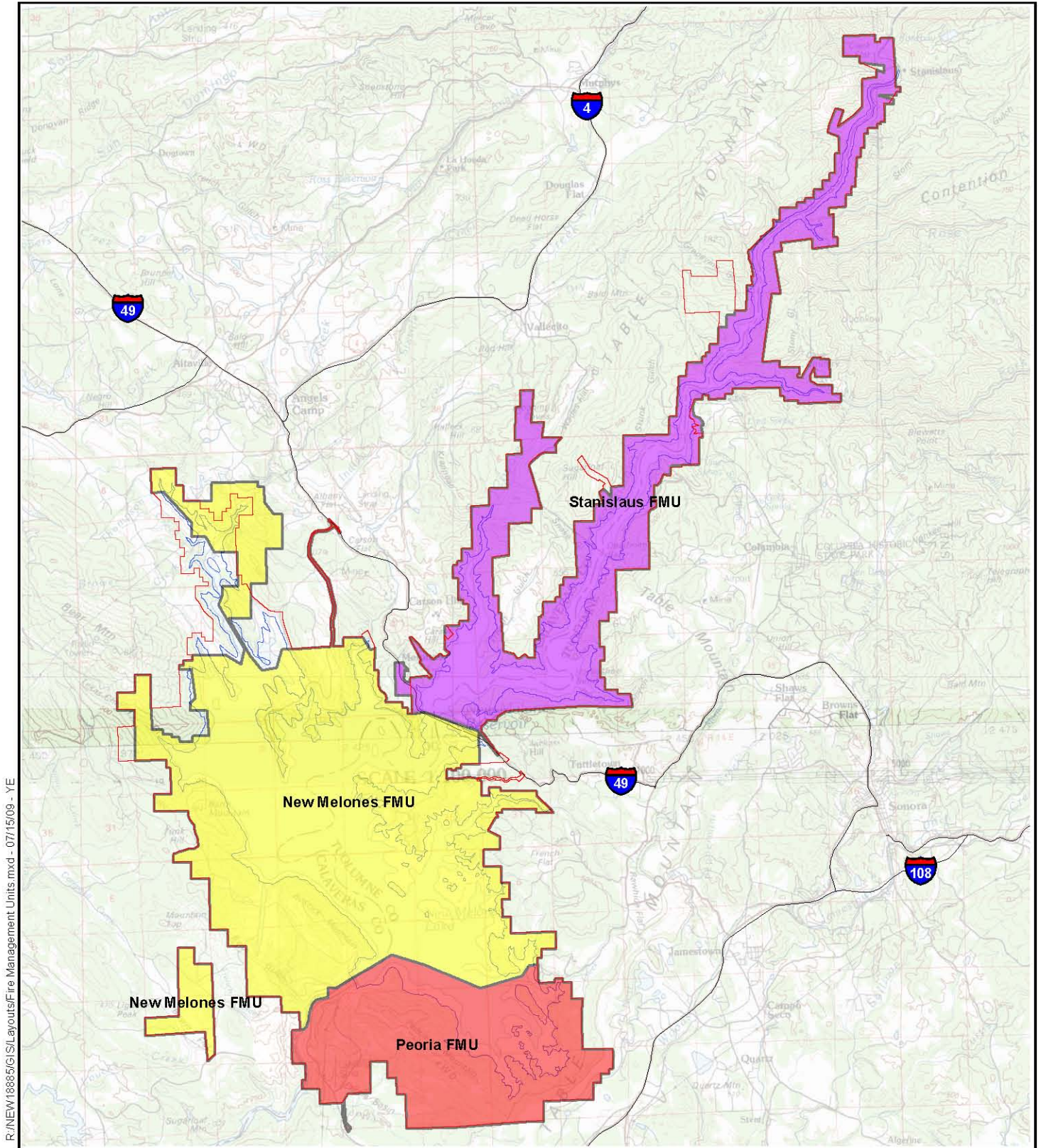
1 Fuel conditions have also been affected by an increase of nonnative invasive species,  
2 such as star thistle (*Centaurea solstitialis*). Burning tends to stimulate star thistle  
3 germination and may lead to more robust plants following fire due to reduced  
4 competition from native species. In addition, star thistle retains moisture longer and  
5 grows larger than native plants; thus, the fuel it creates is more concentrated and burns  
6 slower and hotter, increasing fire severity.

7 Deteriorating forest health creates fuel conditions that contribute to high-intensity fires.  
8 Tree density, dense patches of shrubs, and introduced weeds increase fuel loads and  
9 competition among species, promoting tree mortality and disease and resultant high-  
10 intensity fire.

11 **Fire Management Units.** Fire is managed in three distinct fire management units (FMU)  
12 on New Melones project lands (New Melones, Stanislaus, and Peoria; Figure 5-12). An  
13 FMU is any land management area definable by objectives, management constraints,  
14 topographic features, access, value to be protected, political boundaries, fuel types, and  
15 major FRCC groups that set it apart from the management characteristics of an adjacent  
16 FMU. The FMUs on New Melones project lands encompass both Reclamation and non-  
17 Reclamation lands. The New Melones unit's primary resource management strategy is to  
18 protect the wildland-urban interface (WUI) and high-value watersheds; the Stanislaus  
19 unit's primary strategy is to protect watersheds and the WUI; and the Peoria unit is  
20 primarily managed to protect high-value habitat and the WUI (Reclamation 2007b).

21 New Melones FMU consists of four fuel types, totaling 6,589 acres (2,670 hectares). The  
22 eight management areas in the FMU are Tuttletown French Flat, Bear Creek, Dam and  
23 Spillway, Westside, Greenhorn Creek, Glory Hole, and Carson. The northern half of Bear  
24 Creek and the eastern two-thirds of Carson are managed under different FMUs. Fire and  
25 fuels management in this unit are necessary to protect resource values, such as water  
26 quality, watershed values, private property, developed recreation sites, cultural resources,  
27 special status species, wildlife habitat, air quality, recreation, and visual resources. The  
28 following communities/WUI areas are at risk from wildland fire: Angels Camp,  
29 Stanislaus, Tuttletown, Jamestown, Carson Hill, Cloy House, Copperopolis, and Jackass  
30 Hill.

31 Wildland fires in the western US have become increasingly dangerous due to the  
32 proximity of structures and fuel buildup (invasive weeds or vegetation that would have  
33 burned more often, but due to successful fire suppression, continue to accumulate). In  
34 response to the risks wildland fires pose to firefighters and the impacts on communities,  
35 the National Fire Plan was initiated by a partnership of government land management  
36 agencies in 2000. This coordinated effort to protect communities and natural resources  
37 from increasingly severe wildfire resulted in the 10-Year Comprehensive Strategy and  
38 specific goals and objectives to guide fire management planning (Reclamation 2007b). In  
39 addition to the guidance provided by the National Fire Plan, the FRCC method was  
40 established. FRCC is an interagency standardized tool for determining the degree of  
41 departure from reference condition vegetation, fuels, and disturbance regimes. Assessing  
42 FRCC can help guide management objectives and set priorities for treatments. Reference

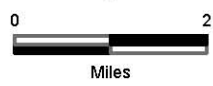


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**Fire Management Units**

New Melones Lake Area, California  
Central California Area Office

**Figure 5-12**



1 conditions are vegetation and disturbance attributes that can sustain current native  
2 ecological systems and natural fire regimes. Reference conditions are determined by  
3 experts through professional judgment, published literature, and historical information  
4 using standardized computer models. This quantitative method links landscape-scale  
5 assessments and stand-level classifications (Hann et al. 2003). The objective of this  
6 method is to target those areas exhibiting the greatest departure from reference condition  
7 as priority for fuel treatment.

8 Development around the New Melones Lake Area and surrounding areas continues to  
9 increase as demand for recreation and housing in the area increases. Greater numbers of  
10 people, homes, and structures within the WUI, coupled with accumulating hazardous  
11 fuels due to fire suppression and the lack of fuel management measures, creates a  
12 dangerous situation. Many of Reclamation's lands are not easily accessible, further  
13 increasing the fire hazard. The three FMUs in the decision area list WUI as a major  
14 decision factor (Reclamation 2007b). As the WUI continues to grow, it will become more  
15 of a driving factor on fire suppression and fuels management in the future. A draft Fire  
16 Management Plan is included in Appendix D.

17 The CAL FIRE-Tuolumne/Calaveras Unit is the principal agency responsible for fire  
18 suppression in the project area. On adjacent BLM lands the levels of resources available  
19 have not allowed for ideal fire management (BLM 2006). Competition among agencies  
20 for CAL FIRE staff and equipment could lead to a lack of personnel and equipment to  
21 accomplish fuel treatment goals, resulting in a backlog of high priority fuels management  
22 projects.

23 Smoke management and associated air quality concerns may increase as resource users  
24 and residences increase in and around the project area, potentially limiting prescribed  
25 burning activity.

26 Noxious and invasive weed species will continue to colonize disturbed sites. This trend  
27 will likely increase if fire severity and size increases and if fuels continue to build up as a  
28 result of fire suppression.

## 29 **5.2.16 Cultural Resources**

30 *The New Melones Reservoir Cultural Resource Overview, Calaveras and Tuolumne*  
31 *Counties, California* (Pacific Legacy 2008) was completed for this project and provides a  
32 detailed account of cultural resources and research orientations within the New Melones  
33 Lake Area. The following discussions are taken from that document.

### 34 ***Compliance for Reclamation Undertakings***

35 Reclamation is responsible for compliance with Section 106 and 110 of the NRHP.  
36 Section 106 of the NHPA requires federal agencies to take into account the effects of  
37 their undertakings on historic properties and can afford the Advisory Council on Historic  
38 Preservation (ACHP) a reasonable opportunity to comment while Section 110 of the



1 NHPA sets out the broad historic preservation responsibilities of the federal agency and  
2 is intended to ensure that historic preservation is fully integrated into ongoing programs.

3 For project specific compliance, Reclamation must take into account the effects its  
4 undertakings will have on historic properties as defined in 36 CFR, Part 800.16 (1).  
5 When the effects of an undertaking are not fully known or the project extends over a  
6 period of years, Reclamation may elect to follow an alternative process following  
7 procedures found in 36 CFR, Part 800.14 which allows for the development of a  
8 programmatic agreement between consulting parties. Under NEPA (42 USC, Sections  
9 4321-4327), Reclamation is required to consider potential environmental impacts and  
10 appropriate mitigation measures for projects with federal involvement.

11 Projects undertaken by Reclamation must follow directives and guidelines found in  
12 Reclamation Manual Policy and Directives and Standards. LND P01, LND 02-01, and  
13 LND 07-01. LND P01 establishes policy and authority for cultural resource  
14 identification, evaluation, and management of cultural resources. LND 02-01 provides  
15 directives and standards and clarifies the role of Reclamation regarding implementation  
16 of its cultural resources management responsibilities. LND 07-01 provides procedures  
17 protocols for inadvertent discoveries on Reclamation land for cultural items which fall  
18 under the authority protection of the Native American Graves Protection and Repatriation  
19 Act (NAGPRA).

20 For federal undertakings and administration, which require compliance with Section 106  
21 or Section 110 of the NHPA, federal significance or criteria apply. Cultural resources  
22 significance is evaluated in terms of eligibility for listing on the NRHP. NRHP criteria  
23 for evaluation are defined as follows:

24 The quality of significance in American history archaeology, and culture is present in  
25 districts, sites, buildings, structures, and objects of state and local importance that possess  
26 integrity of location, design, setting, materials, workmanship, feeling and association and  
27 that:

- 28 • Criterion A: are associated with events that have made a contribution to the broad  
29 pattern of our history;
- 30 • Criterion B: are associated with lives of significant people in our past;
- 31 • Criterion C: embody the distinct characteristics of a type, period, or method of  
32 construction, or that represent the work of a master, or that possess high artistic  
33 values, or that represent a significant and distinguishable entity whose  
34 components may lack individual distinction; or,
- 35 • Criterion D: have yielded, or are likely to yield, information important in  
36 prehistory or history (36 CFR, Part 60.4).

37 The analysis of potential impacts to historic properties employs the Criteria of Adverse  
38 Effect as developed by the ACHP in its regulations for the “protection of Historic  
39 Properties (36 CFR, Part 800). Adverse effects can occur when and undertaking may alter

1 any of the characteristics of a historic property that qualify it for inclusion in the NRHP  
2 in a manner that would diminish the integrity of the property's location, design, setting,  
3 materials, workmanship, or association. Examples of adverse effects include:

- 4 • physical destruction or alteration of the property;
- 5 • isolation of the property from or alteration of the property's setting when that  
6 character contributes to the property's qualification for the NRHP;
- 7 • introduction of visual, audible, or atmospheric elements that are out of character  
8 with the property or alter its setting;
- 9 • neglect of a property resulting in its deterioration or destruction; and,
- 10 • transfer, lease, or sale of the property (36 CFR, Part 800.5(a)(2)).

11 To be considered as a historic property, a cultural resource must retain the quality of  
12 integrity. Integrity is defined as the degree to which a property retains or is able to  
13 convey the essential characteristics defined under one of the four eligibility criteria, listed  
14 above. These characteristics may be expressed through integrity of location, design,  
15 setting, materials, workmanship, feeling, and association of a property. An archaeological  
16 property may retain sufficient integrity to qualify it for the NRHP if the property retains  
17 the ability to yield information important to an understanding of history or prehistory. It  
18 must be demonstrated to have the potential to yield, or have previously yielded, data that  
19 can be used to address important research questions.

20 Reclamation will complete this process for site-specific activities as they are designed  
21 and a decision is made to fund them.

### 22 ***Summary of Cultural Resources in the New Melones Lake Area***

23 A total of 23,265 acres has been surveyed, leaving 6,735 acres of the New Melones Lake  
24 Area unsurveyed. Of the unsurveyed area, only 4,672 acres are above the current  
25 maximum pool. A total of 643 cultural resources have been recorded within the New  
26 Melones Lake Area and another 82 cultural resources have been recorded within a  
27 quarter mile. Of the 643 cultural resources within the New Melones Lake Area, four have  
28 been determined to be noncultural in nature; however, the four sites remain on the record  
29 and are therefore included here. Based on ethnographically available information and  
30 location data, portions of five Central Sierra Miwok settlements may exist within the  
31 New Melones Lake Area. An additional six ethnographically documented settlements are  
32 within a quarter mile of the New Melones Lake Area. Three general site categories have  
33 been identified: prehistoric (which includes a multiple prehistoric site type), historic  
34 (which includes a multiple historic site type), and multi-component. Within these  
35 categories, more specific site types for the New Melones Lake Area have been identified:  
36 bedrock mortar, midden, cave, and rock art. Historic site types are mining,  
37 homestead/ranching, water/power systems, transportation, cemetery, and, historic feature.  
38 Some of the multiple prehistoric site types also contain other site constituents that were  
39 never recorded in isolation and, therefore, did not warrant their own site type designation  
40 (for example, lithic scatters, human remains, house depressions, shell scatters). In

1 addition to these site categories, there is a multi-component site type, which is defined by  
 2 the presence of both historic and prehistoric remains (Pacific Legacy 2008). Estimates  
 3 of the potential for each management area to yield undiscovered resources are provided  
 4 in Table 5-14. Note that management areas Middle Bay, North Bay, and South Bay are  
 5 under the maximum pool and are therefore inaccessible to a new survey for undiscovered  
 6 resources. Bowie Flat, Dam and Spillway, and Mark Twain Management Areas have  
 7 been completely inventoried, making discovery of previously unidentified resources  
 8 unlikely.

**Table 5-14: Potential for Undiscovered Resources By Management Area**

<b>Management Area</b>	<b>Site Density<sup>1</sup></b>	<b>Sites Recorded</b>	<b>Acres Above Maximum Pool Unsurveyed<sup>2</sup></b>	<b>Potential for Surface Survey to Yield New Resources</b>
Stanislaus River Canyon	0.162	47	1,487	Very High
Parrotts Ferry	0.070	91	593	Very High
Coyote Creek	0.036	21	473	High
Westside	0.015	25	815	High
Tuttletown	0.035	20	286	High
French Flat	0.061	17	119	Moderate to High
Peoria Wildlife Area	0.017	43	269	Moderate
Bear Creek	0.030	38	132	Moderate
Camp Nine	0.061	21	151	Moderate to High
Carson	0.045	103	81	Moderate
Greenhorn Creek	0.010	8	86	Low to Moderate
Glory Hole	0.017	16	45	Low to Moderate
Middle Bay	0.020	52	0	Low
North Bay	0.026	59	0	Low
South Bay	0.027	23	0	Low
Bowie Flat	0.017	8	0	Low
Dam and Spillway	0.015	39	0	Low
Mark Twain	0.089	12	0	Low

Source: Pacific Legacy 2008

<sup>1</sup>Based on number of resources that have been previously recorded in the management area.

<sup>2</sup>“Unsurveyed” in this table refers to areas that have not previously been surveyed for cultural resources.

9 ***Archaeological Setting***

10 The New Melones Lake Area has been the subject of numerous cultural resource studies  
 11 beginning in the 1940s (Fredrickson 1949) and continuing to the present day. The data  
 12 generated from cultural resource management projects have formed the basis on which  
 13 the cultural history of the area has been constructed and provides evidence for a cultural  
 14 occupation of the area as early as 8000 BC. Moratto and colleagues (Moratto, Tordoff,

1 and Shoup 1988; Moratto 2002) have proposed a prehistoric (Indian) cultural sequence  
 2 for the area that includes at least eight defined phases in six temporal periods. Phases are  
 3 formal cultural units with continuity over a geographical area within a given temporal  
 4 period. In their recent reappraisal of the central Sierra Nevada, Rosenthal and McGuire  
 5 (2004:12-22, 129-148) provide a useful critique of the earlier New Melones sequence and  
 6 offer an alternate temporal sequence. In an effort to simplify the sequence, they employ a  
 7 more general periodization. Both chronological sequences are provided in Table 5-15.

8 **Table 5-15: Cultural Chronologies for the New Melones Lake Area**

BC/AD	Moratto, Tordoff, & Shoup 1988 Moratto 2002	Rosenthal & McGuire 2004	BP
AD 1848	Peoria Basin Phase (Historic) (AD 1848-1910)		
AD 1300	Horseshoe Bend Phase (AD 1300-1848)	Late Prehistoric (1100 BP-Contact)	500 BP
AD 500	Redbud Phase (AD 500-1300)		
1000 BC	Sierra Phase (1000 BC-AD 500)	Late Archaic (3000-1100 BP)	3000 BP
	Calaveras Phase (~2000 BC)		
3500 BC	Texas Charley Phase (3500-?2500 BC)	Middle Archaic (7000-3000 BP)	5500 BP
	Stanislaus Phase (~4250 BC)		
6000 BC	Late Clarks Flat Phase (~6000-4500 BC)		8000 BP
	Clarks Flat Phase (7650-4500 BC)	Early Archaic (10,000-7000 BP)	
		Paleo-Indian (13,000-10,000 BP)	10,500 BP
			13,500 BP

9  
 10 Source: Pacific Legacy 2008

11  
 12 Although evidence for occupation of the area before 6000 BC is scant, what evidence  
 13 does exist suggests that people inhabited the area in highly mobile hunting and gathering  
 14 bands. This occupation is evidenced by large lanceolate-stemmed and square-stemmed  
 15 bifaces manufactured of chert. The oldest documented cultural phase during this time is  
 16 the Clarks Flat Phase (7650 to 4500 BC). The phase is included in Rosenthal and  
 17 McGuire's Early Archaic, but it is suggested that the identification of the Clarks Flat  
 18 Phase may need to be reexamined.

19 The period from 6000 to 3500 BC is poorly known archaeologically in the New Melones  
 20 Lake Area. However, based on available data it has been argued that the period retains  
 21 some cultural continuity from the previous one (Peak and Crew 1990:229; Moratto  
 22 2002:37-38). The period includes a Late Clarks Flat Phase (circa 6000 to 4500 BC),

1 which retains many characteristics of the earlier Clarks Flat manifestations, but with a  
2 broader subsistence base, and a Stanislaus Phase (circa 4250 BC), defined on the basis of  
3 the Stanislaus broad-stemmed projectile point (Peak and Crew 1990) and a broadening of  
4 the resource base. The Late Clarks Flat Phase falls within Rosenthal and McGuire's Early  
5 Archaic (8000 to 5000 BC), while the Stanislaus Phase falls at the transition between  
6 their Early Archaic and Middle Archaic (5000 to 1000 BC).

7 Two cultural phases with a possible intervening hiatus are encompassed by the 3000 to  
8 1000 BC timeframe: the Texas Charley Phase and the Calaveras Phase, provisionally  
9 distinguished by differences in projectile point type. The Texas Charley Phase (circa  
10 3500 to 2500 BC) is defined by large lanceolate bifaces, a well-developed percussion-  
11 flaked chert and greenstone industry, and stone tools distinguished by heat treatment and  
12 the masterful use of exotic chert. While the Calaveras Phase (circa 2000 BC) is not well  
13 defined, it is characterized by Humboldt and Pinto series points and very minimal  
14 occupation at several sites. Both phases fall within Rosenthal and McGuire's Middle  
15 Archaic.

16 Occupation of the New Melones Lake Area during the 1000 BC to AD 500 period is  
17 characterized by middens with housepits, indicating intensive occupation by large  
18 populations. Cemeteries also begin to appear in the archaeological record during this  
19 period, along with mortuary caves. This period was during the Sierra Phase,  
20 characterized by shell beads and ornaments, Elko series projectile points, and exotic  
21 obsidians, suggesting a sophisticated long-distance trade network between the New  
22 Melones Lake Area and both the coast and areas to the east. The Sierra Phase falls within  
23 Rosenthal and McGuire's Late Archaic (1000 BC to 900 AD).

24 Another remarkable shift in use of the area took place between AD 500 and 1300.  
25 Archaeological sites occupied intensively during the preceding period lack evidence of  
26 use during this period, which includes the Redbud Phase. This is characterized by sites  
27 with poorly developed deposits and based largely on an analysis of organic remains  
28 (teleological examination) of what is absent relative to the previous and subsequent  
29 phases. Thus, the Redbud Phase is still quite poorly understood. However, one debate  
30 engendered by the Redbud Phase concerns the introduction of new artifact types, most  
31 importantly the Rosegate arrow point. Whether this represents population replacement by  
32 the bow and arrow wielding Miwok or the continuation of a gradual shift toward bow and  
33 arrow technology remains a question. The Redbud Phase falls within transition between  
34 Rosenthal and McGuire's Late Archaic and Late Prehistoric (900 AD to Contact).

### 35 ***Ethnographic Setting***

36 The period from AD 1300 to 1848 is characterized by a shift toward the ethnographic  
37 cultural pattern of the Central Sierra Miwok. This period represents the most intensive  
38 occupation of the New Melones Lake Area and is also the most widespread. One cultural  
39 phase is identified within this period: the Horseshoe Bend Phase. Settlements associated  
40 with this phase are spaced more closely together and individual sites are highly organized  
41 internally. During this phase, several new technologies replace older ones and an

42

1 intensive acorn-based economy is evident in all facets of the archaeological record. Trade  
2 connections with the Great Basin to the east are clearly demonstrated by the presence of  
3 desert side-notched and cottonwood triangular projectile points and by the predominance  
4 of Bodie Hills obsidian. The Horseshoe Bend Phase falls within Rosenthal and  
5 McGuire's Late Prehistoric.

6 Most of what researchers know about Central Sierra Miwok lifeways derives from  
7 ethnographic data (Pacific Legacy 2008). Traditionally, Miwok social organization was  
8 rooted in the nena, the place of origin of the patrilineal family. Each nena comprised a  
9 semi-autonomous political unit. The Miwok preferred to settle on flat, south-facing  
10 slopes or near small drainages. The later Central Sierra Miwok made permanent  
11 settlements within their territory, their hunter-gatherer mode of subsistence appears to  
12 have depended on seasonal travel to higher and lower elevations to obtain food not found  
13 in the vicinity of their permanent settlements. The Miwok also participated in an  
14 extensive trade network, connected by trails, which facilitated trade with their neighbors.

15 The New Melones Lake Area encompasses lands traditionally used by the Central Sierra  
16 Miwok, who still maintain a strong local presence in the surrounding communities. There  
17 are three federally recognized bands of Miwok who have reservation lands in Calaveras  
18 and Tuolumne Counties. Contact with Gold Rush-era settlers was devastating to the  
19 Miwok and other native populations. In addition to exposure to introduced diseases, they  
20 were the victims of much violence and discrimination. However, even as they lost most  
21 of their land base, they continued the traditions of cultural and sacred use of lands and  
22 natural resources.

23 Ethnographers have documented 46 Central Sierra Miwok settlements and villages in and  
24 around the New Melones Lake Area, derived from interviews conducted well after the  
25 devastation of the Gold Rush. During archaeological studies conducted before the dam  
26 was constructed and the lake was filled, ceremonial structures, a mourning site,  
27 petroglyphs, cemeteries, isolated burials, and mortuary caves were recorded. In  
28 conjunction with archaeological mitigations, the Miwok entered into a burial agreement  
29 with the National Park Service (NPS) before the NAGPRA was passed.

30 The Tuolumne Rancheria was established in 1910 and quickly became a refuge for  
31 displaced Indians, including some of the remaining Central Sierra Miwok and their  
32 Native neighbors (Levy 1978). The Chicken Ranch Rancheria of Miwok Indians, who  
33 currently hold trust land in Jamestown, are also descendants of the Central Sierra Miwok  
34 in Tuolumne County. In Calaveras County, the Calaveras Band of Miwok Indians and the  
35 Calaveras County Mountain Miwok Indian Council, near West Point, maintain  
36 communities and traditions. Several individual Miwok families also reside in and around  
37 the New Melones Lake Area in Jamestown, Columbia, Sonora, Murphy's, Vallecito,  
38 Carson Hill, and elsewhere.

39 While the devastation of the Gold Rush and its aftermath disrupted many traditional  
40 practices and lifeways, the descendants of the Central Sierra Miwok flourish today as  
41 their culture, language, and traditions continue to be passed down through the  
42 generations. Celebrations, or "big times," are regularly held, and many traditional crafts,

1 including baskets, are still produced. The Tuolumne Rancheria has developed a Cultural  
2 and Historic Preservation Committee to represent their interests and those of other Sierra  
3 Miwok (Fuller 1996).

#### 4 ***Post-Contact Historic Setting***

5 Great turmoil and rapid change in the area characterized the period from AD 1848 to  
6 1910. During the California Gold Rush, the traditional lifeways of the native inhabitants  
7 of the New Melones Lake Area were disrupted by large numbers of Euro-American gold  
8 seekers, merchants, and other fortune seekers. The population expansion in the area was  
9 rapid and overwhelming, with the Central Sierra absorbing the vast influx of California's  
10 gold mining economy. The impact on the area's native populations was profound. While  
11 these changes are charted in historical documents, archival records, and oral histories, the  
12 archaeological record provides the time depth to study changes in the material culture  
13 and lifeways of the Central Sierra Miwok that are either inaccessible or unremarked in  
14 traditional histories. This period is dubbed the Peoria Basin Phase and is quite  
15 widespread in the New Melones Lake Area. However, Peoria Basin components are often  
16 sparse, leaving only minimal traces of the fundamental reorganization of Native  
17 American tradition that was taking place. Peoria Basin Phase material evidence indicates  
18 the maintenance of tradition, the adoption of new materials to manufacture traditional  
19 items, the acceptance of Euro-American material items, and the abandonment and  
20 disintegration of long-held economic and trade networks (Moratto, Tordoff, and Shoup  
21 1988; Moratto 2002). This period does not correspond to any of Rosenthal and  
22 McGuire's proposed periods for the New Melones Lake Area.

23 Euro-American history in the area is divided into three periods: the Spanish Era (AD  
24 1769-1821), the Mexican Era (AD 1821-1848), and the American Era (AD 1848-1950).

25 The expansion of the Spanish frontiers northward from Mexico into Alta California  
26 began in the eighteenth century. The California interior was not settled by the Spanish  
27 pioneers, although a number of Spanish expeditions explored portions of the San Joaquin  
28 and Central Valleys beginning in the 1770s. In 1806, an expedition headed by Gabriel  
29 Moraga followed the San Joaquin River to the Merced River and discovered the  
30 Tuolumne and Stanislaus Rivers (Hoover et al. 1990:487; Jackson et al. 1976:2). Two  
31 years later, Moraga returned to the Stanislaus River area in search of a suitable interior  
32 mission site but deemed the area undesirable (Jackson et al. 1976:4-5).

33 In 1821, Mexico rebelled against Spain and gained its independence. The Mexican  
34 government sent several military expeditions in 1828 and 1829 to capture a renegade  
35 missionized Native American named Estanislao, who had escaped the mission system  
36 with a band of neophytes and returned to the Stanislaus River region. Mariano Vallejo  
37 succeeded in driving Estanislao away from the Stanislaus and Tuolumne River region by  
38 burning the river banks. Vallejo was rewarded with a land grant in 1843 for the 49,000-  
39 acre Rancheria del Rio Estanislao, which included portions of San Joaquin, Calaveras,  
40 and Stanislaus Counties (Jackson et al. 1976:7). The rancho was just southwest of the  
41 New Melones Lake Area and included what is now Tulloch Lake (United States District  
42 Court 1857).

1 Also during the Mexican era, three American parties crossed the Sierra Nevada, through  
2 the Stanislaus River region, although it is not known if they entered the New Melones  
3 Lake Area. Jedediah Smith crossed the Sierra eastward in May 1827, somewhere  
4 between Lake Tahoe and Kings River. According to Jackson et al. (1976:12), current  
5 historical research appears to support the theory that Smith followed the Stanislaus River  
6 route into the Sierra. The John Bidwell party crossed the Sierra in 1841 en route to  
7 California from Nevada and may have followed the Stanislaus River forks as the party  
8 found its way down out of the mountains (Jackson et al. 1976:15). In AD 1844, John C.  
9 Fremont's Second Expedition entered California at Carson Pass and stayed at Sutter's  
10 Fort for several weeks. From there, the party traveled south to the Stanislaus River near  
11 Ripon, approximately 35 miles west of the New Melones Lake Area (Jackson et al.  
12 1976:17).

13 Following the Mexican-American War from 1846 to 1848 and the signing of the Treaty  
14 of Guadalupe Hidalgo, Alta California became part of the United States, beginning the  
15 American Era. The area surrounding New Melones Lake was first settled by Euro-  
16 Americans following the discovery of gold at Coloma in 1848. This discovery led to an  
17 influx of miners, who sought rich placer deposits along the Stanislaus River and its  
18 tributaries. As new deposits were discovered, camps and towns were established near the  
19 discoveries and these quickly developed into communities to provide for the needs of an  
20 expanding population. These circa 1848-1850 mining communities included Angels  
21 Camp, Mokelumne Hill, Chili Gulch, Carson Hill, Robinson's Ferry, Melones, Pine Log  
22 Mining Camp, Columbia, Sonora, and Murphys (Costello and Cunningham 1985; Hoover  
23 et al. 1990; Jackson et al. 1976; Shoup and Greenwood 1984). These communities  
24 reflected a diverse ethnic population, including Mexicans in Melones, Italians along  
25 Angels Creek, Italians and Chinese at Robinson's Ferry, Chileans in Chili Gulch,  
26 Austrians and Yugoslavians at the later New Melones mines, and other northern  
27 Europeans, such as English, German, and Swedes, throughout the area (Greenwood and  
28 Shoup 1983). Numerous mines and mine claims are located within the New Melones  
29 Lake Area, many of which are clustered in the Carson Hill-Melones region that was  
30 traversed by the Morgan-Melones vein (Jackson et al. 1976:44). Mines within the  
31 Calaveras County portion of the New Melones Lake Area include the Garibaldi Mine, the  
32 Carson Creek Mine, part of the Carson Hill Mine complex (which includes the Adelaide  
33 Quartz Mine, Bright Star Lode, Calaveras Quartz Mine, Santa Cruz Lode, and Stanislaus  
34 Quartz Mine), and the Vonich Mine. Mines within the Tuolumne County portion of the  
35 New Melones Lake Area include Bell Mine, Densmore Mine, Punchbowl Mine,  
36 Horseshoe Bend Mine, and Norwegian Mine (Jackson et al. 1976; Moratto, Tordoff, and  
37 Shoup 1988:393).

38 In addition to these communities and mines, other industries developed to support the  
39 needs of the Gold Rush, including agriculture, ranching, a water system, and  
40 transportation systems.

41 Cattle ranching boomed from 1850 to 1860 in response to the Gold Rush population  
42 influx. By the 1860s and 1870s, many lands had been cleared of trees, and agriculture  
43 had become increasingly important due to the high costs of importing food from Hawaii



1 and Chile. In the 1870s and 1880s, fruit orchards became an expanding agricultural  
2 industry. In the New Melones Lake vicinity, the mountainous landscape limited  
3 homesteads and ranches to raising livestock and agriculture on the scale of truck farms,  
4 fruit orchards, and vineyards. Based on the historic records and survey results, most of  
5 the ranches and homesteads were established in the 1850s through 1890s along the creek  
6 banks of the Stanislaus River drainage system by settlers who arrived during the Gold  
7 Rush (Greenwood and Shoup 1983:251; Jackson et al. 1976). Early ranching and farming  
8 in the area were devoted to cattle, small gardens, and truck farms to supply the needs of  
9 the influx of miners. As settlements became more stable, the farms and ranches supplied  
10 such towns as Robinson's Ferry and Columbia. During the later nineteenth century and  
11 early twentieth century, the trend was toward consolidating smaller farms and ranches to  
12 create larger cattle ranches. As was common elsewhere in the United States, families  
13 often chose homesteads near each other to pool resources.

14 As hard rock and hydraulic mining became common in the 1850s, the need for large  
15 amounts of water led to the construction of numerous dams, ditches, and flumes  
16 throughout the region. Between 1851 and the late 1860s, more than 34 water and ditch  
17 companies were established in Tuolumne and Calaveras Counties (Jackson et al.  
18 1976:83-84). As mining waned, the resulting water system was used to supply domestic  
19 and agricultural needs. Several large water companies emerged during the later  
20 nineteenth century. Tuolumne County Water Company eventually became one of the  
21 largest water companies in the area and was later reincorporated as the Tuolumne County  
22 Water and Electric Power Company. However, shortly thereafter however it was acquired  
23 by the Sierra and San Francisco Power Company in 1909. The original water company  
24 ditches and reservoirs remained in use until at least 1947 as part of the Pacific Gas and  
25 Electric Company water system (Tuolumne Utilities District 1947:2).

26 In the 1880s and 1890s, electric power became the new technology. With the demand for  
27 electric power and the increasing demand for water came plans for dams and  
28 hydroelectric power. In 1899, Charles Tulloch and Mrs. A. G. Lane established the San  
29 Joaquin Water Company, which built a concrete dam across the Stanislaus River above  
30 Knight's Ferry that sent irrigation water to the Escalon and Oakdale areas, as well as  
31 electric power to Angels Camp, Copperopolis, Oakdale, and Modesto (Jackson et al.  
32 1976:207). In 1918, the Oakdale Irrigation District and the South San Joaquin Irrigation  
33 District began plans for the original Melones Dam, reservoir, and power plant near the  
34 current Melones Dam location (Jackson et al. 1976:210). After a hiatus of several years,  
35 dam construction was begun in 1925 and was completed in 1927. Melones Dam rose 210  
36 feet above the bedrock and retained 112,500-acre-feet of water. Pacific Gas and Electric  
37 Company built a powerhouse below the dam to provide electricity for the area (Costello  
38 1986:3; Jackson et al. 1976:212). In addition to the Melones Dam project, a second  
39 hydroelectric project, the Stanislaus Powerhouse or Camp Nine Project, was completed  
40 within the New Melones Lake Area. The Camp Nine Project was conceived to provide  
41 water and electricity for hydraulic mining and San Francisco street railways.

42 Transportation networks formed to provide access to the mining areas, to provide  
43 communication, and to provide delivery systems for living staples, equipment, and gold

1 shipment. Initially, these networks were composed of pack trains of mules that followed  
2 trails between the communities. By the early 1850s, as the trails began to widen and  
3 become roads, freight wagons and stagecoaches were able to move along the system.

4 Crossing the Stanislaus River was accomplished using a series of ferries that included  
5 Robinson's Ferry, Parrotts Ferry, Central Ferry, Reynold's Ferry, Abbey's Ferry, and  
6 McLean's Ferry (a.k.a. Murphy's Ferry). Although the origins of many of these ferries  
7 are uncertain, Robinson's Ferry and McLean's Ferry were established around 1849. The  
8 rest of the ferries were operating by the 1860s (Jackson et al. 1976), and all remained in  
9 use through the nineteenth century. In the early twentieth century, many of the ferry  
10 crossings were replaced by bridges, such as the 1903 bridge at Parrott's Ferry and the  
11 1910 bridge at Robinson's Ferry (Jackson et al. 1976:74; Shoup and Greenwood  
12 1984:86). By the 1870s, railroads were extending into Calaveras, Tuolumne, and  
13 Stanislaus Counties but had not yet reached the current New Melones Lake Area. In  
14 1897, the Sierra Railway proposed plans for the Angels Branch rail line from Jamestown  
15 to Angels Camp across the current New Melones Lake Area. The Angels Branch was  
16 completed in 1902 and included a rail bridge across the Stanislaus River at Melones  
17 (Costello 1983:53; Jackson et al. 1976). The Angels Branch was used until 1936, when  
18 the branch service was terminated (Jackson et al. 1976:180).

#### 19 ***New Melones Archaeological District***

20 Archaeological study of the New Melones Lake Area began in 1948 with an initial  
21 reconnaissance by Fredrickson (1949). However, the New Melones Archaeological  
22 Project (NMAP) had its formal inception with a survey conducted in 1968 (Payen et al.  
23 1969), which is considered to be Phase I of the NMAP. Activities associated with the  
24 NMAP, which included an archaeological survey, testing, mitigation work, ethnographic  
25 research, and historic research, continued for nine more field seasons, or phases,  
26 concluding with Phase X data recovery excavations in 1981. As a part of Phase X, final  
27 archaeological reports provided a cultural resource inventory and a synthesis of the  
28 results from all ten phases of research (Moratto et al. 1986). In 1988, Moratto et al.  
29 compiled and submitted a nomination for the New Melones Lake Area cultural resources  
30 to the National Register of Historic Places as an archaeological district.

31 The district included over 627 cultural resource sites identified during the NMAP,  
32 including archaeological sites, bedrock mortars, and historic homestead sites. The NPS  
33 returned the nomination submission in April of 1991, requesting clarifications and the  
34 submission of additional information. A final formal nomination, addressing Townsend's  
35 comments, has never been prepared, but the comments received from NPS indicate that  
36 there is consensus that the district is significant and can be formally nominated to the  
37 NRHP if the identified problems with the nomination are addressed. The SHPO has  
38 concurred that the district is eligible for inclusion on the NRHP, so there is a consensus  
39 determination as to its eligibility.

40 Suggestions for resubmitting the NRHP nomination are provided in the New Melones  
41 Reservoir Cultural Resources Overview (Pacific Legacy 2008). This includes removing  
42 90 sites from the historic district's list. The reasons for this are varied and include

1 because the sites were destroyed or disturbed, they are not sites, they cannot be relocated,  
2 and they are outside of the New Melones Lake Area. Seventeen sites left out of the  
3 original nomination but within the New Melones Lake Area are suggested to be added to  
4 the nomination.

### 5 **5.2.17 Indian Trust Assets**

6 There are no known Indian Trust Assets or treaty rights exercised by tribes in the New  
7 Melones Lake Area, and no reservation or trust lands border on New Melones Lake.  
8 Although some treaties were made with California tribes in the Sierra Nevada in the  
9 nineteenth century, these were not ratified by the US Congress, which left native groups  
10 largely landless and without rights.

11 There are three tribal groups recognized by the federal government in Calaveras and  
12 Tuolumne Counties. The California Valley Miwok Tribe (formerly Sheep Ranch  
13 Rancheria) has a very small reservation (0.92 acre [0.37 hectare]) in Calaveras County.  
14 This land was purchased in 1916 as a reservation for landless Native Americans. There  
15 are two reservations in Tuolumne County. The Tuolumne Band of Me-Wuk Indians  
16 governs the 356-acre (145-hectare) Tuolumne Rancheria. The original 177 acres (70  
17 hectares) of land for the reservation was purchased in 1910 and additional lands were  
18 subsequently acquired. The Chicken Ranch Rancheria occupies 2.85 (1.15 hectares) acres  
19 near Jamestown. Federal recognition of the Chicken Ranch Rancheria was restored as the  
20 result of a lawsuit in 1985. Both the Tuolumne Rancheria and the Chicken Ranch  
21 Rancheria have gaming operations.

22 There are no trends affecting Indian Trust Assets that are known to specifically involve  
23 the New Melones Lake Area. Overall trends in California and elsewhere include the  
24 assertion of tribal sovereignty, aboriginal rights and federal recognition. Many tribes  
25 were parties to unratified treaties or dispute the legal basis for the past loss of land and  
26 resources. Tribal groups, such as the Calaveras County Band of Miwok Indians, are  
27 seeking federal recognition. As these tribes become recognized, they will be sovereign  
28 nations under federal law. There have been attempts by other tribes to assert the Winters  
29 Doctrine, named for a Supreme Court decision in 1908 that held that when a reservation  
30 is established under treaty, it is implicit that sufficient water be reserved for the tribe's  
31 present and future use. Tribes in many places have also sought and succeeded in  
32 acquiring federal land in trust through transfer, exchange, or legislation. Tribes are also  
33 purchasing land for economic development. The Tuolumne Rancheria has expressed an  
34 interest in acquiring BLM-managed lands that adjoin the reservation (BLM 2006). As  
35 individuals and tribes continue to pursue and assert rights, local communities and state  
36 and federal land and resource management practices will be affected.

### 37 **5.2.18 Socioeconomic and Environmental Justice**

#### 38 ***Socioeconomic Conditions***

39 **Population.** Table 5-16 presents population figures for California, Calaveras, and  
40 Tuolumne Counties and the communities closest to the New Melones Lake Area.

1 Between 1990 and 2000, the population of all of these areas increased, and the rate of  
 2 population growth was greater than the state average of 14.3 percent in Calaveras County  
 3 (25.9 percent), Angels Camp (25.7 percent), and Murphys (35.9 percent). The population  
 4 of Tuolumne County increased by less than the state average (12.8 percent), and Sonora's  
 5 population increased by substantially less (6.5 percent) than that of the other localities in  
 6 the New Melones Lake Area (US Census Bureau 1990, 2000a; California Department of  
 7 Finance 2004).

8 Between 2000 and 2006, Angels Camp experienced the greatest population percentage  
 9 increase (19.0 percent), and Sonora's population also increased by 8.6 percent, which is  
 10 greater than the county average of 6.0 percent (US Census Bureau 2000a; California  
 11 Department of Finance 2006c). Population increases for both counties were the result of  
 12 predominantly domestic net migration (California Department of Finance 2006a).

13 **Table 5-16: County Population Estimates 1990-2000**

Location	1990	2000	Percent Change 1990-2000	2006	Percent Change 2000-2006
California <sup>1</sup>	29,828,473	34,098,744	14.3%	37,172,015	9.0%
Calaveras County <sup>1</sup>	32,470	40,890	25.9%	45,711	11.8%
Angels Camp <sup>2</sup>	2,409	3,004	24.7%	3,576	19.0%
Copperopolis <sup>2</sup>	NA	2,363	NA	NA	NA
Murphys <sup>2</sup>	1,517	2,061	35.9%	NA	NA
Tuolumne County <sup>1</sup>	48,719	54,946	12.8%	58,231	6.0%
Jamestown <sup>2</sup>	2,178	3,017	38.5%	NA	NA
Sonora <sup>2</sup>	4,153	4,423	6.5%	4,804	8.6%

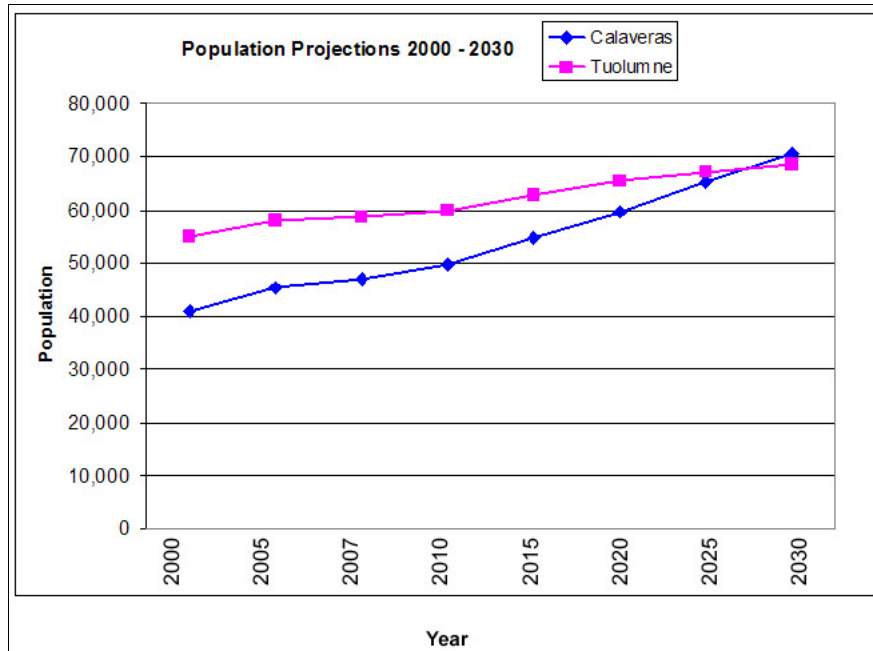
Notes: NA = Not available

Sources: <sup>1</sup>California Department of Finance 2004; <sup>2</sup>California Department of Finance 2006c; <sup>3</sup>US Census Bureau 1990 and 2000a

14 The scenic and recreational attributes of Calaveras County make the tourism and  
 15 recreation industries an extremely valuable part of the economy (Calaveras County  
 16 1996). In fact, the county's 28.23 percent vacancy rate is attributed to the high number of  
 17 second homes and seasonal vacation houses. This pattern is mainly visible near the  
 18 county's lakes, winter sports areas, and golf courses. According to the Calaveras County  
 19 General Plan estimates, in 2000, 96.2 percent of Calaveras County residents lived in the  
 20 unincorporated portion of the county, and 66.1 percent of that population lived in small  
 21 towns (Calaveras County 1996). Approximately 21.5 percent of Tuolumne County is  
 22 privately owned, and the population density on private land is about 104 people per  
 23 square mile. The population tends to be dispersed throughout small towns of mixed use  
 24 surrounded by large expanses of open space consisting of agriculture, native vegetation,  
 25 and low-density development. It is Tuolumne County's policy to preserve open space  
 26 between these communities. Almost 10 percent of Tuolumne County's population is in  
 27 such facilities as assisted living and long-term care. The largest portion of the  
 28 institutionalized population, more than 4,000 men, is in the state prison outside of  
 29 Jamestown (Tuolumne County 2005).

1 Chart 5-1 shows projected population growth from 2000 to 2030. Chart 5-1 indicates that  
 2 although the 2000 population of Calaveras County is smaller than that of Tuolumne  
 3 County, by 2030 it is projected to exceed Tuolumne County's population by 2,030 (Chart  
 4 5-1). Also, as presented in Table 5-17, between 2000 and 2030, the population growth in  
 5 Calaveras County (72.6 percent) is expected to exceed the state average (41.3 percent); in  
 6 Tuolumne County (24.8 percent) population growth is expected to be below the state  
 7 average.

8 **Chart 5-1: Population Projections 2000-2030**



Source: California Department of Finance 2004

9  
10  
11

12 **Table 5-17: County Population Projections 2000 and 2030**

County	2000	2030	2000-2030 Change	2000-2030 Percent Change
California	34,043,198	48,110,671	14,067,473	41.3
Calaveras	40,890	70,577	29,687	72.6
Tuolumne	54,946	68,566	13,620	24.8

Source: California Department of Finance 2004

13

14 **Housing.** Table 5-18 presents 1990, 2000, and 2006 housing data for Calaveras and  
 15 Tuolumne Counties, Angels Camp, and Sonora, as well as for California. Between 1990  
 16 and 2000, the total number of housing units and the number of occupied units in  
 17 Calaveras and Tuolumne Counties and Angels Camp increased by more than the state  
 18 averages of 9.2 percent total and 10.8 percent occupied. In Sonora, between 1990 and  
 19 2000, the total number of housing units increased by more than occupancy, resulting in a  
 20 vacancy increase of from 6.5 to 6.6 percent; both values increased by less than the state

1 average. Between 2000 and 2006 the total number of housing units and the number of  
 2 occupied units increased by a percentage similar to or above the state average. Angels  
 3 Camp experienced the greatest percentage increase, with a 22.9 percent rise in the  
 4 number of units and a 22.8 percent rise in the number of occupied units. Of the two cities  
 5 in the New Melones area, Sonora had the lower vacancy rate at 6.6 percent, and of the  
 6 two counties in the New Melones area, Tuolumne County had the lower vacancy rate at  
 7 25.9 percent. All vacancy rates shown for the New Melones area were higher than the  
 8 state average of 5.9 percent in 2006 (California Department of Finance 2000b, 2006c).

**Table 5-18: County Housing Estimates 1990, 2000, and 2006**

Location	Year	Total	Occupied	Percent Vacant
California	1990	11,182,513	10,380,856	7.2
	2000	12,214,550	11,502,871	5.8
	Percent change 1990-2000	9.2	10.8	
	2006	13,138,670	12,367,468	5.9
	Percent change 2000-2006	7.6	7.5	
	Percent change 1990-2006	17.5	19.1	
Calaveras County	1990	19,153	12,649	34.0
	2000	22,946	16,469	28.2
	Percent change 1990-2000	19.8	30.2	
	2006	26,685	19,171	28.2
	Percent change 2000-2006	16.3	16.4	
	Percent change 1990-2006	39.3	51.6	
Angels Camp	1990	1,229	1,107	9.9
	2000	1,422	1,286	9.6
	Percent change 1990-2000	15.7	16.2	
	2006	1,747	1,579	9.6
	Percent change 2000-2006	22.9	22.8	
	Percent change 1990-2006	42.1	42.6	
Tuolumne County	1990	25,175	17,959	28.7
	2000	28,336	21,004	25.9
	Percent change 1990-2000	12.6	17.0	
	2006	30,071	22,298	25.9
	Percent change 2000-2006	6.1	6.2	
	Percent change 1990-2006	19.4	24.2	
Sonora	1990	2,084	1,949	6.5
	2000	2,197	2,051	6.6
	Percent change 1990-2000	5.4	5.2	
	2006	2,365	2,208	6.6
	Percent change 2000-2006	7.6	7.7	
	Percent change 1990-2006	13.5	13.3	

Sources: California Department of Finance 2000b, 2006c

9

10 As shown in Table 5-19, since 2000, housing values in Calaveras and Tuolumne Counties  
 11 increased by less than the state average. The median value in Tuolumne County went up  
 12 by more than that in Calaveras County, resulting in similar current median values

1 (\$221,731 and \$219,990). Median housing values for the state and both counties were  
 2 higher than the national average of \$136,625 (US Census Bureau 2000b; Reply.com  
 3 2007a, 2007b).

**Table 5-19: Median Housing Value**

Location	Year	Median (dollars)
California	2000	\$211,500
	2007	\$346,606
	% change	63.9%
Calaveras County	2000	\$156,900
	2007	\$219,990
	% change	40.2%
Tuolumne County	2000	\$149,800
	2007	\$221,731
	% change	48.0%

Sources: US Census Bureau 2000b; Reply.com 2007a, 2007b

4  
 5 The 2001-2009 Housing Element of the General Plan for unincorporated Calaveras  
 6 County identifies the typical residence as a single-family structure, built in 1981. Based  
 7 on 2003 and 2004 actual housing costs and 2003 income limits for a family of three or  
 8 four, the availability of affordable typical housing is limited. In addition, in 2003, 4.4  
 9 percent of the housing in unincorporated Calaveras County was overcrowded, whereas,  
 10 2.2 percent of housing in Angels Camp was overcrowded. Approximately 65 percent of  
 11 overcrowded units were owner occupied (Calaveras County 2005).

12 Angels Camp is the only incorporated city in Calaveras County. The typical Angels  
 13 Camp residence in 2003 was a rented single-family structure built in 1968. The city  
 14 estimates that an additional 282 housing units will be needed between 2001 and 2009 to  
 15 accommodate growth resulting from newly created, mainly minimum wage commercial  
 16 and service jobs. Approximately 38 percent would be affordable housing for very low-  
 17 and low-income families. The primary constraints to new housing development are  
 18 limitations in water and wastewater infrastructure (City of Angels Camp 2006).

19 According to the Tuolumne County General Plan Housing Element Update, housing  
 20 affordability is the primary concern of residents, particularly since the average Tuolumne  
 21 County family of four at the median income level is able to afford the purchase of a  
 22 \$190,000 home. The median price of a home in Tuolumne County was \$220,000 in 2003,  
 23 and the average price was \$245,000 (Tuolumne County 2003).

24 **Schools.** In the 2005 to 2006 school year there were 29 active public schools in Calaveras  
 25 County, with a total enrollment of 6,861 and student-to-teacher ratio of 21.1 (Education  
 26 Data Partnership 2007a). Of these schools, six were in Angels Camp, two were in  
 27 Copperopolis, and one was in Murphys (NCES 2007). The average class size in these  
 28 schools was 25.4, which is lower than the state average of 27.3. A total of 7,733 students  
 29 were enrolled in 44 public schools in Tuolumne County during the 2005 to 2006 school

1 year (Education Data Partnership 2007b), 17 of which were in Sonora (NCES 2007). The  
 2 student-to-teacher ratio was 18.9, and the average class size was 24.0, which was below  
 3 the state average. The student-to-teacher ratio in each of the two New Melones Area  
 4 counties was below the state average of 21.4 (Education Data Partnership 2007c). By  
 5 2015, enrollment in Calaveras County is projected to increase by 6.2 percent to 7,290,  
 6 and in Tuolumne County enrollment is forecast to decline by 3.4 percent to 7,467  
 7 (California Department of Finance 2006b).

8 **Employment and Income.** Unemployment rates are a key indicator of the health of local  
 9 economies. They reflect the ability of employers to provide the numbers and types of jobs  
 10 needed by the labor force and the ability of the labor force to supply the skills and  
 11 availability needed by employers (Tuolumne County 2005). Table 5-20 provides labor  
 12 force and employment data in Calaveras and Tuolumne Counties and California. The  
 13 unemployment rate in both Calaveras and Tuolumne Counties (5.9 and 6.1 percent) is  
 14 above the state average (5.4 percent), despite increased economic diversity in these two  
 15 counties (California Employment Development Department 2006; Calaveras County  
 16 1996; Tuolumne County 2005).

17 **Table 5-20: County Employment Statistics (2005)**

County	Civilian Labor Force	Employed	Unemployed	Unemployment Rate
California	17,695,600	16,746,900	948,700	5.4%
Calaveras County	20,620	19,410	1,210	5.9%
Tuolumne County	26,080	24,480	1,600	6.1%

Source: California Employment Development Department 2006

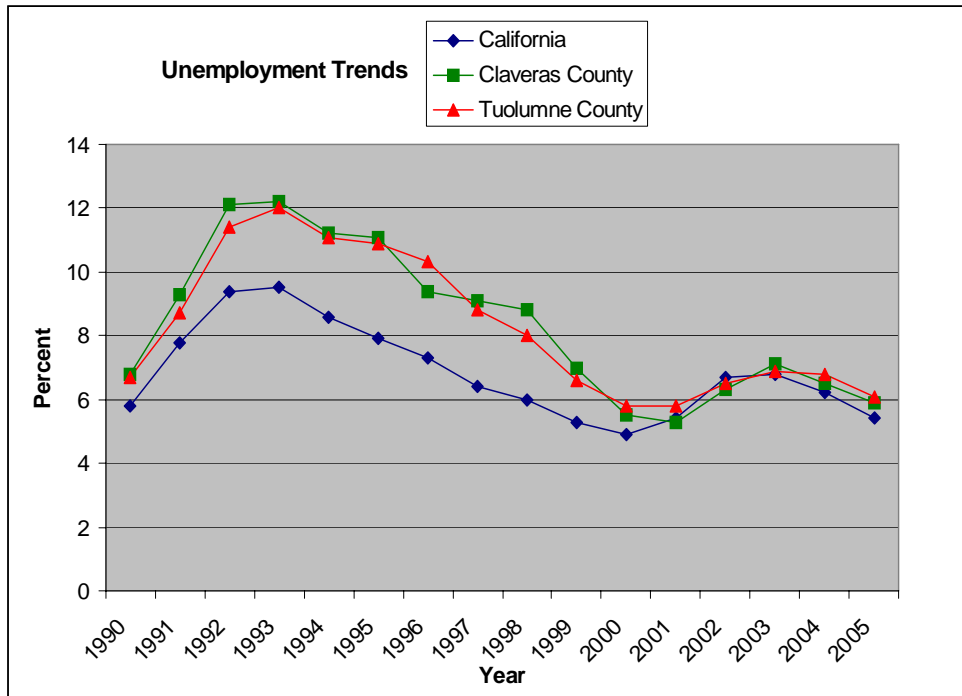
18  
 19 As shown on Chart 5-2, since hitting a high point in 1992, unemployment in the two  
 20 study area counties and in the state has been declining in general, except during the  
 21 recession in 2001 through the recovery in 2004. It is during a portion of this period that  
 22 the unemployment rate in the two project area counties fell below that of the state,  
 23 probably due to the differing industry mix in the project area counties, as compared with  
 24 the state as a whole (California Employment Development Department 2006). In  
 25 addition, unemployment in the study area has increased as of the date of this Draft  
 26 RMP/EIS due to the current recession. Unemployment in Calaveras County climbed to  
 27 14.4 percent in August 2009, and in Tuolumne County it reached 12.9 percent (California  
 28 Employment Development Department 2009).

29 Calaveras and Tuolumne Counties are part of the Mother Lode region, which includes El  
 30 Dorado, Amador, and Mariposa Counties. This area has been known historically for its  
 31 minerals and timber industries, but these industries have been declining as sources of  
 32 employment and income, as government, tourism and recreation, services, and  
 33 construction have become increasingly important. Increases in tourism and recreation  
 34 have generated additional employment in the leisure and hospitality sector and in  
 35 construction. Newly created jobs in the leisure and hospitality sector are often entry-  
 36 level, low-wage commercial and service positions, which may provide income to local  
 37 families insufficient to afford adequate housing (City of Angels Camp 2006; Tuolumne



1 County 2005). Increases in construction have helped to boost employment in the timber  
 2 industry in the project area counties. In Tuolumne County, recent job losses have  
 3 occurred in manufacturing, a sector that typically contributes more to the economy than  
 4 growing sectors of government, services, and construction (Tuolumne County 2005).

5 **Chart 5-2: Unemployment Trends**



6  
 7 Source: California Employment Development Department 2006

8 Table 5-21 provides a breakdown of the project area counties' percentage employment by  
 9 sector and average sector growth between 1990 and 2000 and between 2000 and 2005. In  
 10 2005 most employment in the project area counties and the state was in the services  
 11 industries (80.1 percent in Calaveras County, 86.4 percent in Tuolumne County, and 81.4  
 12 percent in California); however, unlike the state, where most jobs in this group are in  
 13 professional and business services, hospitality and leisure is the largest private services  
 14 sector in Calaveras and Tuolumne Counties (13.0 and 12.9 percent). The education and  
 15 health services sector employs a similar number of Tuolumne County residents (12.1  
 16 percent). Government is the largest services sector in the project area counties and the  
 17 state (80.1 in Calaveras County, 8.4 percent in Tuolumne County, and 81.6 percent in  
 18 California). Between 1990 and 2000, the largest decline in employment in Calaveras  
 19 County was in farm employment (-70.0 percent), which had been a historically stable  
 20 industry in the county, with field crops, vineyards, orchards, livestock, and poultry  
 21 contributing most to total gross value of production (Calaveras County 1996). However,  
 22 this sector also experienced the greatest increase in employment between 2000 and 2005  
 23 at 133.3 percent, which was still below the 1990 level. The most substantial increases  
 24 between 1990 and 2000 were in other services, professional and business services, and  
 25 manufacturing. Between 2000 and 2005, the greatest losses in employment in Calaveras

1 County were seen in the federal and state government sectors; and  
 2 transportation/warehousing/utilities was the other major growth sector, besides farming  
 3 (California Employment Development Department 2006).

**Table 5-21: Employment by Sector and Growth**

	California			Calaveras County			Tuolumne County		
	Percent Change 1990-2000	2005 (percent of total)	Percent Change 2000-2005	Percent Change 1990-2000	2005 (percent of total)	Percent Change 2000-2005	Percent Change 1990-2000	2005	Percent Change 2000-2005
Total, All Industries (number employed)	15.8%	15,161,100	1.8%	17.8%	9,100	12.5%	12.4%	17,870	12.0%
Total Farm	12.3%	2.5%	-8.0%	-70.0%	0.8%	133.3%	100.0%	0.5%	-50.0%
Total Nonfarm	15.9%	97.5%	2.0%	19.1%	99.3%	12.2%	11.8%	99.5%	12.8%
Total Private	16.7%	81.6%	1.7%	25.1%	72.0%	14.1%	10.1%	69.1%	10.0%
Goods Producing	-1.1%	16.1%	-7.0%	10.2%	19.1%	23.4%	-3.0%	13.1%	4.0%
Natural Resources, Mining and Construction	11.4%	6.1%	22.0%	-1.9%	14.6%	31.7%	-24.3%	7.7%	23.2%
Manufacturing	-5.4%	10.0%	-18.7%	60.0%	4.5%	2.5%	32.9%	5.4%	-15.0%
Service Providing	20.5%	81.4%	4.0%	21.1%	80.1%	9.6%	14.7%	86.4%	14.3%
Private Servicing									
Producing	22.8%	65.5%	4.0%	30.5%	52.7%	11.1%	14.0%	56.0%	11.6%
Trade, Transportation and Utilities	12.5%	18.6%	3.4%	8.9%	17.5%	17.8%	19.3%	16.5%	3.5%
Wholesale Trade	17.2%	4.4%	4.4%	20.0%	1.3%	0.0%	-21.1%	1.1%	33.3%
Retail Trade	8.0%	10.9%	6.0%	5.9%	12.9%	8.3%	23.3%	13.9%	-0.4%
Transportation, Warehousing, and Utilities	21.6%	3.2%	-5.8%	15.4%	3.3%	100.0%	17.6%	1.5%	35.0%
Information	47.3%	3.1%	-17.4%	7.7%	1.3%	-14.3%	15.0%	1.6%	26.1%
Financial Activities	-3.3%	6.1%	16.6%	6.9%	3.2%	-6.5%	-30.4%	3.3%	7.3%
Professional and Business Services	48.5%	14.2%	-4.1%	86.7%	6.4%	3.6%	1.1%	5.8%	16.9%
Educational and Health Services	25.2%	10.5%	13.3%	31.0%	7.5%	23.6%	51.8%	12.1%	27.6%
Leisure and Hospitality	20.7%	9.7%	10.6%	35.1%	13.0%	13.5%	8.7%	12.9%	8.5%
Other Services	17.1%	3.4%	4.9%	123.5%	4.0%	-5.3%	14.5%	3.7%	6.3%
Government	11.7%	15.9%	4.1%	6.9%	27.4%	6.9%	16.1%	30.4%	19.6%
Federal Government	-24.6%	1.6%	-8.7%	0.0%	1.4%	-18.8%	-33.9%	2.0%	-2.7%
State and Local Government	19.4%	14.3%	5.8%	7.4%	25.9%	8.8%	24.5%	28.4%	21.6%
State Government	16.1%	3.1%	4.4%	-22.6%	2.2%	-16.7%	-4.3%	6.1%	-1.8%
Local Government	20.4%	11.2%	6.2%	13.5%	23.7%	11.3%	39.7%	22.3%	30.1%

Source: California Employment Development Department 2006

4  
 5 In contrast with Calaveras County, in Tuolumne County between 1990 and 2000 total  
 6 farm employment experienced the greatest increase, and between 2000 and 2005 this  
 7 sector experienced the greatest decrease in employment. Educational and health services,  
 8 local government, and manufacturing also experienced substantial growth (51.8, 39.7,  
 9 and 32.9 percent). Between 2000 and 2005, transportation/warehousing/utilities

1 experienced the greatest percentage growth (California Employment Development  
2 Department 2006).

3 The greatest absolute increase in the number of employed in Calaveras County between  
4 2000 and 2005 occurred in government (160 workers), leisure and hospitality (150  
5 workers), and transportation/warehousing/utilities (140 workers). In Tuolumne County  
6 the greatest absolute increases occurred in government (890 workers), educational and  
7 health services (470 workers), leisure and hospitality (180 workers), and professional and  
8 business services (150 workers) (California Employment Development Department  
9 2006).

10 Table 5-22 shows the major employers in Calaveras and Tuolumne Counties. Five of the  
11 major employers in Calaveras County are in Angels Camp and one is in Murphys. Fifteen  
12 of Tuolumne County's major employers are in Sonora and two are in Jamestown. Four of  
13 the largest employers in Calaveras County are in the hospitality sector (Bear Valley Ski  
14 Area Main Office, Resort at Greenhorn Creek, Saddle Creek Lodge Resort, and Sequoia  
15 Woods Country Club), and four of Tuolumne County's largest employers are in the  
16 hospitality sector (Black Oak Casino, Dodge Ridge Ski Resort, Chicken Ranch Bingo  
17 and Casino, and Lair of the Bear).

18 According to employment projections, between 2002 and 2012, total nonfarm wage and  
19 salary employment in the Mother Lode region is expected to grow by about 1.5 percent  
20 annually (about 9,000 jobs) between 2002 and 2012, slightly less than the statewide  
21 growth rate of 1.8 percent. Approximately 64 percent of new nonfarm wage and salary  
22 jobs are forecast to occur in government (32 percent), leisure and hospitality (19 percent),  
23 and construction (13 percent). Construction is expected to be the fastest growing major  
24 industry sector (at an annual growth rate of 3.0 percent), and information, educational  
25 and health services, and professional and business services are also forecast to grow at a  
26 faster rate than the county average (California Employment Development Department  
27 2007c).

28 Both counties' general plans indicated that low-income levels and low-paying local jobs  
29 have resulted in residents commuting outside the area for employment and have led to a  
30 decline in the affordability of housing to local residents. In 2004, per capita personal  
31 income in Calaveras and Tuolumne Counties was \$27,480 and \$26,578. The state  
32 average of \$35,219 was about 22 percent higher than income in Calaveras County and 24  
33 percent higher than in Tuolumne County (BEA 2006). Income is also depressed in this  
34 region due to the high population of retirees that reside in the area. Retirees on fixed  
35 incomes have limited funds to spend (in the form of tax increases) for infrastructure  
36 improvements or other community benefits (Holsapple 2009).

37 **Taxes and Payments in Lieu of Taxes (PILT).** Recreation at New Melones Lake  
38 contributes to tax revenues in Calaveras and Tuolumne Counties and the communities  
39 surrounding it by drawing visitors who pay sales and use taxes and transient occupancy  
40 taxes. Those attracted to the area for recreation or employment who also purchase  
41 property would contribute to the counties' property tax revenues. The US Department of  
42 the Interior provides PILT to local governments to help offset losses in property taxes

**Table 5-22: Major Employers in Calaveras and Tuolumne Counties**

Calaveras County				Tuolumne County			
Employer Name	Location	Industry	Number of Employees	Employer Name	Location	Industry	Number of Employees
Bear Valley Ski Area Main Office	Bear Valley	Skiing Centers and Resorts	250-499	Corrections Department	Jamestown	State Government-Correctional Institutions	1,000-4,999
Forestry and Fire Protection	San Andreas	Government-Forestry Services	250-499	Black Oak Casino	Tuolumne	Casinos	500-999
Mark Twain St. Joseph's Hospital	San Andreas	Hospitals	250-499	Sonora Regional Medical Center	Sonora	Emergency Medical and Surgery Service	500-999
Mountain Machining	Angels Camp	Machine Shops	250-499	Dodge Ridge Ski Resort	Pinecrest	Skiing Centers and Resorts	250-499
Human Resources Council	San Andreas	Social Service and Welfare Organizations	100-249	MRL Industries, Inc.	Sonora	Semiconductor-Manufacturers Equipment/Supplies (Wholesale)	250-499
Ironstone Vineyards	Murphys	Wineries	100-249	National Audubon Society	Sonora	Environmental Conservation/Ecological Organization	250-499
Mark Twain Convalescent Hospital	San Andreas	Hospitals	100-249	Tuolumne General Hospital	Sonora	Hospitals	250-499
Rite of Passage ATCS	San Andreas	Schools	100-249	Tuolumne General Hospital SNF	Sonora	Nursing and Convalescent Homes	250-499
Big Trees Market	Arnold	Grocers-Retail	50-99	Wal-Mart	Sonora	Department Stores	250-499
Bret Harte High School	Altaville	Schools	50-99	Avalon Care Center	Sonora	Nursing and Convalescent Homes	100-249

1

**Table 5-22: Major Employers in Calaveras and Tuolumne Counties**

Calaveras County				Tuolumne County			
Employer Name	Location	Industry	Number of Employees	Employer Name	Location	Industry	Number of Employees
Calaveras County Human Services	San Andreas	County Government-Social/Human Resources	50-99	Chicken Ranch Bingo and Casino	Jamestown	Bingo Games	100-249
Calaveras County Road Department	San Andreas	Grading Contractors	50-99	Columbia College	Sonora	Schools-Universities and Colleges Academic	100-249
Calaveras County Sheriff	San Andreas	Sheriff	50-99	Diestel Turkey Ranch	Chinese Camp	Poultry Processing Plants	100-249
Calaveras County Water	San Andreas	Water and Sewage Companies-Utility	50-99	Hetch Hetchy Water and Power	Moccasin	Water and Sewage Companies-Utility	100-249
Calaveras Lumber	Angels Camp	Lumber-Retail	50-99	Lair of the Bear	Pinecrest	Camps	100-249
Calaveras Public Works Department	San Andreas	Grading Contractors	50-99	Pak 'N Save Foods	Sonora	Grocers-Retail	100-249
Calaveras Works and Human Services	San Andreas	Government Offices-County	50-99	Pine Mountain Lake Association	Groveland	Associations	100-249
Foot Hill Village Lodge and Inn	Angels Camp	Retirement Communities and Homes	50-99	Sierra Pacific	Sonora	Lumber Manufacturers	100-249
Jenny Lind Elementary School	Valley Springs	Schools	50-99	Sierra Pacific Industries	Chinese Camp	Sawmills	100-249
Longs Drugs	Valley Springs	Pharmacies	50-99	Sonora School District	Sonora	Schools	100-249

**Table 5-22: Major Employers in Calaveras and Tuolumne Counties**

Calaveras County				Tuolumne County			
Employer Name	Location	Industry	Number of Employees	Employer Name	Location	Industry	Number of Employees
Mark Twain Elementary School	Angels Camp	Schools	50-99	Sonora Union High School	Sonora	Schools	100-249
Mar-Val Food Stores	Valley Springs	Grocers-Retail	50-99	Tuolumne County Human Services Agency	Sonora	County Government-Social/Human Resources	100-249
Resort at Greenhorn Creek	Angels Camp	Resorts	50-99	Tuolumne County Sheriff	Sonora	Sheriff	100-249
Saddle Creek Lodge Resort	Copperopolis	Hotels and Motels	50-99	Tuolumne County Social Services	Sonora	County Government-Social/Human Resources	100-249
Sequoia Woods Country Club	Arnold	Restaurants	50-99	USFS	Groveland	Government-Forestry Services	100-249

Sources: California Employment Development Department 2007a, 2007b

1 due to nontaxable federal lands. Taxes, including PILT, are the primary revenue support  
2 for local police and fire protection, roads, and other infrastructure.

3 The sales and use tax rate in Tuolumne and Calaveras Counties is 7.250 percent. The  
4 property tax rate in Calaveras County in the area surrounding New Melones Lake is an  
5 average of 1.0264 percent (Calaveras County 2007a). Sales tax revenue for Calaveras  
6 County during the 2005 to 2006 fiscal year totaled \$2,587,619 (Calaveras County  
7 2007b), and property tax revenues were \$71,622,000 for unincorporated Calaveras  
8 County (Calaveras County 2007c). The property tax rate in Tuolumne County is roughly  
9 1.04182 percent. Sales tax revenue in Tuolumne County for the 2005 to 2006 fiscal year  
10 was \$3,156,000, and \$13,839,000 in property tax revenue went to Tuolumne County's  
11 General Fund over this period (Robertson 2007).

12 Transient occupancy taxes are one way local governments collect revenues from visitors.  
13 They are a good indicator of travel activity because almost all of these sales are made to  
14 travelers. In 2005, transient occupancy tax revenue in Tuolumne County totaled  
15 \$1,271,273 and in Sonora \$202,790 (Robertson 2007). Transient occupancy taxes  
16 accounted for \$288,222 in revenue in Calaveras County (Calaveras County 2007a) and  
17 \$739,177 in Angels Camp for the 2005 to 2006 fiscal year (City of Angels Camp 2007).

18 The formula used to compute the payments is based on population, receipt sharing  
19 payments, and the amount of federal land within an affected county. PILT payments in  
20 2006 in Calaveras County totaled \$70,775, and in Tuolumne County total PILT payments  
21 were \$739,215. In Calaveras County these payments covered 140,127 acres of federal  
22 land, 13 percent of which (18,213 acres) was Reclamation land. In Tuolumne County,  
23 federal lands totaled 1,091,844 acres, 0.8 percent of which (8,260 acres) was Reclamation  
24 land. Approximately 0.6 percent of federal land statewide was Reclamation land.  
25 Between 2000 and 2006, PILT payments in Calaveras County declined by 18.2 percent  
26 despite a 2.8 percent increase in federal lands; whereas, in Tuolumne County and the  
27 state, PILT payments increased by 5.2 and 47.4 percent. Over this period the federal  
28 acreage in Tuolumne County did not change, but the state average increased by 1.3  
29 percent. The acreage of Reclamation lands increased in Calaveras County by 87 acres,  
30 remained unchanged in Tuolumne County, and increased by 213 acres statewide between  
31 2000 and 2006 (US Department of the Interior 2007).

32 **Recreational Revenues of the New Melones Reservoir.** The projected annual benefits  
33 presented in the economic impact study prepared in 1978 for the New Melones Reservoir  
34 were \$20,300,000 (based on 1975 price levels). This would be equivalent to the 2007  
35 dollar value of \$74,907,749. The study estimated that 10 percent of this annual benefit  
36 would be from general recreation and fishery enhancement. The average revenue  
37 generated, between 2005 and 2007, from recreational use fees and marina franchise fees  
38 is \$341,675 (Laird 2009a). The recreation uses fees account for approximately 75 percent  
39 of the total recreational revenue fees.

1 **Environmental Justice**

2 In order to comply with EO 12898, Federal Actions to Address Environmental Justice in  
 3 Minority and Low-Income Populations, data was compiled concerning the ethnic  
 4 composition and income and poverty levels of the two New Melones Lake Area counties.  
 5 At the time of the 2000 Census, the percentage of minorities in the census tracts  
 6 surrounding New Melones Lake was 11.9 percent, and the percentage of any race that  
 7 was considered Hispanic was 8.3 percent (US Census Bureau 2000a).

8 Table 5-23 presents ethnicity data for Calaveras County, and Table 5-24 presents  
 9 ethnicity data for Tuolumne County. The minority population constitutes approximately  
 10 14.3 percent of the population of Calaveras County. Similar to Tuolumne County, the  
 11 Hispanic population forms the greatest percentage of the minority population (7.0  
 12 percent). The percentage of minorities in Calaveras County has increased since 2000 and  
 13 is projected to continue to increase, as is the percentage of minorities that is made up of  
 14 Hispanics (California Department of Finance 2004). Based on Census data, the  
 15 percentage of minorities in the area closest to New Melones Lake is lower than the  
 16 Calaveras County average.

17

**Table 5-23: Population Ethnicity Estimates for Calaveras County**

Year	White	Hispanic	Asian	Pacific Islander	Black	Native American	Multi-Race	% Non-White	Total
<b>2000</b>	35,685	2,879	367	41	360	652	906	12.7%	40,890
Percent	(87.3%)	(7.0%)	(0.9%)	(0.1%)	(0.9%)	(1.6%)	(2.2%)		
<b>2006</b>	39,555	3,651	433	41	499	1,002	985	14.3%	46,166
Percent	(85.7%)	(7.9%)	(0.9%)	(0.1%)	1.1%	(2.2%)	(2.1%)		
<b>2030</b>	55,981	7,954	1,076	41	1,226	3,042	1,257	20.7%	70,577
Percent	(79.3%)	(11.3%)	(1.5%)	(0.1%)	1.7%	(4.3%)	(1.8%)		

Source: California Department of Finance 2004

18

19 As shown in Table 5-24, ethnic minorities are estimated to make up 16.3 percent of the  
 20 current population of Tuolumne County, which is a slightly higher percentage than in  
 21 Calaveras County. As for Calaveras County, the Hispanic population forms the greatest  
 22 percentage of the minority population (8.5 percent of the total population). The  
 23 percentage of minorities has increased since 2000 and is projected to continue to  
 24 increase, as is the percentage of minorities that is made up of Hispanics (California  
 25 Department of Finance 2004). Based on census data, the percentage of minorities in the  
 26 area closest to New Melones Lake is lower than the Tuolumne County average.



**Table 5-24: Population Ethnicity Estimates for Tuolumne County**

Year	White	Hispanic	Asian	Pacific Islander	Black	Native American	Multi-Race	Percent Non-White	Total
<b>2000</b>	46,674	4,540	421	93	1,159	948	1,111	15.1%	54,946
Percent	(84.9%)	(8.3%)	(0.8%)	(0.2%)	2.1%	(1.7%)	(2.0%)		
<b>2006</b>	48,867	4,952	518	93	1,191	1,476	1,265	16.3%	58,362
Percent	(83.7%)	(8.5%)	(0.9%)	(0.2%)	2.0%	(92.5%)	(2.2%)		
<b>2030</b>	54,191	6,526	863	93	1,269	3,909	1,715	21.0%	68,566
Percent	(79.0%)	(9.5%)	(1.3%)	(0.1%)	1.9%	(5.7%)	(2.5%)		

Source: California Department of Finance 2004

1

2 This trend toward a larger percentage minority population, with Hispanics being the  
 3 largest minority, reflects the state trend; however, the proportion of minorities in the New  
 4 Melones Lake Area counties is much lower than the state average, which has been above  
 5 50 percent since 2000. In 2000, approximately 52.9 percent of the state population was  
 6 minority, with 32.6 percent Hispanic; and in 2006 about 57.8 percent of California's  
 7 population was minority, with 36.4 percent Hispanic. By 2030 the state is projected to  
 8 have a 70.5 percent minority population, and 46.8 percent of the population is forecast to  
 9 be Hispanic (California Department of Finance 2004).

10 The US Census Bureau uses a set of income thresholds that vary by family size and  
 11 composition to determine which families are living in poverty. If a family's total income  
 12 is less than its threshold, then that family, and every individual in it, is considered to be  
 13 living in poverty. Poverty thresholds do not vary geographically, but they are updated  
 14 annually for inflation using the Consumer Price Index. For individuals who do not live  
 15 with family members, their own income is compared with the appropriate threshold (US  
 16 Census Bureau 2004). According to the US Census Bureau, the poverty threshold in 2004  
 17 was \$9,973 for an individual and \$19,971 for a family of four. Table 5-25 shows  
 18 estimated median household income and poverty levels for Calaveras and Tuolumne  
 19 Counties and for the state. According to the US Census Bureau, the percentage of the  
 20 populations of Calaveras and Tuolumne Counties at income levels below the poverty  
 21 threshold was lower than the state average of 13.2 percent, with 9.3 and 11.6 percent,  
 22 respectively. The median household income for these two counties was also below the  
 23 state average (US Census Bureau 2006).

24

**Table 5-25: Median Household Income and Poverty, 2004**

State/County	Median Household Income	Number in Poverty	Percent in Poverty
California	49,894	4,681,645	13.2
Calaveras County	46,052	4,323	9.3
Tuolumne County	41,067	6,069	11.6

Source: US Census Bureau 2006

25

1 According to the 2000 Census, within the census tracts surrounding the New Melones  
2 Lake Area, the percentage of families below the poverty line averaged approximately 9.3  
3 percent, higher than the Calaveras County average of 8.7 percent and the Tuolumne  
4 County average of 8.1 percent. The average percentage of individuals below the poverty  
5 line in the census tracts surrounding the New Melones Lake Area was 12.8 percent,  
6 which was higher than the Calaveras County average of 11.8 percent and the Tuolumne  
7 County average of 11.4 percent (US Census Bureau 2000b).

### 8 **5.2.19 General Recreation**

9 The New Melones Lake Area receives approximately 800,000 visitors a year  
10 (Reclamation 2007d). Most visitor use occurs within the designated developed recreation  
11 areas of Glory Hole and Tuttletown. Both areas have been developed and managed in  
12 conformance with the Master Plan (1976). In addition to its magnificent scenery, the lake  
13 offers an array of activities, such as camping, hiking, wildlife viewing, rock climbing,  
14 mountain biking, horseback riding, fishing, boating, water skiing, wake boarding, using  
15 personal watercraft, sailing, swimming, kayaking, canoeing, picnicking, spelunking, and  
16 operating floatplanes and radio-controlled aircraft. Boat ramps, RV dump stations, a  
17 visitor center, and trails are other recreation amenities.

18 A 2007 telephone and on-site survey of residents in the New Melones Lake Area yielded  
19 data on visitor use trends. Most recreationists visiting the New Melones Lake Area come  
20 from Tuolumne (20.2%), Santa Clara (11.6%), and Stanislaus (10.1%) counties. Based in  
21 part on this information, the telephone survey of users was stratified as follows  
22 (Reclamation 2008):

- 23 • Tuolumne County – 30%
- 24 • Santa Clara – 16%
- 25 • Stanislaus – 15%
- 26 • Calaveras County – 13%
- 27 • Contra Costa County – 13%
- 28 • San Joaquin – 13%

29 During the onsite survey, users were asked how many times they visited the New  
30 Melones Lake Area in the past 12 months. The mean number of visits was 13, while the  
31 median number was only 6. This suggests a wide distribution in use patterns. Nearly one  
32 quarter of the respondents visiting the area had more than 15 visits in the past year. A  
33 large number of users (44%), however, had visited the area less than 4 times in the past  
34 year (Reclamation 2008).

35 The number of days spent visiting the area is as follows:

- 36 Less than 1 day – 30.5%
- 37 1 day – 28.6%

1           2 to 4 Days – 37.1%

2           5+ Days – 3.8%

3   The mean time spent at New Melones was 1.5 days and the median was 1 day  
4   (Reclamation 2008).

5   Figure 5-13 shows recreation areas at New Melones Lake. Within the developed  
6   recreation areas, Reclamation manages five fee campgrounds. Campsites are available for  
7   reservation through the National Recreation Reservation Service. Camping is permitted  
8   only in the designated campgrounds; no shoreline camping is allowed. Each campground  
9   also has its own self-registration/self-pay station. The current capacity is 305 developed  
10   camping sites for the primary use season, two group campgrounds, 470 parking spaces  
11   year-round, 125 picnic sites, and a group picnic area. Each camping site contains a picnic  
12   table, fire pit, and grill. Each campground has water spigots, restroom facilities, and hot  
13   showers. Most of the camping and picnicking infrastructure on the lake is aging.  
14   Historically, recreation occurred on a seasonal basis, with significantly fewer visitors  
15   during colder months. With visitation in the non-peak seasons increasing, pressure on  
16   facilities and infrastructure is also increasing. Three sites in the campground have been  
17   updated to meet the Americans with Disabilities Act standards. Almost all sites are  
18   available by reservation and are otherwise available on a first come, first served basis.

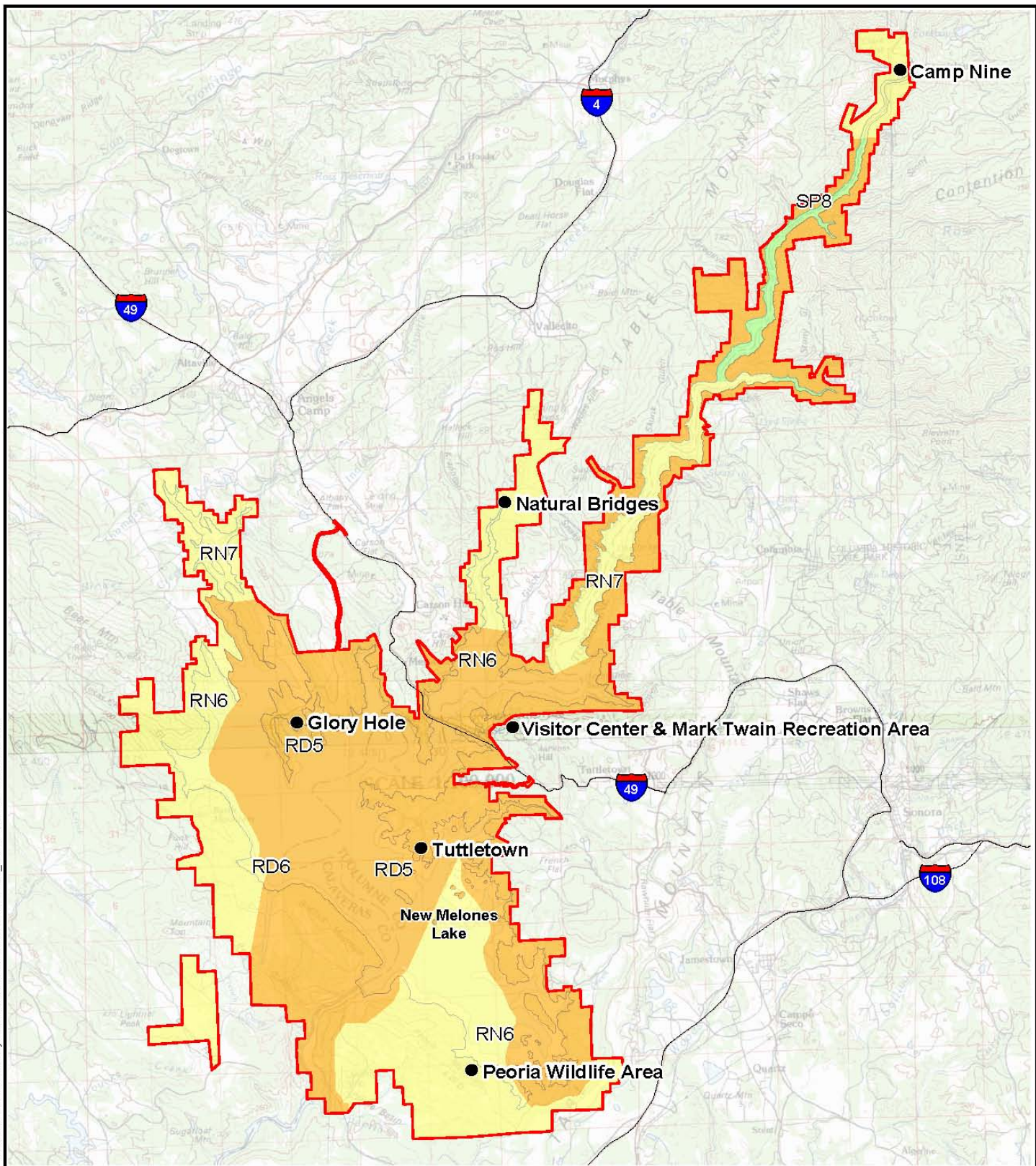
### 19   **Concessions**

20   Reclamation uses concessionaire agreements to achieve needed recreational support  
21   services, programs, and facilities and as a means for disseminating public use  
22   information. The primary concessionaire at the New Melones Lake Area runs the New  
23   Melones Lake Marina at the Glory Hole Management Area. The marina provides rentals  
24   of houseboats, patio boats, fishing boats, and personal watercraft. There are 20 rental  
25   houseboats and 38 private houseboats docked at the marina, and an additional 50 private  
26   houseboats are docked at mooring balls in the cove. The marina also rents boat slips and  
27   runs a store offering food, beverages, and fishing tackle. The marina also has such  
28   amenities as a boat fueling station, sewage pump-out service, propane sales, and baggage  
29   cart service.

30   Reclamation supports concessionaire agreements with private enterprises to achieve  
31   needed recreational support services, programs, and facilities and to disseminate  
32   Reclamation information (Reclamation 1995). All concessionaire contracts include  
33   explicit measures related to the notice and dissemination of public information,  
34   communications equipment necessary in the event of emergencies, medical emergency  
35   provisions, and spill emergency response measures.

36   The marina concessionaire at the New Melones Lake Area holds a County Non-  
37   Community Water Permit for the marina's water system and a Calaveras County Store  
38   Permit for the convenience store at the marina (Reclamation 1995). The concessionaire  
39   also holds a fuel permit for the convenience store and a State of California license for

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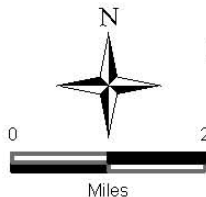
WROS INVENTORY SCALE										
1	2	3	4	5	6	7	8	9	10	11
U	S	RD	RN	SP	P					

- U - Urban Recreation
- S - Suburban Recreation
- RN - Rural Natural Recreation
- RD - Rural Developed Recreation
- SP - Semi Primitive Recreation
- P - Primitive Recreation

**WROS Categories**

- U
- S
- RD
- RN
- SP
- P

**Recreation Areas and Zones**



New Melones Lake, California  
Central California Area Office

**Figure 5-13**

1 selling beer and wine, which includes a federal tax stamp from the Federal Bureau of  
2 Investigation.

3 White-water boating has occurred during ideal lake conditions. The Stanislaus River,  
4 when it is not inundated by New Melones Lake, offers generally forgiving to fairly  
5 difficult rafting runs. Depending on seasonal water fluctuations, commercial rafting  
6 companies may offer organized guided raft trips down the river. Most of the white-water  
7 boating consists of organized permittees that provide day-long, guided raft trips;  
8 however, several individuals also kayak and raft the lake and river.

9 Recreational gold panning is an unregulated activity and is allowed throughout the area.  
10 Unpermitted fishing guide services and an unpermitted float plane school are also found  
11 in the area. Reclamation is seeking voluntary compliance of these unpermitted  
12 commercial services with 43 CFR, Parts 423 and 429, and other directives. Per 43 CFR,  
13 Part 429, those staging commercial activities and events and occupying or using federal  
14 land must obtain a land use authorization, such as a right of use permit. Permitted uses  
15 are listed in Section 6-10.

16 The marina concessionaire at Glory Hole would like to put more houseboats on the lake.  
17 Increased recreational demand results in pressure to develop more marina facilities like  
18 the one at Glory Hole. Additional requests include allowing for such activities as guided  
19 horseback riding, guided kayak/canoe tours, guided lake tours by boat, RV campgrounds  
20 with hookups, and houseboat/boat storage and repair facilities.

21 **Licenses.** Reclamation licenses the Sonora Radio-Controlled Flyers and New Melones  
22 Water Skiers, Inc., to operate in the New Melones Lake Area. The licenses allow these  
23 nonprofit organizations to operate on Reclamation land with the understanding that they  
24 operate the water ski course (located in the South Bay Planning Area) and radio-  
25 controlled airplane strip (located downstream of the dam) in a way that is fully open to  
26 the public.

27 CAL FIRE has a lease agreement to run Baseline Conservation Camp on approximately  
28 66 acres (25 hectares) of Reclamation land. The facility is self contained and has its own  
29 water treatment plant and power source. In this case, CAL FIRE uses Baseline  
30 Conservation Camp inmates to provide New Melones with such services as fire fuels  
31 reduction in exchange for housing its facility on Reclamation land. The benefits of this  
32 agreement to the New Melones Lake Area include fire suppression, recreation area  
33 maintenance, and wildlife habitat enhancement.

## 34 **5.2.20 Facilities, Land Use, and Management Areas**

### 35 ***Facilities***

36 The New Melones Lake Area is in a rural area among the foothills of the west slope of  
37 the Sierra Nevada. Altaville, Angels Camp, Columbia, Springfield, Sonora,  
38 Copperopolis, and Jamestown are the closest towns.

1 Each year, approximately 800,000 visitors take advantage of the various recreational  
2 opportunities at the New Melones Lake Area (Reclamation 2007d). Facilities at New  
3 Melones Lake are found at Glory Hole and Tuttletown Recreation Areas, the visitor  
4 center, and undeveloped areas. The types of facilities include access and parking  
5 facilities, day use facilities, overnight facilities, and support facilities. There are other  
6 miscellaneous facilities, such as amphitheater, trailhead parking areas, and playgrounds.  
7 The types and number of facilities at the New Melones Lake Area are identified in  
8 Appendix I.

9 **Developed Recreation Areas.** Reclamation designates developed recreation areas for  
10 recreational use and has developed them in conformance with the Master Plan  
11 (Reclamation 1995). Glory Hole Recreation Area is in Calaveras County in the mid-basin  
12 area and is accessed from Highway 49 via Whittle Ranch Road. The recreation area is  
13 composed of the main portion (which includes the large peninsula extending into the  
14 reservoir), the New Melones Lake Marina, and Angels Creek (which is north of the main  
15 area).

16 The Tuttletown Recreation Area is in Tuolumne County in the mid-basin area and is  
17 accessed from Highway 49 via Reynolds Ferry Road (Reclamation 1995). The recreation  
18 area is on a large peninsula extending into the reservoir.

19 The Mark Twain Recreation Area includes the administration area and visitor center,  
20 which is in Tuolumne County near the Highway 49 Stevenot Stanislaus River Bridge  
21 (Reclamation 1995). It is accessed from Highway 49 along and adjacent to the old  
22 Highway 49 road via Melones Court and Studhorse Flat Road. The area is on the gradual  
23 incline of the north-facing side of Jackass Hill. In addition to housing Reclamation's  
24 administration and maintenance operations facilities, the area also has a visitor center and  
25 restrooms and informal lake access.

26 The Dam Overlook is in Tuolumne County and is accessed via Peoria Flat Road from  
27 Highway 108/120 (Reclamation 1995). The area contains viewing shelters, a restroom,  
28 and a parking lot. The view from the overlook is on the west side of New Melones Dam,  
29 the powerhouse, and the Stanislaus River. The overlook facility was built to enable  
30 public viewing for the dam and powerhouse construction. Once dam construction was  
31 completed, the Dam Overlook became obsolete and was closed to the public.

32 Reclamation constructed playgrounds in camping areas shortly after the lake was filled.  
33 The playgrounds will be removed because of safety concerns.

34 **Undeveloped Recreation Areas.** Undeveloped recreation areas are sites that were  
35 planned for future development in the Master Plan but remained undeveloped or with  
36 minimum basic facilities. These areas are presently used, Reclamation having designated  
37 them for dispersed recreational use and other uses, such as wildlife management. Various  
38 facilities are found in the nine undeveloped recreation areas identified in Appendix I.  
39 Vehicles with car-top boats have access to the lake at the Mark Twain undeveloped lake  
40 access, which is the old Highway 49 route. In this area, canoes, kayaks, and small boats  
41 with a maximum of ten horsepower motors are allowed to be hand launched; trailered

1 launching is not permitting. Parrotts Ferry undeveloped lake access, also a former  
 2 roadway, was at one time open to trailered boat launching/vehicle access but is now open  
 3 only for foot traffic and hand launching. Both former roadways have deteriorated and are  
 4 in disrepair because of shoreline erosion undercutting the road and hillside. The Old  
 5 Melones area is now closed.

6 Most of the facilities in the developed areas meet current recreation demands from the  
 7 public, except when the water level is high and during peak visitor periods. Parking areas  
 8 are inundated when the water level is high, reducing parking space. During peak visitor  
 9 periods, there is a lack of ADA-accessible facilities, reservable group picnic spots, fish-  
 10 cleaning stations, pay phones, and showers at the campgrounds. High water level, day  
 11 use parking, parking at the marina, and overflow parking for campers is also lacking.

12 The undeveloped areas do not have facilities to support current or future levels of visitor  
 13 activities. Undeveloped areas have limited parking, restroom, and refuse facilities and  
 14 lack vehicle barriers, fencing, signs, and visitor information boards.

15 **WROS Classification**

16 Recreation settings are characterized and organized into categories called a Water  
 17 Recreation Opportunity Spectrum (WROS), which is a tool used to understand the type  
 18 and locations of six types of water-related recreation opportunities, otherwise known as  
 19 WROS classes (Reclamation 2004). The six WROS classes range across the following  
 20 categories, in order, from the most developed recreational setting to the least developed:  
 21 Urban, Suburban, Rural Developed, Rural Natural, Semi Primitive and Primitive  
 22 (Reclamation 2004). Table 5-26 describes the attributes that determine the different  
 23 categories.

**Table 5-26 WROS Attributes**

<b>Physical Attributes</b>	<b>Managerial Attributes</b>	<b>Social Attributes</b>
Degree of development	Degree of management presence	Degree of visitor presence
Sense of closeness	Degree of public access facilities	Degree of non-recreational use
Degree of resource modification	Degree of developed recreation facilities	Degree of diverse recreation
Distance to development on or adjacent to a water resource	Degree of visitor services and conveniences	Degree of visitor comforts
Degree of natural ambience		Degree of solitude/remoteness

24 Source: Reclamation 2004

25 Within the eighteen New Melones Lake Area management areas there are three WROS  
 26 classes: Rural Developed, Rural Natural, and Semi Primitive. The primary characteristics  
 27 of these three WROS classes are:

- 28 • **Rural Developed:** A Rural Developed WROS area is beyond a metropolitan area  
 29 and the suburban ring of development. Rural Developed areas may serve as

1 “bedroom” communities for urban areas and may contain working farms and  
2 ranches. Towns and primary road networks are common. Development will be  
3 prevalent and common, yet the setting has a pastoral sense because of an  
4 interspersing of forests, water resources, hills, valleys, canyons, wetlands, open  
5 spaces, and agricultural land uses. Natural appearing shoreline edges are  
6 common, although various water controls or other structures are also common.  
7 Recreation management is prevalent and common but not as extensive as in an  
8 urban setting (e.g., personnel, rules, facilities, signs, services, conveniences,  
9 security). Recreation use, diversity, socialization, concentration, sense of security,  
10 and conveniences are common but less so than in a developed suburban or urban  
11 setting. The sights, sounds, and smells of recreation and non-recreation use are  
12 common, yet interspersed with locations and times when a sense of tranquility  
13 and escape from everyday challenges may be experienced by the urbanized  
14 visitor. Examples of Rural Developed areas may include areas with country  
15 estates, second homes and cabins, dams, power stations, primary and secondary  
16 roads, communication lines, resorts, marinas, small communities, full-service  
17 campgrounds, county and state parks, farms, ranches, and small commercial and  
18 industrial establishments (Reclamation 2004).

19 • **Rural Natural:** A Rural Natural WROS area is a considerable distance from  
20 metropolitan areas and communities. Natural features are predominant on the  
21 landscape, and the presence of development is occasional or infrequent.  
22 Agriculture, tourism, and outdoor recreation are often primary industries. Rural  
23 Natural areas are often large enclaves of public lands and waters. Natural  
24 resources dominate the landscape. The sights, sounds, and smells of development  
25 are infrequent. The water resources are bordered by natural appearing settings.  
26 Water controls or other structures are occasional along the shoreline.  
27 Management is occasionally noticeable in the form of patrols, facilities, signage,  
28 conveniences, and full services. Visitors desire a sense of tranquility and escape  
29 from their daily routine. Opportunity for visitors to see, hear, and smell nature is  
30 prevalent and common, as are occasions to enjoy periods of solitude. Recreation  
31 use, diversity, socialization, concentration, sense of security, and conveniences  
32 are periodic and occasional. Examples of a Rural Natural area might include  
33 unincorporated rural areas with occasional secondary and unpaved roads, small  
34 cabins, single residences, farms and ranches, rustic campgrounds, rural county  
35 and state parks, power lines, small stores and fuel services, and areas often  
36 bordering or surrounded by large expanses of public lands and waters  
37 (Reclamation 2004).

38 • **Semi Primitive:** A Semi Primitive WROS area is a large expanse of natural  
39 resources that is far from any city or metropolitan area and a considerable  
40 distance from small communities, subdivisions, or developments. Natural  
41 resources dominate the landscape. Development is minor and the sights and  
42 sounds of human activity are few, but may include such evidence of human  
43 activity as distant farming operations, power lines, livestock, small buildings, old  
44 roadways, historic structures, and historic logging or mining. These water  
45 resources are often within large expanses of public lands and waters.



1 Management, in the form of patrols, facilities, and signage, is seldom noticeable  
2 and the visitors are expected to have the equipment and skills to be able to  
3 navigate and enjoy this setting. Visitors desire a sense of tranquility and escape  
4 from their daily routine. Facilities are rustic and blend well into the setting.  
5 Resource protection is very important. Opportunity for visitors to see, hear, and  
6 smell nature is wide-spread. Visitors sense solitude and remoteness. Examples of  
7 Semi Primitive settings are large expanses of state and federal lands and waters  
8 that are commonly designated as a wild and scenic river, wilderness, backcountry  
9 lake, headwater, marine reserve, roadless area, or other type of state, federal, or  
10 international protected area (Reclamation 2004).

11 Of the three WROS classes present at the New Melones Lake Area, rural developed areas  
12 offer the most developed setting where man-made conveniences are common, while  
13 semi-primitive areas offer the least developed setting where visitors experience few  
14 sights and sounds of human activity and opportunities for remoteness and solitude. Rural  
15 natural areas allow visitors to experience a natural landscape with some opportunities to  
16 experience both solitude and man-made conveniences.

17 At the New Melones Lake Area, there are 17,372.87 acres classified as Rural Developed,  
18 10,686.58 acres classified as Rural Natural, and 413.55 acres are classified as semi-  
19 primitive. Rural developed settings dominate and opportunities to recreate in semi-  
20 primitive settings are rare.

## 21 ***Management Areas***

22 **Camp Nine Management Area** (WROS description is Semi Primitive). This area is in  
23 Calaveras and Tuolumne Counties and is the northernmost of the planning areas and  
24 recreation areas along the upper Stanislaus arm. Although it is the most remote and is  
25 farthest from the campgrounds, marina, and boat launches, the Camp Nine Management  
26 Area experiences intensive use because it is a favorite recreation area for white-water  
27 rafters, kayakers, and swimmers. Before the dam was completed in 1979, the Old Camp  
28 Nine Bridge was the launch site for rafters, who would travel nine miles to Parrotts Ferry  
29 Bridge, where they would take out their boats. This area was once thought of as the best  
30 run for intermediate-skill rafters in California. After the dam was constructed, the general  
31 assumption was that the Old Camp Nine bridge would be inundated and many of the  
32 aquatic opportunities would be lost. However, due to drought and low water levels, the  
33 bridge is often exposed. Bridge jumping is also a popular activity, but recently a gate has  
34 been put up to restrict access to the Old Camp Nine Bridge, and signs warning against  
35 bridge jumping have been posted. Due to safety and public health concerns, the Old  
36 Camp Nine Bridge is planned for deconstruction in 2008/2009.

37 Access to the Camp Nine Management Area is limited, with the only practical route  
38 being the unimproved Camp Nine Road, which originates near the town of Vallecito.  
39 Development is minor, consisting of an informal parking area, footbridge, hiking trails,  
40 and one vault restroom. Opportunities in this area are for more adventurous visitors.  
41 Recreation opportunities and development is minor, consisting of a hiking trail to the

1 cultural sites at Clarks Flat. Low-impact activities, such as wildlife viewing, hiking, and  
2 stream fishing, are encouraged.

3 **Stanislaus River Canyon Management Area** (no WROS recommendation) is in  
4 Tuolumne and Calaveras Counties, just south of the Camp Nine Planning Area. Power  
5 boat users regularly visit the area, although the area upstream of the confluence of the  
6 upper Stanislaus fork and the south fork of the Stanislaus is a designated no wake zone.  
7 During years of extreme drought when the lake level is low, white-water rafters visit this  
8 area. As such, this planning area is subject to intensive use. This area is a significant cave  
9 resource area, with numerous caves on both sides of the river. Developed recreation  
10 opportunities in this planning area are limited, and management is primarily focused on  
11 preserving sensitive resources. However, spelunkers explore many of the caves, an  
12 activity that is difficult to manage and for which little official data regarding use levels  
13 exists. To protect sensitive resources, such as rare or listed animal species and cultural  
14 resources, some caves have been gated. No facilities have been developed in this area.

15 **Parrotts Ferry Management Area** (WROS description is Rural Developed) is in  
16 Tuolumne County, adjacent to Parrotts Ferry Road. The area is very steep, except for two  
17 small flat areas along the road. Before the dam was constructed, Parrotts Ferry was the  
18 take-out location for rafters who started nine miles upstream at the Old Camp Nine  
19 Bridge. The old road was heavily used as lake access for boat launching, but the road and  
20 retaining wall were deemed safety hazards and vandalism was a problem. As a result, the  
21 road was closed to public access several years ago. Recreationists use the area for fishing,  
22 boating, and suction dredge gold mining. No facilities have been developed.

23 **Carson Management Area** (WROS description is Rural Developed) is in both  
24 Tuolumne and Calaveras Counties on the eastern shoreline of the lake. Low slopes in the  
25 western part of this planning area make this area particularly susceptible to variable water  
26 levels, while steep slopes on the eastern side make access to the lake from land difficult.  
27 Horseshoe Bend, on the eastern side of this planning area, is a well-known fishing cove.  
28 This area was not identified in the Master Plan (1976) and has no facility development. It  
29 is heavily transited by boaters traveling between the main body of the lake and the  
30 Stanislaus River Canyon area of the lake.

31 **Mark Twain Management Area** (WROS description is Rural Developed) is in  
32 Tuolumne County, on the northeastern portion of New Melones Lake, adjacent to SR 49.  
33 Recreation opportunities in this planning area include sheltered cove swimming and  
34 fishing. Despite its high use, there has been minimum facility development.  
35 Reclamation's headquarters and visitor center are in this planning unit (see Section  
36 5.2.21., Interpretive Services and Visitor Information). Boat launching that had occurred  
37 near the intersection of Studhorse Flat Road and Highway 49 is no longer allowed. As of  
38 April 2008, only car-top boats may be launched in this area.

39 **Tuttletown Management Area** (WROS description is Rural Developed) is the largest of  
40 the public use areas on the Tuolumne County side and the second most highly developed  
41 recreation area on the lake. The area consists of approximately 1,115 acres (450 hectares)

1 and is accessed by Reynolds Ferry Road, off SR 49. This area is popular for overnight  
2 camping, group camping, day use picnicking, and boat launching. Recreational activities  
3 include hiking, biking, and fishing. To help alleviate vandalism, the Tuttle town  
4 Recreation Area entrance gate is closed at night and is reopened in the morning.

5 The Tuttle town Recreation Area has three campgrounds, Acorn, Manzanita, and  
6 Chamise, with a total of 161 campsites. There are no electrical hookups at any of the  
7 campground sites, and one RV dump station is available. All campgrounds have  
8 restrooms, showers, water taps, and barbeque/fire pits. Campsites at Tuttle town may be  
9 reserved through the National Recreation Reservation Service. When they have not been  
10 reserved, campsites are available on a first come, first served basis.

- 11 • *Acorn Campground*, with 69 sites, is on the north side of the Reynolds Ferry  
12 Road and is the largest of the three campgrounds in the Tuttle town Recreation  
13 Area. Acorn sits at the highest elevation and therefore is the campground farthest  
14 from the water. Shade is limited, so this campground is most popular in the  
15 winter. The Heron Point Trail can be accessed from the campground and connects  
16 users to the Heron Point day use area.
- 17 • *Manzanita Campground* is in the southeastern portion of the recreation area and  
18 has 56 sites. Two campsites have been updated for ADA compliance. This  
19 campground was established for lower access to the water; however, in 2006 one  
20 loop of this campground was inundated.
- 21 • *Chamise Campground* is on the southwestern portion of the recreation area. It is  
22 the smallest of the three campgrounds in the Tuttle town Recreation Area with  
23 only 36 sites. This campground has walk-in and standard sites only, and trailers  
24 are not permitted.

25 In addition to the three campgrounds described above, the Tuttle town Recreation Area  
26 also contains two group camps, Fiddleneck and Oak Knoll. Fiddleneck Group Camp has  
27 six group sites that can accommodate 40 to 60 people. Oak Knoll has 10 group sites that  
28 can accommodate 20 to 50 people. Camp hosts volunteer to regulate the sites year round.  
29 Several campsites have been redesigned to accommodate users with special needs.  
30 Improvements include ensuring that the sites are very flat and that wheelchair-accessible  
31 restrooms and wheelchair-friendly picnic tables are provided. Fiddleneck has an  
32 accessible flush toilet but no showers, while Oak Knoll has an accessible vault toilet.  
33 Both sites are available by reservation through the National Recreation Reservation  
34 Service.

35 Tuttle town has three day use areas (Heron Point, Lupine, and Eagle Point), one fish  
36 cleaning station, one RV dump station, and hiking and biking trails. Three seven-lane  
37 boat ramps, for use at various reservoir levels, are at the end of the Reynolds Ferry Road.  
38 The Heron Point Trail can be accessed at the Heron Point Day Use Area, and more trails  
39 are planned for development.

40 **French Flat Management Area** (WROS description is Rural Developed) lies between  
41 the highly developed Tuttle town planning area and the more rural Bear Creek Planning

1 Area. This area has no developed recreational facilities but is popular for inappropriate  
2 uses such as late-night parties, target shooting, and ORV use. Access to this area is via a  
3 BLM parcel, and there is no vehicle access through Reclamation lands or private  
4 easements.

5 **Bear Creek Management Area** (the WROS description is Rural Developed) is in  
6 Tuolumne County on the eastern shoreline of New Melones Lake. This area is popular  
7 with boaters because it provides a natural setting with many coves, bays, and islands. The  
8 shoreline has no developed recreational facilities. Popular activities include fishing and  
9 houseboating, and waterskiing is popular in the main body of open water. Additional  
10 recreation includes hiking, hunting, bird watching, and any other activities that do not  
11 require vehicle access. This planning area is accessible via Shell Road; Old Melones  
12 Dam Road also provides access but is fenced and gated and vehicular access is restricted.

13 **Peoria Wildlife Management Area** (WROS recommendation is Rural Natural) is in  
14 Tuolumne County and was set aside as an area dedicated to wildlife habitat protection  
15 and enhancement. Management objectives focus on wildlife enhancement measures and  
16 habitat mitigation, with dispersed recreation permitted. However, activities such as  
17 hunting, horseback riding, hiking, wildlife viewing, and mountain biking occur here, and  
18 the area offers opportunity for grazing leases in the future. Campfires, camping, target  
19 shooting, and vehicles are prohibited from this area past the gates.

20 Table Mountain Planning Area is within the PWMA, just inland from the Bear Creek  
21 Management Area at the end of Shell Road. This is one of the most sensitive ecological  
22 areas within Reclamation lands, and Reclamation manages it to protect sensitive habitats  
23 and species. This area has minor facility development, including a parking area at the  
24 trailhead and one vault toilet.

25 The Peoria Flat Planning Area is also within the PWMA. It includes the RC Flyers  
26 landing strip, Baseline Conservation Camp, the powerhouse warehouse (including  
27 equipment and materials storage), the New Melones Archaeological Storage Facility, an  
28 equestrian area, hiking trails, wastewater and water treatment facilities (both associated  
29 with Baseline Conservation Camp), power transmission lines, a closed overlook with  
30 facilities (such as parking, restroom, picnic area, and displays), trails, a wastewater  
31 evaporation pond, and fencing.

32 Rock climbing is the most notable recreation, predominately at two locations, the Grotto  
33 and the White Room, both situated on the west-facing side of Table Mountain. Other  
34 prominent activities in this area include hiking, mountain biking, wildlife viewing, and  
35 hunting. From the trailhead, hikers can follow a trail that leads to the top of Table  
36 Mountain. In fall, winter, and spring, Reclamation park rangers offer guided hikes along  
37 this same route. From the top, visitors have panoramic views of New Melones Lake and  
38 surrounding lands. Table Mountain also provides extensive northern basalt flow vernal  
39 pool habitat. Mastiff bat, golden eagle, and great horned owl sightings are common.  
40 Hunting for such species as deer, quail, and mourning dove is a popular activity at Table  
41 Mountain.

1 **Dam and Spillway Management Area** (WROS recommendation is Rural Developed) is  
2 in Tuolumne and Calaveras Counties and consists of the area south of the dam and north  
3 of the lake spillway. This area is not subject to development for recreation. Public  
4 vehicles, hunting, and fishing below the dam to the buoy line are not permitted within the  
5 restricted area around the dam and powerhouse. No public access is permitted within the  
6 spillway.

7 **Bowie Flat Management Area** (no WROS recommendation) became part of the New  
8 Melones Lake Area to provide a borrow area for construction of the dam. The area is  
9 suited for dispersed recreation, and there is no overland access.

10 **Westside Management Area** (WROS recommendation is Rural Natural) is in Calaveras  
11 County and contains an extensive collection of cultural resources, particularly in Texas  
12 Charley Gulch. This area is suited for dispersed recreation, and there is no overland  
13 access.

14 **Greenhorn Creek Management Area** (WROS classification is Rural Developed) in  
15 Calaveras County is well known as a fishing cove and is used by houseboats. It offers no  
16 recreational development and there is no overland access.

17 **Glory Hole Management Area** (WROS description is Rural Developed) is in Calaveras  
18 County in the midbasin vicinity of the New Melones Lake Area. It can be accessed from  
19 SR 49 via Whittle Ranch Road. This management area is composed of the main portion,  
20 which includes the large peninsula extending into the lake, and is the location of the New  
21 Melones Lake Marina. Within Glory Hole Water Management Unit is the Angels Creek  
22 Recreation Area. This is the most highly developed recreation area on the lake and  
23 provides an array of recreation opportunities, ranging from day use picnicking to boat  
24 launching and take-out. This area is a major boat launch, parking, and transportation  
25 corridor for boaters traveling to the main body of the lake. The only public beach on the  
26 lake is located here and has picnic tables and barbeque grills, although there is no  
27 lifeguard. Other facilities within the Glory Hole Management Area include boat ramps,  
28 parking lots, picnic shelters, and fish cleaning stations. Trails are available for hiking and  
29 mountain biking. Equestrian use and hunting are not permitted.

30 The Glory Hole Recreation Area has two campgrounds, Ironhorse and Big Oak, with a  
31 total of 144 campsites. Campsites can be reserved through the National Recreation  
32 Reservation Service. Trailhead parking and facilities are available.

- 33 • *Ironhorse Campground* is on the west side of the Glory Hole Access Road and  
34 has water taps, barbeque/fire pits, and full-service restrooms with showers.  
35 Updates have been made to one campsite to comply with ADA, and a park host  
36 site has been added.
- 37 • *Big Oak Campground* is on the east side of the Glory Hole Access Road and has  
38 restrooms, showers, water taps, and barbeque/fire pits. Two campsites have been  
39 updated to comply with ADA, and a park host site has been added.

1 Glory Hole Recreation Area gate is closed at night to help alleviate vandalism. Day use  
2 areas are Buckbrush, Angels Creek, Black Bart, and Osprey Point. There are hiking and  
3 biking trails, in addition to the only concessionaire-operated marina on New Melones  
4 Lake. Four boat ramps are used for high, medium, and low water levels. Three of the four  
5 boat ramps have seven lanes, while the lowest ramp has two lanes.

6 **Coyote Creek Management Area** (WROS description is Rural Developed) is in  
7 Calaveras County off Parrotts Ferry Road. This historically significant area is freely  
8 accessible to the public and provides the only access to the Natural Bridges caves. Minor  
9 facility development at this site includes a parking area at the Natural Bridges trailhead  
10 and one vault toilet. The trail, rated as moderately difficult, leads 0.7 mile (one kilometer)  
11 to the Natural Bridges caves on Coyote Creek. The Natural Bridges day use area is  
12 popular for hiking, spelunking, swimming (wading or floating), and picnicking. Many  
13 people enjoy floating through the caves on inner tubes or inflatable mattresses. During  
14 fall, winter, and spring, Reclamation’s park rangers lead interpretive hikes in this area to  
15 teach visitors about the unique geologic history.

16 **North Bay Management Areas** (WROS recommendation is Rural Developed) is most  
17 associated with boaters and lake users coming from the Glory Hole boat ramps and  
18 marina. Boaters transit this area on the way to other parts of the lake or use the area for  
19 waterskiing or fishing.

20 **Middle Bay Management Area** (WROS recommendation is Rural Developed) is most  
21 associated with lake users coming from the Tuttle town boat ramps and campgrounds. As  
22 with the North Bay Management Area, boaters transit this area or use it for waterskiing.  
23 Floatplanes also land in this area on occasion.

24 **South Bay Management Area** (WROS recommendation is Rural Developed) is used  
25 extensively by water skiers due to the presence of a water ski park at the south end of the  
26 main body of the lake.

### 27 **5.2.21 Aquatic Recreation**

28 The New Melones Lake Area is most popular with visitors for its aquatic recreation  
29 opportunities. At full capacity, there are approximately 12,500 surface acres (5,000  
30 hectares) of water available for aquatic recreation. Activities such as fishing, swimming,  
31 boating, kayaking, white-water rafting, houseboating, and water skiing all occur on the  
32 lake.

33 New Melones Lake accounts for about 12,500 surface acres (5,000 hectares) of the  
34 approximately 27,000 acres (10,900 hectares) of Reclamation-administered lands in the  
35 study area and holds up to 2.4 million acre-feet (2.9 million megaliters) of water. The  
36 lake is surrounded by approximately 100 miles (160 kilometers) of shoreline.

37 A 2007 telephone and on-site survey of residents in the New Melones Lake Area yielded  
38 data on visitor use trends (Reclamation 2008).

1 Aquatic recreation was identified as the most common recreation activities:

- 2 Swimming – 59.0%
- 3 Motor Boating – 57.2%
- 4 Fishing (shoreline/boating) – 41.9%
- 5 Water Skiing/Wakeboarding – 41.7%
- 6 Camping – 37.4%
- 7 Beach Activities – 35.0%
- 8 Using Open Spaces – 31.8%
- 9 Wildlife Viewing – 30.7%

10 Table 5-27 lists a summary of aquatic recreation activities, by primary management  
 11 areas, in the New Melones Lake Area.

**Table 5-27: Summary of Aquatic Recreation by Management Area**

<b>Aquatic Activity</b>	<b>Primary Management Areas</b>	<b>Description</b>
<b>Raft launching and takeout</b>	Camp Nine, Parrotts Ferry	Camp Nine is the only designated launch site for rafters. Parrotts Ferry is one of the main takeout sites for rafters.
<b>Boat launch and retrieval</b>	Parrotts Ferry, Mark Twain, Tuttle town, Glory Hole	Parrotts Ferry has a one-lane walk in hand launch area that lacks any docks, buoys, signs, or other facilities.  Mark Twain has a one-lane car-top boat ramp that is in poor condition. This management area also lacks docks, signs or other facilities, such as parking. Tuttle town has a three-level boat launching facility, and Glory Hole has a four-level boat launch facility.
<b>Water skiing</b>	North, Middle, and South Bays, south portion of Stanislaus River Canyon	The middle portion of the lake offers relatively uncrowded conditions for water skiing, compared to more enclosed areas. South Bay contains a popular water-skiing course.
<b>Swimming</b>	Glory Hole, Mark Twain, Tuttle town, Coyote Creek, Camp Nine, Parrotts Ferry	The Natural Bridges day use area is popular for wading in streams. Glory Hole has a swimming beach.
<b>Boat rental</b>	Glory Hole	Glory Hole is the only area where houseboats are available for rent. Houseboats, along with patio boats, fishing boats, water skis, personal watercraft, and boat slips, are available for rent from the marina.
<b>Fishing</b>	Fishing occurs in all management areas except Bowie Flat.	Though fishing occurs in most management areas, Stanislaus River

**Table 5-27: Summary of Aquatic Recreation by Management Area**

Aquatic Activity	Primary Management Areas	Description
		Canyon, Spillway and Dam, Horseshoe Bend, and Greenhorn Creek are particularly known for their fishing.
<b>Floatplane landing</b>	North, Middle, and South Bays	Floatplanes may land in specified zones within the North, Middle, and South Bays, in accordance with Reclamation guidelines (Figure 5-14).
<b>Radio-controlled airplanes</b>	Dam and Spillway, PWMA	A model airplane club is allowed use of an abandoned airstrip to fly radio-controlled model aircraft. The airstrip in the PWMA is shared with CAL FIRE.

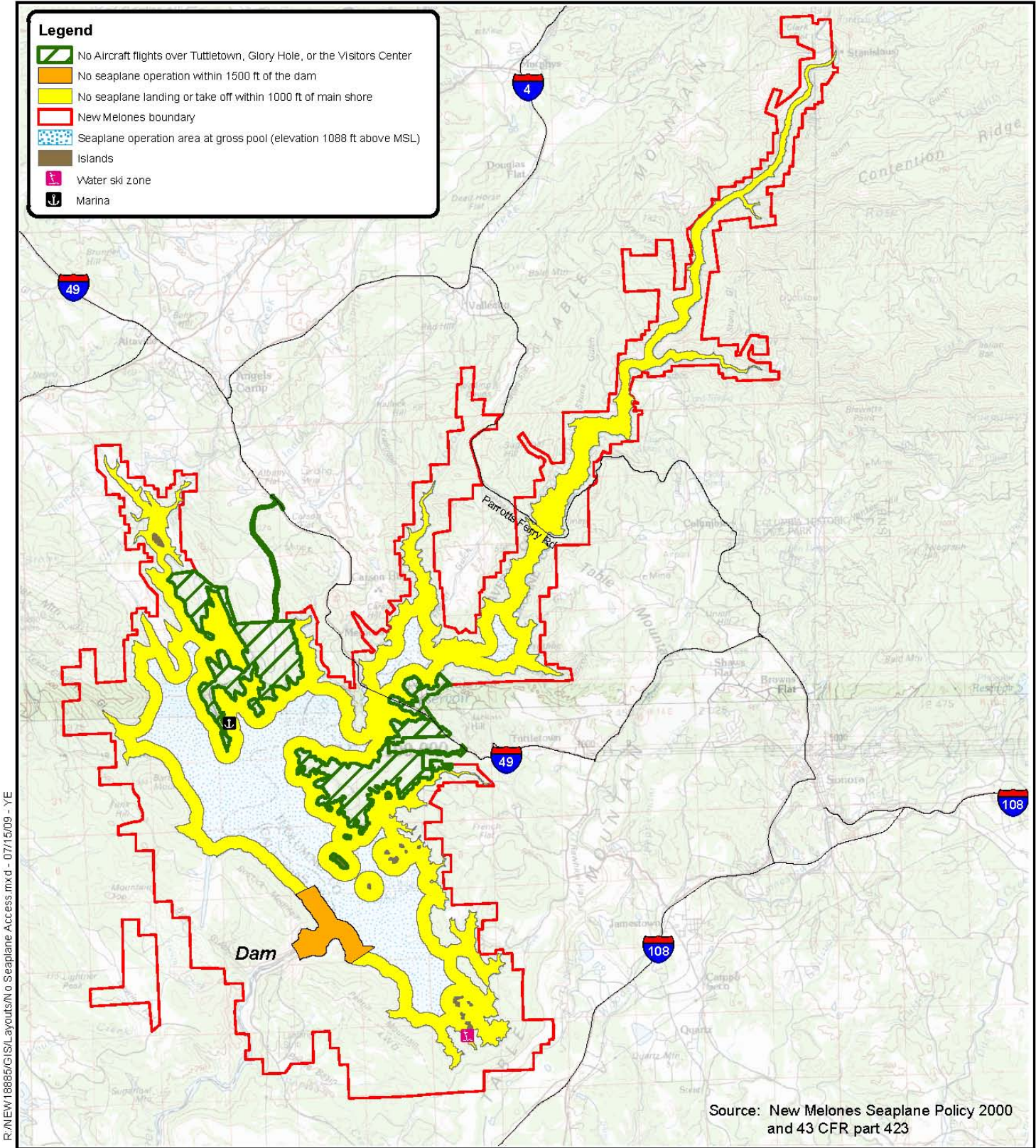
1 Source: Reclamation 1995

2 Swimming is a popular activity but is most often enjoyed from a boat, due to limited  
 3 access and inadequate shoreline conditions (such as steep slopes and lack of beaches or  
 4 grassy areas). Glory Hole provides the only designated swimming area on the lake, but  
 5 no lifeguard services are offered, and swimming is not allowed within 100 feet (30  
 6 meters) of launch ramps and public docks, including the marina docks.

7 Motorized boats are abundant on New Melones Lake as a means to enjoy recreation  
 8 opportunities, such as waterskiing, swimming and fishing, and sightseeing. Houseboats  
 9 and personal watercraft also are used on the lake. The only location in the New Melones  
 10 Lake Area that has boat rentals or boat mooring facilities is at the New Melones Marina.  
 11 There are no speed limits on the water, except those required under the State of  
 12 California Department of Boating and Waterways regulations. That is, the maximum  
 13 speed is five miles an hour for motorboats within 100 feet (30 meters) of a bather (but not  
 14 a water skier) and within 200 feet (60 meters) of a beach, swimming float, diving  
 15 platform or life line, passenger landing being used, or a landing where boats are tied up  
 16 (California Department of Boating and Waterways 2007).

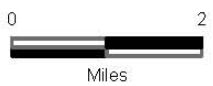
17 The number of houseboats allowed on the lake at one time is limited, but there is no limit  
 18 to the number of other motorized boats allowed. The current capacity is 50 private  
 19 houseboats on mooring balls, 38 private houseboats in houseboat slips, and 20 rental  
 20 houseboats. Reclamation maintains a total of 17 boat ramp lanes at Glory Hole, Angels  
 21 Creek, and Tuttletown (Haas 2003). When the water drops below certain levels, some of  
 22 these lanes cannot be used. Reclamation does not maintain the unimproved boat ramps at  
 23 Mark Twain and Parrotts Ferry (Laird 2009b). Table 5-28 provides a list of the available  
 24 boat ramps, along with their elevation range.





# New Melones Current and Proposed Seaplane and Aircraft Operation Policy

New Melones Lake Area, California  
 Central California Area Office



**Figure 5-14**

**Table 5-28: Available Boat Ramps at New Melones Lake**

Location	Number of Lanes	Elevation Range (feet)
Glory Hole: Lowest Ramp	6	860-900
Low Ramp		899-943
Medium Ramp		940-1,028
High Ramp		1,025-1,088
Angels Creek Ramp	4	975-1,088
Tuttletown Ramp: Low Ramp	7	900-962
Medium Ramp		962-1,036
High Ramp		1,031-1,088
Mark Twain Unimproved Lake Access	1	760+ (car-top loading only)
Parrotts Ferry Unimproved Lake Access	1	760+ (car-top loading only)

Source: Glory Hole Sports 2006

1  
2 Fishing is one the most popular water-based recreation activities on New Melones Lake.  
3 It occurs throughout the lake, as the preferred fishing locations vary according to the type  
4 of fish species sought and also with the seasons. The CDFG issues permits, regulates  
5 fishing activities at New Melones, and ensures compliance with CDFG regulations. Since  
6 1992, Reclamation has sponsored a Kids Day Fishing Derby to celebrate and support  
7 National Fishing Week. As many as 75 fishing tournaments are also held and range from  
8 those sponsored by local clubs with a small participation size to regional events with over  
9 one hundred participants. Reclamation and CDFG issue permits for these tournaments.

10 White-water kayaking and rafting is also enjoyed in Camp Nine sections, subject to  
11 appropriate water levels. Flatwater paddling, such as in canoes or touring kayaks, has  
12 expanded in popularity in recent years. These activities occur almost exclusively during  
13 periods of low lake water levels. Most of the white-water rafting consists of organized  
14 concessionaires that provide day-long, guided raft trips. However, individuals may also  
15 kayak and raft the lake/river. Depending on water levels, the white-water trip can be up  
16 to nine miles long. In some parts of the New Melones Lake Area, water flows, controlled  
17 upstream by PG&E's hydro facilities, provide Class II to Class III rapids.

18 Not as popular as the activities listed above but still present on the lake are sailing and  
19 windsurfing. The low popularity of these pastimes may be attributed to the steep hills that  
20 enclose the lake and create a wind-protected environment throughout much of the year.

21 Suction and dredge recreational gold mining takes place in the flowing water of  
22 tributaries to the lake and is accessed by motorboat. This type of mining involves  
23 vacuuming sediment, sifting it for gold particles, and then discharging most of the  
24 sediment back into the water. It is permitted and regulated by the CDFG. CDFG  
25 regulations concerning suction dredging are outlined in Sections 228 and 228.5, Title 14,  
26 California Code of Regulations.

1 Floatplanes/seaplanes use the lake for landing in specified zones within the north, middle,  
2 and south bay areas. Reclamation seaplane use policy on the lake allows seaplane  
3 operation for recreation only. The policy is authorized in accordance with applicable  
4 Federal Aviation Administration rules and regulations, as well as other conditions  
5 stipulated in the policy (Figure 5-14).

## 6 **5.2.22 Land-Based Recreation**

7 Of the approximately 27,000 acres (10,900 hectares) managed by Reclamation on and  
8 surrounding the New Melones Lake Area, about 15,000 acres (6,000 hectares) are on  
9 land. Camping and day use facilities are readily available on the lake, but many areas are  
10 not accessible for recreation largely due to topography. Surrounding the lake, there are  
11 about 27 miles (45 kilometers) of trails available for hiking and biking, and some of these  
12 are suitable for horseback riding.

13 Camping is a popular land-based recreation and is restricted to two developed recreation  
14 areas, Glory Hole and Tuttletown. Glory Hole has two campgrounds and a total of 144  
15 campsites. Tuttletown Recreation Area has three campgrounds with 161 campsites.

16 Tuttletown also has two group camps, with a total of 16 group sites that can  
17 accommodate up to 110 people in total. Camping is restricted to a maximum of 14 days  
18 within a 30-day period. Standard campsites are limited to eight people, and walk-in  
19 campsites are limited to four people. For more details on recreation areas and camping at  
20 New Melones Lake, see Section 5.2.20, Facilities, Land Use, and Management Areas;  
21 and Appendix E, New Melones Lake Policy.

22 Both Glory Hole and Tuttletown Recreation Areas also have day use facilities. Glory  
23 Hole has four day use areas with 61 picnic sites, the only concessionaire-operated marina  
24 on New Melones Lake, and other facilities. Tuttletown has three day use areas with 52  
25 picnic sites, and other facilities such as a fish cleaning station and RV dump station.

26 Hunting is open on all of Reclamation's lands surrounding the lake, with the exception of  
27 Tuttletown, Glory Hole, and Mark Twain, but takes place mostly within or near the  
28 PWMA. The CDFG issues hunting licenses and regulates this activity on Reclamation  
29 lands.

30 Bank fishing and gold panning occur along the shoreline.

31 There are many caves throughout the study area, and many visitors are involved in  
32 spelunking, or caving. This activity is restricted to a handful of caves, with the most  
33 frequented caves being the two Natural Bridges located within the Coyote Creek  
34 tributary.

35 Hiking, bicycling, and horseback riding all occur at New Melones Lake. There are  
36 approximately 25 miles (40 kilometers) of trails, which is considered to be a very small  
37 amount compared to the acreage of the planning area. Table 5-29 summarizes land-based  
38 recreation opportunities, by management area, available at the New Melones Lake Area.

**Table 5-29: Summary of Land-Based Recreation by Management Area**

<b>Activity</b>	<b>Primary Management Area</b>	<b>Description</b>
<b>Biking</b>	Glory Hole, PWMA, Tuttle town	Approximately 25 miles (40 kilometers) of multiple-use trails exist in the planning area.
<b>Camping</b>	Tuttle town (3), Glory Hole (2)	Camping is allowed only in these two management areas.
<b>Day use (designated)</b>	Tuttle town (2), Glory Hole (4), Coyote Creek, Mark Twain, French Flat, Bear Creek	Day use facilities include parking areas, picnic areas, and lake access.
<b>Day use (undesignated)</b>	Rose Creek area of Stanislaus River Canyon, Mark Twain, Table Mountain, PWMA	Though this is not designated as a day use area, Rose Creek in the northern part of this management area is informally used by white-water rafters and motor boaters and is subject to intensive use. Mark Twain is also used informally as a day use area.
<b>Hiking</b>	PWMA, Glory Hole, Mark Twain, Coyote Creek, Tuttle town	Approximately 25 miles (40 kilometers) of multiple-use trails exist in the planning area.
<b>Horseback riding</b>	PWMA	Approximately 10 miles (16 kilometers) of multiple-use trails exist in the planning area. Horseback riding is allowed on certain trails.
<b>Hunting</b>	Primary hunting area is PWMA	Hunting is allowed at all areas except for Tuttle town, Glory Hole, and Mark Twain.
<b>Picnicking</b>	Glory Hole, Tuttle town, Coyote Creek, Mark Twain	Developed day use areas offer picnicking at Glory Hole and Tuttle town, while a more informal setting is found at Mark Twain and Coyote Creek.
<b>Rock climbing</b>	PWMA	Rock climbing occurs at the Grotto and the White Room, both located on Table Mountain.
<b>Spelunking</b>	Coyote Creek, Stanislaus River Canyon	Easy spelunking is offered at Natural Bridges. More advanced cave exploration occurs in the limestone caverns in the Stanislaus River Canyon.
<b>Visitor center, interpretive services</b>	Mark Twain, Glory Hole	Glory Hole contains an amphitheater used for interpretive programs, while the visitor center at Mark Twain has informative displays, interpretive programs, picnic tables, flush toilets, and drinking water.*

1 Notes: \*For more information, see Section 5.2.20.  
2 Source: Reclamation 1995

1 **5.2.23 Interpretive Services and Visitor Information**

2 The New Melones Lake Visitor Center is accessible from SR 49, midway between the  
3 towns of Sonora and Angels Camp in the Mark Twain Planning Area. General  
4 information, directions, and maps are available at the center. In addition, the visitor  
5 center showcases a variety of displays and exhibits, including the area’s geologic past,  
6 Me-wuk Indian and early human history, the California Gold Rush, natural history, and  
7 the New Melones Dam and Reservoir Project. Visitors can also see displays of some of  
8 the wildlife that inhabits the New Melones Lake Area.

9 The New Melones Lake Visitor Center hosts various events, including a fall and spring  
10 lecture series, throughout the year. This lecture series takes place on Thursday evenings  
11 which, in the past, has focused on the area’s cultural and natural history. Several times a  
12 year public stargazing programs are offered at the visitor center.

13 During the fall, winter, and spring, park rangers at New Melones Lake schedule  
14 interpretive walks and hikes to explain the area’s cultural and natural history. Park  
15 rangers provide formal campfire programs and children’s programs throughout the  
16 summer recreation season. Most of these programs are held at the Glory Hole  
17 amphitheater located in the Ironhorse Campground.

18 **5.2.24 Utilities**

19 Recent and planned upgrades to the utilities infrastructure have provided water and  
20 improved its reliability (Brooks 2007a). The need to provide additional wastewater and  
21 solid waste services continues to change as recreation demands change, such as new  
22 types of recreation in new areas and fluctuating user levels.

23 **Electrical Services.** PG&E provides electrical service to the headquarters, visitor center,  
24 maintenance building in the Mark Twain Management Area, a private concessionaire at  
25 Glory Hole Management Area marina, and the southern end of the reservoir for dam  
26 operations and the New Melones Archaeological Storage Facility and Baseline Camp  
27 (Brooks 2007a). An emergency generator has been installed to service the  
28 administration/visitor center complex. The Western Area Power Authority provides  
29 electrical service to Glory Hole and Tuttle town Management Areas. With few exceptions,  
30 all of the electrical lines are aboveground. Some electrical lines are owned by  
31 Reclamation and are maintained by Western Area Power Authority, which may contract  
32 out maintenance work to PG&E occasionally. Both PG&E and WAPA are required to  
33 coordinate all electrical line maintenance with Reclamation to ensure protection of  
34 cultural and natural resources. Solar panels on top of the maintenance building provide  
35 electricity to the immediate buildings.

36 **Water.** A needs assessment identifies water system demands at the New Melones Lake  
37 Area (Reclamation 2001). The assessment was based on planned recreation facilities  
38 identified in the Master Plan (USACE 1976). Table 5-30 is a summary of projected  
39 system demands.

1

**Table 5-30: Estimated Peak-Day (Gallons) Water Demand for 2040**

Recreation Area	Day Use	Campers	Total Demand
Tuttletown	48,405	36,225	84,630
Glory Hole	48,750	56,700	105,450
Angels Arm	19,905	17,500	37,405
	Visitors	Staff	Total Demand
Visitors Center	6,600	150	6,750
Administration Offices	1,200	0	1,200
<b>Total</b>	<b>123,660</b>	<b>111,775</b>	<b>235,435</b>

2

Source: Reclamation 2001

3

4 Reclamation maintains one 50,000-gallon (190,000-liter) water storage tank and one  
5 80,000-gallon (300,000-liter) tank at Tuttletown Recreation Area, one 36,000-gallon  
6 (135,000-liter) tank at Angels Arm, and one 50,000-gallon (190,000-liter) tank at Glory  
7 Hole Recreation Area (Brooks 2007a). There are also two 16,000-gallon (60,500-liter)  
8 tanks at the Glory Hole Recreation Area marina. One of these, installed in 2005, is owned  
9 by Reclamation and is used for water storage and fire supply; the other is owned by the  
10 marina operator.

11 Glory Hole Recreation Area has two wells that provide water for public uses, including  
12 for the restrooms and for water spigots (Brooks 2007a). A third well at the marina is used  
13 by staff and for concessionaire operations, such as cleaning houseboats and filling  
14 houseboat water tanks and hot tubs. Water from the reservoir at Glory Hole Recreation  
15 Area is no longer treated.

16 Angels Arm has a new water treatment plant, installed in 2006, that treats water from the  
17 lake to provide potable water for the Angels Arm launch ramp restroom and fish cleaning  
18 station for the and Buckbrush Day use area (Brooks 2008). An additional well is required  
19 in the Angels Arm area because the current water source is unreliable. A new well has  
20 been developed in the Tuttletown Recreation Area to provide increased water supply and  
21 to improve the water supply; the former well is now used as a backup (Brooks 2008). The  
22 treatment plant is still used to treat the well water for odor and taste.

23 Approximately 25 people at the headquarters, maintenance building, and visitor center  
24 are served by a well. There is no potable water available at any of the undeveloped  
25 recreation areas.

26 **Wastewater.** A needs assessment identifies wastewater systems demands at New  
27 Melones Lake (Reclamation 2001), based on planned recreation facilities identified in the  
28 Master Plan (USACE 1976). Table 5-31 is a summary of projected system demands.

1 **Table 5-31: Estimated Maximum Wastewater Production Rates (Gallons per Day)**  
 2 **for 2004**

Recreation Area	Day Use and Campers
Tuttletown	60,766
Glory Hole	43,741
Visitors Center and Administration Offices	1,070
<b>Total</b>	<b>51,721</b>

3 Source: Reclamation 2001

4  
 5 Glory Hole and Tuttletown Recreation Areas and the Baseline Conservation Camp  
 6 generate wastewater that is piped to evaporation ponds and then to polishing ponds  
 7 (Brooks 2007a). Some of the wastewater is then applied to spray fields.

8 The Glory Hole Recreation Area generates wastewater from the campground restrooms,  
 9 the day use areas, boat launches, RV dump station, fish cleaning stations, houseboats, and  
 10 floating restrooms (Brooks 2007a). It is either piped to or trucked to wastewater lagoons,  
 11 or it is taken off-site by private commercial services.

12 Tuttletown Recreation Area generates wastewater at the restrooms and RV dump station  
 13 (Brooks 2007a). The wastewater at the RV dump station is trucked to the wastewater  
 14 lagoons. The wastewater at the restrooms is either piped to the wastewater lagoons or is  
 15 taken off-site by private commercial services.

16 The headquarters, maintenance building, and visitors center generate wastewater that is  
 17 piped to a nearby leach field (Brooks 2007a). Visitors and approximately 25 staff  
 18 members generate wastewater in this area.

19 The Baseline Conservation Camp at the southern end of the reservoir has a California  
 20 Department of Corrections Facility and CAL FIRE facility (Brooks 2007a). The  
 21 wastewater from these facilities and from spray fields is piped to the evaporation ponds.  
 22 Wastewater from the Reclamation power plant at the southern end of the lake is kept in a  
 23 holding tank for off-site removal by private commercial services.

24 Waste from portable toilets at all of the recreation areas (Brooks 2007a) is taken off-site  
 25 by private commercial services or to the wastewater lagoons.

26 **Solid Waste.** Private commercial services remove solid waste (Brooks 2007a). The  
 27 closest transfer stations to the lake in Calaveras County are in Vallecito and Copperopolis  
 28 (Calaveras County 2007d). The closest transfer station to New Melones Lake in  
 29 Tuolumne County is the Cal Sierra Transfer Station in Sonora (Roberston 2007).

30 **Communications.** A microwave tower on top of Peoria Mountain, which is in the  
 31 southern portion of Reclamation lands, is used for communications between headquarters  
 32 and the dam (Brooks 2007a). Tuttletown Recreation Area has a radio repeater that  
 33 Reclamation uses for staff communication.

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