

Union Valley Reservoir Boating Management Plan

Sacramento Municipal Utility District

Hydro License Implementation • October 2016

Upper American River Project

FERC Project No. 2101

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APPENDICES

Appendix A—Union Valley Reservoir Boating Management Plan Map

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ACRONYMS AND ABBREVIATIONS

Cal Boating	California State Parks, Division of Boating and Waterways
ENF	Eldorado National Forest
FERC	Federal Energy Regulatory Commission
Forest Service	United States Department of Agriculture, Forest Service
GIS	geographic information system
License	FERC License for the Upper American River Project
mph	miles per hour
msl	mean sea level
Plan	Union Valley Reservoir Boating Management Plan
Project	Upper American River Project (FERC Project No. 2101) or UARP
reservoir	Union Valley Reservoir
SMUD	Sacramento Municipal Utility District or Licensee
UARP	Upper American River Project (FERC Project No. 2101) or Project

1.0 INTRODUCTION

Union Valley Reservoir (reservoir) is a water storage reservoir that is part of the Sacramento Municipal Utility District (SMUD) system for operating the Upper American River Project (UARP or Project), Federal Energy Regulatory Commission (FERC) Project No. 2101. Union Valley Reservoir is located in the Crystal Basin near Ice House and Loon Lake Reservoirs on Silver Creek, a tributary of the South Fork of the American River (Figures 1.0-1 and 1.0-2).

The reservoir's water elevation ranges from a maximum of 4,870 feet mean sea level (msl) at full pool (2,850 surface acres) down to the Project's winter pool elevation of about 4,820 feet msl. Union Valley Reservoir is entirely within the FERC Project boundary, which provides a minimum horizontal distance from the high-water edge of about 200 feet. The majority of the shoreline is steep with a few submerged shallow areas or areas with rocky outcroppings. However, the inlets of the lake are relatively shallow, including the area from Yellowjacket Boat Launch to Robbs Powerhouse and the cove west of Camino Campground. Submerged obstacles, such as rocky outcroppings, and large areas of shallow water may pose hazards to boaters at low water levels in these areas.

The Project License, issued by FERC on July 23, 2014 (License), incorporates conditions that are consistent with a Settlement Agreement between SMUD and stakeholders (FERC 2014). U.S. Forest Service (Forest Service) 4(e) condition no. 45 (see Appendix B of the License) requires SMUD to develop a Union Valley Reservoir Boating Management Plan (Plan). The Plan is required to address reservoir surface hazards including user conflicts between differing types of watercraft, human and wildlife conflicts, marking or removal of manmade underwater hazards, speed limits, and the need for marker buoys.

The purpose of the Plan is to formulate a policy for managing boating use on the reservoir and providing public access to Union Valley Reservoir in a manner that: 1) is consistent with the Project's primary purpose of power generation; 2) balances present and future boating use with the need to provide a safe, enjoyable, and environmentally sensitive recreation experience; and 3) considers SMUD's scope of authority relative to reservoir surface management. Upon Eldorado National Forest (ENF) approval of the plan, SMUD will submit the plan to FERC for approval and will begin implementing plan measures as soon as the plan is approved by FERC.

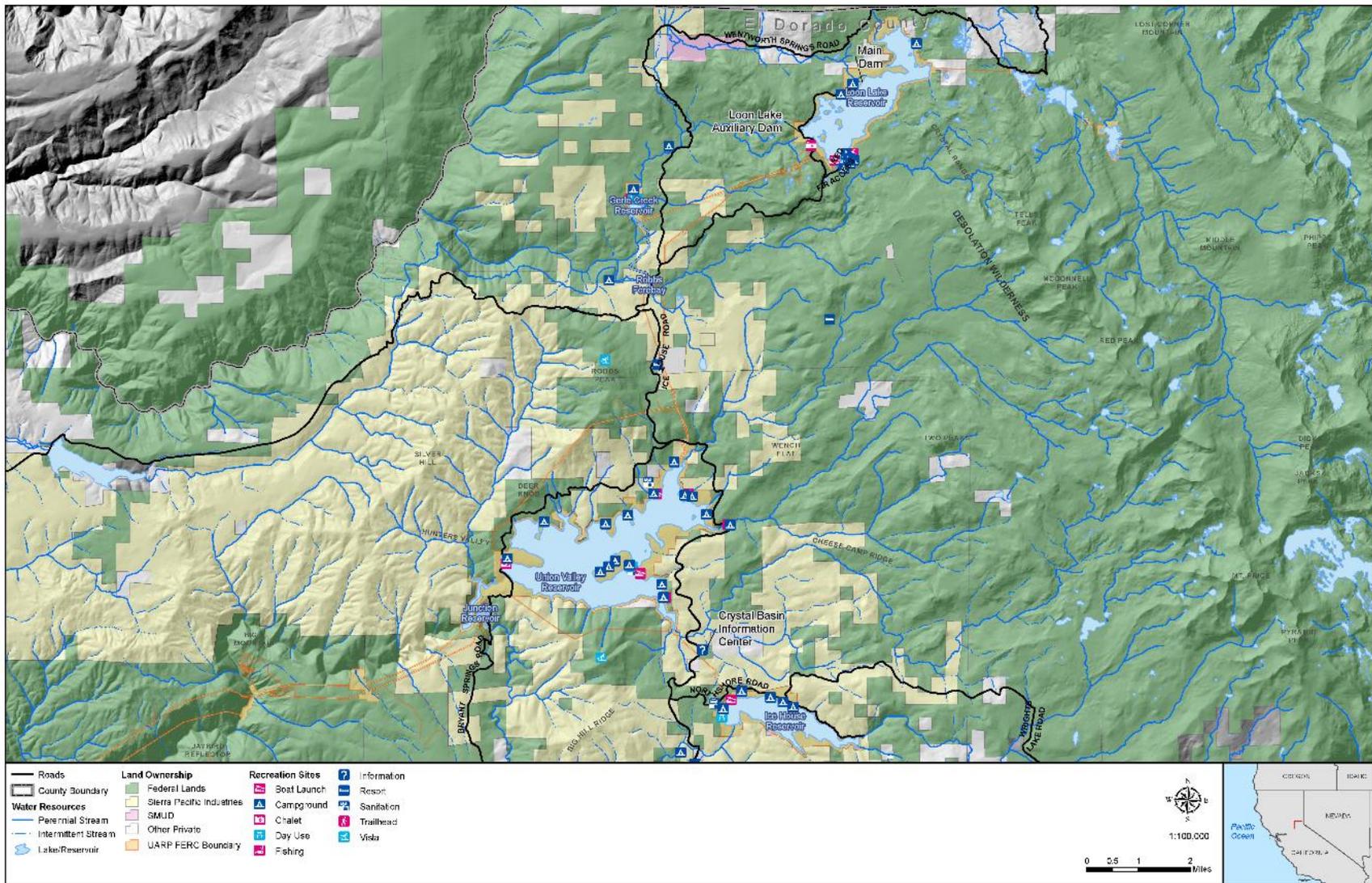
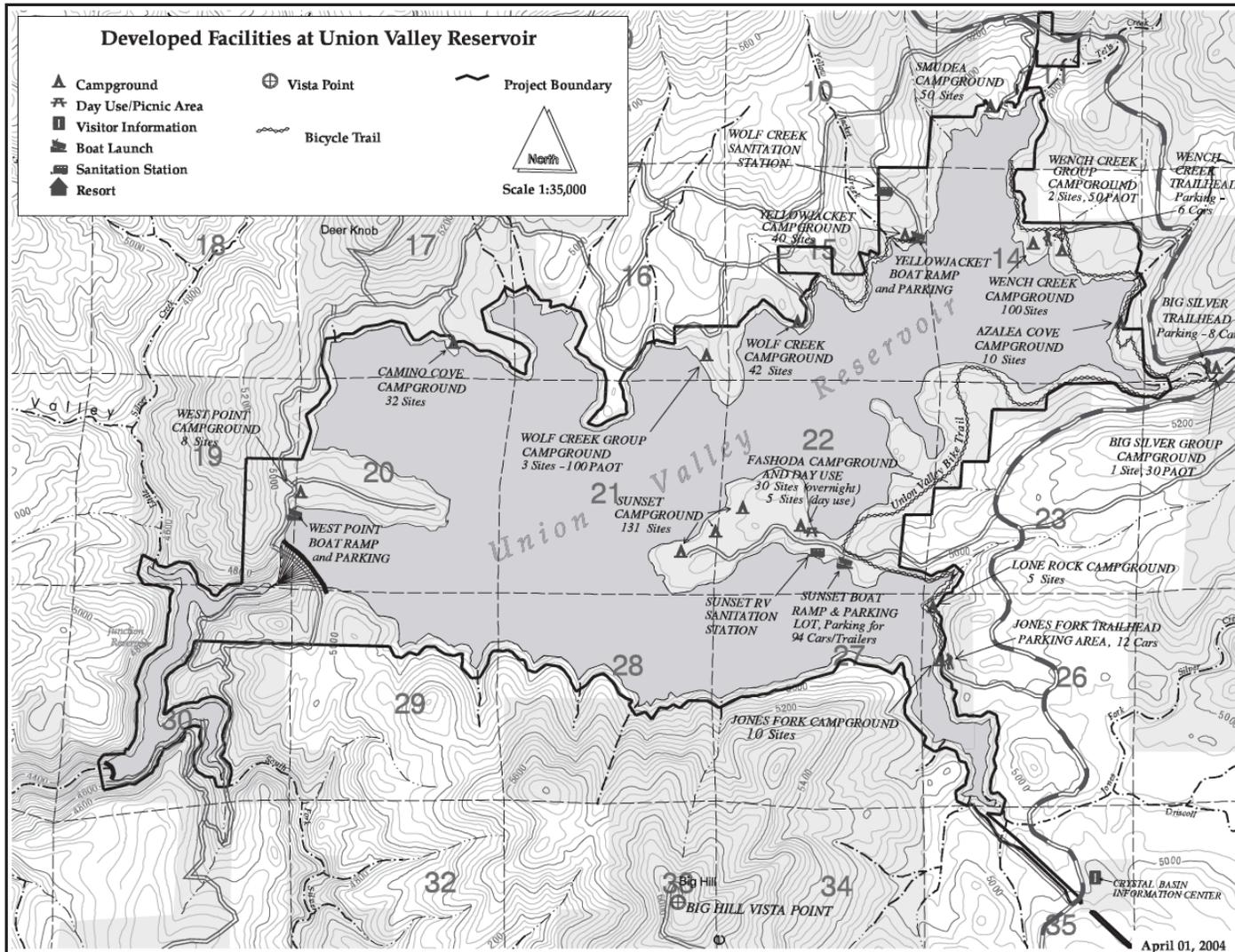


Figure 1.0-1. UARP reservoirs in the Crystal Basin.



Source: SMUD (2004a)

Figure 1.0-2. Recreational facilities at Union Valley Reservoir.

The scope of this Plan includes water surface boating use on Union Valley Reservoir and does not include existing and future recreation facilities that support reservoir boating use (e.g., boat launch parking areas). Recreation facility needs, as they relate to reservoir boating use, such as additional or modified facilities, will be assessed every 6 years in the Report on Recreational Resources required by Forest Service 4(e) condition no. 42, *Recreation Survey*, and consultation required by Forest Service condition no. 44, *Review of Recreation Developments*.

2.0 METHODS

To develop the Plan, SMUD characterized existing conditions at the reservoir by using three types of information: 1) existing boating conditions, existing regulations, and information about recreation use patterns at the reservoir; 2) interview responses of agency and recreation concessionaire staff knowledgeable about boating use at the reservoir; and 3) a Geographic Information System (GIS) map that summarizes information relating to the water surface. SMUD circulated a draft of the Plan to the UARP Consultation Group and revised the draft Plan to address comments, as appropriate.

2.1 Existing Information

SMUD reviewed existing documented information to characterize boating laws and management, known recreation use and issues, capacity issues, and known areas of boat congestion on the lake. The documents included the License application, recreation studies, El Dorado County ordinances, California boating laws, GIS maps of low water levels identifying hazards in the water, and Google Earth images of the reservoir during the summer dating back to 1993.

2.2 Key Contact Interviews

SMUD conducted interviews with key contacts from SMUD, the El Dorado County Sheriff's office (boat patrol), the California State Parks, Division of Boating and Waterways (Cal Boating), California Department of Fish and Wildlife, and ENF. The discussions were open-ended and focused on the staff's areas of expertise, but all interviews included the following questions:

1. Are there boating-related conflicts on the reservoir? If so, please characterize the conflicts (e.g., excessive speed, collisions with submerged objects, crowding, conflicts with non-motorized boating, and conflicts between boaters and swimmers).
2. Are there boating-related conflicts at the boat ramps?

3. Are there manmade objects in the reservoir that interfere with boating? If so, where?
4. Are there boating hazards in the reservoir that you believe should be marked? If so, where?
5. Are there areas of the reservoir where you think speed limits should be implemented?
6. Are there conflicts between boating activities and wildlife? Please characterize and identify where conflicts occur (e.g., encounters with bears, harassing deer, chasing waterfowl, and recreation near raptor/eagle nests).

2.3 Geographic Information System Map

SMUD compiled a GIS map in the plan to depict:

- spatial information collected during the interviews and review of existing information;
- land features that become exposed as the reservoir lowers;
- areas with user conflicts; and
- locations of existing Project infrastructure, developed recreation sites, buoys, and boat launches.

2.4 Consultation

On February 4, 2016, SMUD provided a draft of this Plan to the UARP Consultation Group for a 30-day review and comment period. SMUD received comments from ENF, the State Water Resources Control Board, and Rich Platt.

3.0 EXISTING BOATING CONDITIONS

The Crystal Basin is typically cooler than the Sacramento Valley during the summer and Union Valley Reservoir attracts visitors for camping, swimming, boating, and fishing. The reservoir, which is accessible for overnight stays, has 3 boat launches and 13 nearby campgrounds. Union Valley Reservoir is the biggest of the lakes in the Crystal Basin and tends to attract larger watercraft use as compared to Ice House and Loon Lake Reservoirs.

Water zone designations at Union Valley Reservoir did not exist at the time of Plan development; however, buoy lines at the spillway and Robbs and Jones powerhouses (see map in Appendix A) defined areas where water surface use is prohibited. El Dorado County ordinances (see Section 3.8.3 and map in Appendix A) do not provide water zone designations, but they contain regulations limiting boating speed near the

shoreline and in locations where limits are posted as well as prohibiting boating in locations where fishing and swimming may occur.

3.1 Boating Facilities

Boating access to the reservoir is provided by three boat launches—Sunset, Yellowjacket, and West Point.

3.1.1 Sunset Boat Launch

Sunset Boat Launch, the most popular boating access facility on the reservoir, has a concrete launch lane, asphalt access road, curbs, a parking area with 92 spaces to accommodate vehicles with trailers, a two-unit vault restroom, public information signs, and a boarding dock. No fee is required to launch a boat, but a fee is required for using the parking area. The ramp provides boating access at and above water surface elevations of 4,802 feet msl.

3.1.2 Yellowjacket Boat Launch

The Yellowjacket Boat Launch, adjacent to the Yellowjacket Campground, has an asphalt/chip-sealed surface and a paved parking area with 18 spaces to accommodate vehicles with trailers. No fee is required to launch a boat, but a fee is required for using the parking area. The ramp provides boating access at and above a water surface elevation of 4,850 feet msl.

3.1.3 West Point Boat Launch

The West Point Boat Launch has high water and low water concrete launches separated by a distance of approximately 750 feet, a paved access road and parking area with 14 spaces to accommodate vehicles with trailers, a two-unit vault restroom, public information signs, and trash facilities. No fee is required to launch a boat or use the parking area. The high water launch provides boating access at and above water surface elevations of 4,848 feet msl and the low water launch provides boating access at and above a water surface elevation of 4,808 feet msl.

3.2 Reservoir Levels

Union Valley Reservoir is primarily used to store water for hydroelectric power, so water levels vary throughout the year depending on SMUD's operational needs (consistent with applicable FERC requirements), as well as snowmelt and precipitation. The reservoir surface area changes with elevation (Figure 3.2-1). Table 3.2-1 summarizes the lake surface area through a range of typical water surface elevations.

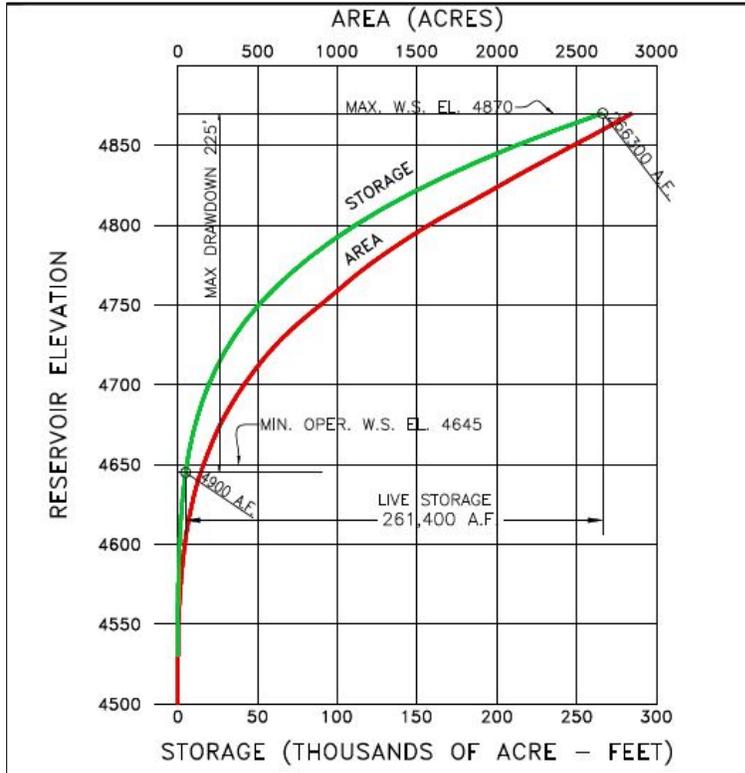


Figure 3.2-1. Union Valley Reservoir elevation, surface area, and storage curve.

Table 3.2-1. Lake levels and reservoir surface area.

Elevation (feet msl)	Surface area (acres)	Notes
4,870	2,847	Maximum Pool
4,865	2,760	Typical elevation in early June
4,860	2,672	Typical elevation in mid-July
4,855	2,576	
4,850	2,479	Typical elevation in mid-August
4,845	2,387	
4,840	2,294	
4,835	2,201	
4,830	2,108	
4,825	2,022	Typical elevation in October
4,820	1,936	
4,815	1,843	
4,810	1,749	

3.3 Boat Density

In 2004, SMUD studied carrying capacity at the Project, including peak boating use on Union Valley Reservoir during summer holidays and weekends (SMUD 2004b). Table 3.3-1 summarizes the findings and shows that SMUD estimated the maximum peak use count to be about 103 boats-at-one-time, and no less than 24 acres of water surface per boat.

Table 3.3-1. Peak boating use on Union Valley Reservoir.

Observation Date, Day, Time, and Reservoir Elevation	Number of Active Watercraft					Water Surface Area ^a (acres)	Acres / Boat
	Power-boats	Small Fishing Boats	Personal Water-craft	Non-motorized Boats	Total		
August 30, 2003, Saturday, 11:45 a.m., 4,843 feet	28	8	12	9	57	2,351	41
August 10, 2002, Saturday, 2:50 p.m. 4,855 feet	17	4	10	13	44	2,572	58
July 26, 2003, Saturday, noon 4,856 feet	24	6	5	5	40	2,589	65
August 9, 2003, Saturday, 1:55 p.m., 4,849 feet	49	14	14	26	103	2,468	24
August 5, 2003, Tuesday, 2:30 p.m., 4,852 feet	10	1	1	0	12	2,507	209
August 27, 2003, Thursday, 2:00 p.m., 4,844 feet	2	1	0	0	3	2,372	791

Source: SMUD (2004b)

^a Surface areas were calculated using water surface elevations on these dates as reported on the USGS Web site, available at http://waterdata.usgs.gov/nwis/inventory/?site_no=11441001.

To provide a historical perspective of boat density on Union Valley Reservoir, SMUD reviewed images of the reservoir on Google Earth and counted watercraft on the water and vehicles parked at the three boat ramps (Table 3.3-2). The Google Earth images suggest that boat densities on the reservoir from 1993 to 2013 average 301 acres per vessel.

Table 3.3-2. Sample observations of boats on Union Valley Reservoir and parking area occupancy.

Google Earth Image Date, Day of Week, and Reservoir Elevation	Water Surface Area (acres)	No. of Boats	Acres / Boat	No. of Parked Vehicles and Trailers in Parking Area					
				Sunset		Yellowjacket		West Point	
				Count	% of Total	Count	% of Total	Count	% of Total
July 16, 1993, Friday ^a	2,672 ^a	40	67	7	8	11	50	5	36
August 19, 1998, Monday ^a	2,479 ^a	55	45	15	16	15	68	6	43
June 11, 2005, Monday ^a	2,760 ^a	11	251	6	7	3	14	2	14
May 24, 2009, Sunday, 4,868 feet	2,813 ^b	42	67	45	49	8	36	8	57
February 7, 2009, Thursday, 4,283 feet	1,985 ^b	19	104	41	45	6	27	4	29
June 10, 2009, Saturday, 4,869 feet	2,826 ^b	3	942	1	1	9	41	0	0
July 10, 2010, Monday, 4,868 feet	2,816 ^b	44	64	71	77	22	100	16	114
July 14, 2011, Thursday, 4,867 feet	2,796 ^b	3	932	5	5	0	0	2	14
July 27, 2011, Wednesday, 4,865 feet	2,753 ^b	26	106	9	10	5	23	8	57
June 10, 2012, Sunday, 4,868 feet	2,819 ^b	4	705	9	10	1	5	1	7
June 16, 2013, Sunday, 4,865 feet	2,763 ^b	8	345	9	10	2	9	4	29

^a Reservoir elevations were not available for this date, so surface areas were estimated using typical lake levels for the months on Table 3.2-1.

^b Surface areas were calculated using water surface elevations on these dates as reported on the USGS Web site, available at http://waterdata.usgs.gov/nwis/inventory/?site_no=11441001.

The recommended safe boating density thresholds vary for different types of boating activity, configuration and size of the water bodies, and policies of water surface management agencies. In general, recommendations range from an average boat

density of about 1 acre per vessel for non-motorized boating to 20 acres per vessel for high-speed motorized boating uses, such as waterskiing (Warren and Rea 1989.)

Because of the high-speed motorized boating use on Union Valley Reservoir, the safe boat density standard of 20 acres per vessel is applicable, and the number of acres per vessel observed on the reservoir appears to be higher than this standard, even during peak use days. Further, a density standard of 20 acres per vessel is conservative considering that the Union Valley Reservoir has an open water surface configuration with few narrow arms that would confine boats to small areas and a regular law enforcement presence.

3.4 Interviews

Appendix B summarizes interviews with staff from ENF, American Land and Leisure (concessionaire that operates recreation facilities at Union Valley Reservoir), and El Dorado County Sheriff's boat patrol. The interviewees noticed common trends related to boating and crowding at the reservoir, including:

- Boating on the reservoir is not crowded. The reservoir supports a range of types of boating, both motorized and non-motorized, and there are no known conflicts between different watercraft.
- Sunset Boat Launch is usually crowded and congested, and regularly over capacity, on summer holidays and from July 4th through Labor Day. It is not uncommon to see the parking lot full, and vehicles with trailers parked along the access road.
- User conflicts, when they occur, primarily happen at Sunset Boat Launch. The parking area and boat launch may be too small to support current use levels. Boaters often have to wait to launch or takeout. Also user conflicts are associated with the boarding dock at Sunset Boat Launch. Boaters leave their boats tied to the dock for long periods, interfering with other boats on the ramp. Anglers and swimmers also try to use the dock, creating conflicts between boaters and other user groups.
- No known conflicts between boaters and wildlife have occurred.
- No known manmade objects are in the lake that create hazards to boaters.
- At low water levels, exposed rocks, islands, and sand bars emerge near the shoreline. The point near Wolf Creek Campground may be a specific navigational hazard at mid-water levels.

Interviewees made a number of recommendations that could improve the boating experience and safety on Union Valley Reservoir:

- Although no known incidents have occurred between boaters and swimmers, safety would be improved at Fashoda Day Use Area by reinstalling the buoys across the cove to separate motorized boats from swimmers. Designating and marking the cove as a "swimming area" would allow the boat patrol to assist in keeping motorized boats out of the cove and separate users.
- Adding swimming and fishing docks to some of the campgrounds would help reduce user conflicts at the boat launches.
- Swimmers illegally cross the main boating channels, and although no issues have been reported to the county, safety may be improved by providing additional informational signage at the day use areas, boat launches, and campgrounds to inform visitors where swimming is prohibited.¹
- Adding courtesy boat docks to assist with launching at Yellowjacket and West Point Boat Launches may help balance boat launch traffic.
- Recreational information posted on signs at Sunset Boat Ramp could be improved to tell the boaters not to block the ramps/docks or leave boats unattended on the docks.
- Adding regulatory 5 miles per hour (mph) buoys near the boat launches and docks could help ensure the safety of swimmers using the shoreline near these areas.
- Designating a 5-mph zone at the Jones Fork arm of the reservoir and at the cove near SMUD's employee campground west of Robbs Powerhouse would help ensure the safety of swimmers because swimmers frequently use these narrow areas.

3.5 Navigational Hazards

As part of its visitor use surveys conducted for Project relicensing, SMUD (2004c) found a small percentage of recreational users who believe that installing buoys to mark navigational hazards, such as submerged rocks, would improve the quality of the boating experience. To characterize shallow areas of the reservoir, SMUD reviewed

¹ El Dorado County Ordinance 12.60.090 (Swimming in Open Channels) states it is unlawful to swim in the open channels of any lake or reservoir which are frequented by motorboats or sailboats or more than 300 feet from the shore or outside the boundaries of a marked swimming area or any public waters unless accompanied by a boat manned by a competent operator.

Google Earth images of the reservoir at different elevations in an attempt to identify boating hazards, especially those in open areas that, when covered with water, may embolden boaters to travel at higher speeds. The Google Earth images show that numerous obstacles emerge at different lake levels near the shore. Most of these obstacles are within 100 feet of the shore where boating speed is limited to 5 mph under California boating laws (Cal Boating 2015).

SMUD identified one area—a peninsula south of the Wolf Creek Campground—that may pose a boating hazard at some water levels. At low water levels, the peninsula would be easy to avoid in a boat (Figure 3.5-1, Image 1). When the reservoir is drawn down about 8 to 9 feet from full pool—a water surface elevation of about 4,861 feet msl—two islands form, one about 300 feet and the other about 800 feet offshore (Figure 3.5-1, Image 2). The area between the islands and the shoreline appears to be shallow and could be a hazard to boaters traveling between the islands, but it is more likely that boaters would see the islands, recognize the navigational risk, and travel to the main channel to avoid the shallow area. However, when the reservoir is only 2 to 7 feet below full pool—a water surface elevation of 4,868 to 4,863 feet msl, the two islands are submerged just below the waterline (Figure 3.5-1, Images 3 and 4). Because the submerged islands are well offshore, this area may pose a hazard to boaters who are not familiar with the reservoir. At these reservoir levels, boaters would see what appears to open water and assume that this area of the reservoir is deep with no risk of hitting obstacles. One interviewee indicated that this area may cause hazards at some water levels, but the El Dorado County Sheriff's office did not specifically call out the area as an unusual hazard as compared to other areas of the lake.

In 2015, SMUD posted temporary signage at the boat launches to alert boaters that unmarked obstructions, such as rocks and stumps, may be exposed due to drought conditions.

3.6 Boating Accidents and User Conflicts

SMUD worked with the staff at the El Dorado County Sheriff's office and Cal Boating to review records and obtain data about boating accidents on Union Valley Reservoir. The Sheriff's office conducts the boat patrol on the reservoir and has maintained records of reported accidents since 1995. In addition, California law requires boaters to file a written report with Cal Boating whenever a boating accident results in: 1) death, disappearance, or injury that requires medical attention beyond first aid; 2) total property damage in excess of \$500; or 3) complete loss of a vessel (Cal Boating 2015).

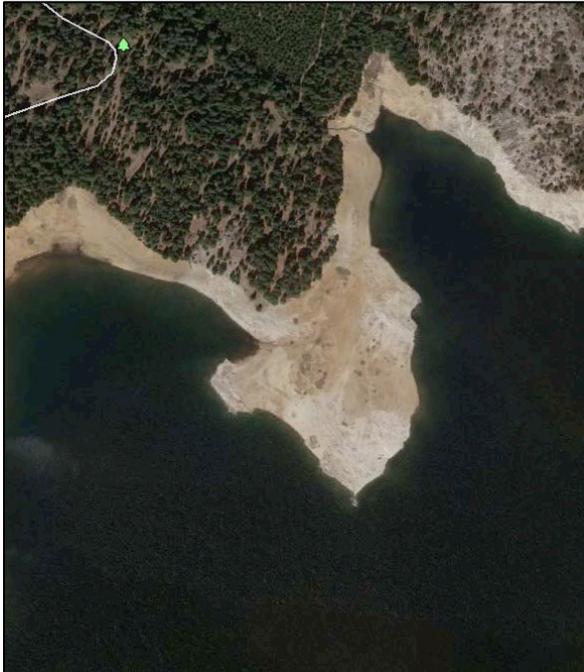


Image 1. Date: April 29, 2015; reservoir elevation—4,846 feet msl; water surface area—2,399 acres

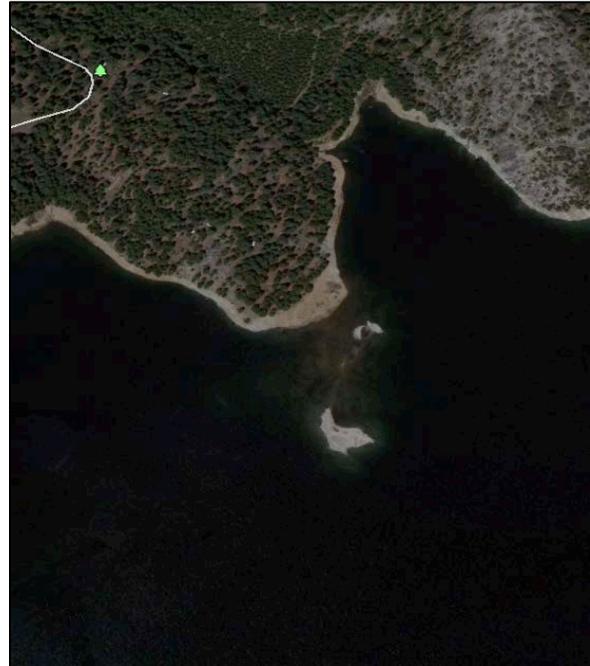


Image 2. Date June 14, 2011; reservoir elevation—4,861 feet msl; water surface area—2,683 acres

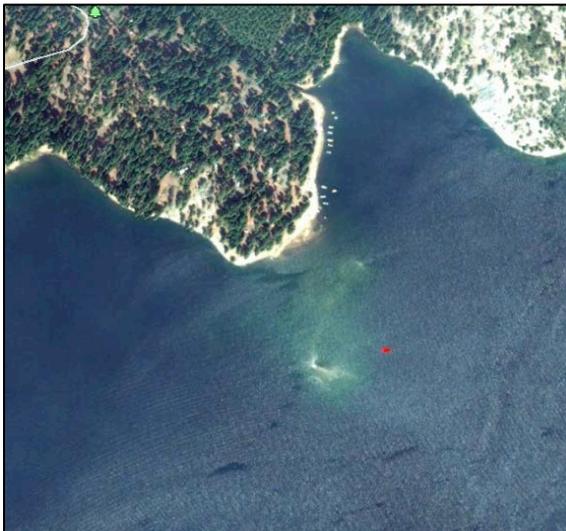


Image 3. Date: July 27, 2011; reservoir elevation—4,865 feet msl; water surface area—2,753 acres



Image 4. Date: June 10, 2012; reservoir elevation—4,868 feet msl; water surface area—2,819 acres

Figure 3.5-1. Google Earth images of peninsula near Wolf Point Campground at different water levels.

Sergeant Brown of the El Dorado County Sheriff's office currently oversees boat patrol at Union Valley Reservoir and indicated that the Sheriff's office records one or two

boating accident reports at Union Valley Reservoir per year. He is not able to provide any accident records, however, because so few accidents occur on the reservoir, any reference to specific accidents would reveal the identity of the people involved. Reports typically include a range of accidents and incidents that can happen when boats are underway and do not necessarily mean collisions between boats or injuries. While the overall accident numbers on the reservoir are low, Sergeant Brown noted that boat patrol is on the lake from Memorial Day weekend through Labor Day weekend, and accidents may not be reported at other times of the year.

Cal Boating has maintained records of boating accidents since 1995 and has reports of 10 boating incidents at Union Valley Reservoir, which involved six injuries but no fatalities. Characteristics of these incidents include:

- One accident in May, six in July, two in August, and one in September;
- One accident on a Friday, seven on Saturdays, and two on Sundays;
- Four accidents during holiday weekends;
- Types of accidents included one by capsizing, two by colliding with other vessels, three by flooding/swamping, one by grounding, three involving skier mishaps, one by striking a submerged object, three by sinking, and one by a propeller strike; and

Causes of accidents included four involving excessive speed, one involving hazardous waters, two involving operator inattention, four involving operator inexperience, two involving reckless passengers/skiers, one involving a sharp turn, one involving careless/reckless operation, and one unknown cause.

3.7 Boating and Wildlife

Bald eagle nesting activity has been observed at Union Valley Reservoir since 1986 with past reports noting considerable human use around nests in the cove near Granlee's Point (SMUD 2015). In previous years, ENF posted seasonal closure signs along the shoreline and along the nearby bike path to reduce human activity during nesting activity. According to the ENF's Bald Eagle Management Plan (ENF 1999 unpublished data, cited in SMUD 2015, 2004d), buoys were to be installed near the entrance to this cove in the fall of 1998 to restrict boat access during the closure period and to impose a 5 mph speed limit in the cove for the remainder of the year (SMUD 2001). However, this work was never completed, and the ENF no longer restricts public access near Granlee's Point (SMUD 2015).

In 2007, the bald eagle was removed from the federal endangered species list, but it remains on the California endangered species list. SMUD is not aware of any studies or

anecdotal accounts that identify conflicts between boaters and wildlife. Similarly, consultation with California Department of Fish and Wildlife and Forest Service staff did not reveal any known conflicts. While no evidence indicates that boating directly affects the success or failure of nesting eagles on the reservoir, beginning in 2016, SMUD will implement an Eagle Monitoring Plan, which includes methodology to investigate whether Project-related recreation activities adversely affect bald eagle nesting success in the UARP. The results of the monitoring may be used to make future management decisions relating to bald eagles at Union Valley Reservoir.

3.8 Jurisdiction for Water Surface Management

This Plan must comply with all applicable local, state, and federal regulations, policies, and mandates. Four primary entities—SMUD, ENF, State of California, and El Dorado County—are responsible for water surface management of the reservoir. SMUD has an obligation to comply with License requirements that include providing public access to Union Valley Reservoir for the term of the License, and it typically achieves this goal by funding capital improvements at the Project in partnership with ENF. ENF, not SMUD, has the authority to approve water surface management measures, such as establishing water surface zones, making shoreline designations, or determining buoy placement on National Forest System land. The El Dorado County Sheriff's office has the responsibility to enforce California boating laws and any restrictions associated with approved water surface designations, such as a swimming area.

3.8.1 SMUD

As required by Article 17 of the License, SMUD has management responsibilities related to land and water use within the FERC Project Boundary. This article requires SMUD to install and maintain reasonable recreation facilities. To meet these License requirements, SMUD designed, constructed, and reconstructed numerous capital improvements, including boat ramps at Union Valley Reservoir, to facilitate public recreation access on National Forest System land administered by ENF. In addition, SMUD contributes more than \$1 million annually to ENF for operation, maintenance, and administration of developed recreation sites, facilities, or uses that are adjacent to or are in the vicinity of Project reservoirs and facilities.

To comply with License requirements and provide for public safety, SMUD maintains buoy lines near all Project infrastructure on Union Valley Reservoir, including powerhouse tailraces and spillway.

3.8.2 Eldorado National Forest

Public access to Union Valley Reservoir is provided via National Forest System land administered by ENF, which is responsible for developing and enforcing regulations associated with land use, recreation, and public access on these lands. Accordingly, ENF is responsible for any water surface and shoreline zoning such as designating swimming areas, and permitting any shoreline developments such as boat launches and relies on Cal Boating and El Dorado County to enforce ordinances and other restrictions. Historically, ENF maintained a boat barrier across the cove at the Fashoda Day Use Area to mark a swimming area where motorized boats were prohibited, but the barrier was removed in approximately 2006 and has not been reinstalled.

3.8.3 State of California

California Harbors and Navigation Code Section 655.2 (Cal Boating 2012) contains the following regulations adopted by El Dorado County:

- (a) Every owner, operator, or person in command of any vessel propelled by machinery is guilty of an infraction who uses it, or permits it to be used, at a speed in excess of 5 mph hour in any portion of the following areas not otherwise regulated by local rules and regulations:
 - (1) Within 100 feet of any person who is engaged in the act of bathing. A person engaged in the sport of water skiing shall not be considered as engaged in the act of bathing for the purposes of this section.
 - (2) Within 200 feet of any of the following:
 - (A) A beach frequented by bathers.
 - (B) A swimming float, diving platform, or lifeline.
 - (C) A way or landing float to which boats are made fast or which is being used for the embarkation or discharge of passengers.
- (b) This section does not apply to vessels engaged in direct law enforcement activities that are displaying the lights prescribed by Section 652.5. Those vessels are also exempt from any locally imposed speed regulation adopted pursuant to Section 660.

3.8.4 El Dorado County Sheriff

The El Dorado County Sheriff's office is responsible for enforcing California boating laws to ensure boating safety on Union Valley Reservoir. Pursuant to El Dorado County

Ordinance Section 12.60.010 (State and Federal Laws Applicable), the operation and equipment of boats shall be governed by the provisions of federal navigation laws and state boating laws and regulations and by additional regulations contained in this chapter of the county ordinances (El Dorado County 2015). Because the county ordinance generally adopts federal and state boating laws, boaters on Union Valley Reservoir must comply with these rules and regulations, which include operating boats at no more than 5 mph within 100 feet of a bather (but not a water skier) and 200 feet of a bathing beach, swimming float, diving platform or lifeline, passenger landing (in use), or landing where boats are tied (Cal Boating 2012). The following El Dorado County ordinances (quoted verbatim) contain additional regulations applicable to Union Valley Reservoir:

- Section 9.46.820—Boat Docks. No person shall fish from a boat dock in a manner that interferes with or disrupts boats using such facilities.
- Section 12.60.060—Marked Swimming Areas. It is unlawful for any person to operate the motor of any boat or to ride, pull or tow any water skis or aquaplane within any marked swimming area.
- Section 12.60.070—Navigating near Dams. It is unlawful for any person to operate any boat within 500 feet of any dam owned or operated by any public agency.
- Section 12.60.090—Swimming in Open Channels. It is unlawful for any person to swim in the open channels of any lake or reservoir which are frequented by motorboats or sailboats or more than 300 feet from the shore or outside the boundaries of a marked swimming area or any public waters unless accompanied by a boat manned by a competent operator.
- Section 12.64.060(B)—Restricted Speed Zone. When that portion of Union Valley Reservoir, being a cove located in the northwest corner of the reservoir, adjoining the area known as Swifts Meadow, is posted, it is unlawful to operate any boat at a speed greater than 5 statute mph.
- Section 12.64.060(C)—Restricted Speed Zone. When that portion of Union Valley Reservoir, being a cove located at the southeast corner of the lake known as Jones Fork is posted, it is unlawful to operate any boat at a speed greater than 5 statute mph.

The Sheriff's office enforces boating regulations on Union Valley Reservoir by conducting boat patrols from Friday through Sunday and on holidays during the summer recreation season (Memorial Day to Labor Day). The boat patrol will enforce boating use restrictions related to water surface zones approved in this Plan.

3.9 Union Valley Reservoir Management Plan Map

The contour map of Union Valley Reservoir is presented in Appendix A. The map shows the reservoir bathymetry in 5-foot contours with color-coded elevations to correspond to reservoir depth, existing and proposed buoy lines for designated water surface zones, recreation sites, trails, and the FERC Project Boundary.

4.0 WATER SURFACE MANAGEMENT

Based on the information SMUD collected and reviewed for this report, the following measures are incorporated into this Plan. By its review and approval, the ENF authorizes the following measures including water zone designations, signage, and buoy placement to manage the water surface for Union Valley Reservoir. The map in Appendix A shows spatial information related to the measures.

4.1 Designated Swimming Area at Fashoda Day Use Area

The cove adjacent to Fashoda Day Use Area is a designated swimming area where motorized boating is not allowed pursuant to El Dorado County Ordinance 12.60.060. A cabled line of buoys across the cove with signs stating “No Motorized Boating” establishes the extent of the swimming area. This designation provides for swimmer safety in this high use area and is consistent with suggestions documented in the key contact interviews. Because non-motorized boats do not pose swimmer safety concerns, non-motorized boats are allowed to use the swimming area. Further, by state boating regulation, boating speed within 200 feet of the designated swimming area may not exceed 5 mph.

4.2 Buoys near Project Infrastructure

To protect public safety, boating and visitor use is restricted near the following Project infrastructure:

- Robbs Powerhouse;
- Jones Fork Powerhouse; and
- Union Valley Spillway.

A cabled line of buoys posted with “No Boats” signs establishes the extent of the areas where boating use is not allowed.

4.3 Areas with Discretionary Boating Speed Limits

Boats may not operate at speeds greater than 5 mph when, at its discretion, El Dorado County posts signage buoys at the following areas of the reservoir:

- Cove to the east of Camino Cove Campground (El Dorado County Ordinance 12.64.060[B]); and
- Jones Fork arm (El Dorado County Ordinance 12.64.060[C]).

4.4 No Boating near Dam

Boats may not operate within 500 feet of the dam (El Dorado County Ordinance 12.60.070).

4.5 Signage

The key contact interview responses indicated some of the water surface use problems relate to visitors who may not have sufficient information about the water surface and proper water surface use. Accordingly, signage at boat launches is included to provide for public safety by increasing visitor awareness and reducing improper water surface use (Table 4.1-1).

Table 4.1-1. Signs at boat launches.

Location	Topic of Message
Message boards at Sunset, West Point, and Yellowjacket Boat Launches	Alert boaters to be aware of unmarked obstructions like rocks and stumps.
Boarding dock at Sunset Boat Launch	No swimming or fishing from dock; 10 minute limit to tie up boats.
Top of ramps at Sunset, West Point, SMUDEA, and Yellowjacket Boat Launches	No swimming or fishing within 100 feet the launch lane. 5 mph speed limit within 200 feet of launch lane (or boarding dock at Sunset)

Note: SMUDEA – Sacramento Municipal Utility District Employees’ Association

4.6 Coordination with El Dorado County Sheriff

SMUD will coordinate with the El Dorado County Sheriff’s office to determine the need for posting speed restrictions at the Jones Fork arm and near Camino Cove. Additionally, SMUD will encourage El Dorado County boat patrol to focus enforcement and education activity near boat ramps to achieve compliance with existing boating rules and regulations. This measure will increase boaters’ awareness of the rules and regulations to provide for visitor safety.

5.0 PLAN IMPLEMENTATION

Because multiple entities share jurisdiction related to boating on the reservoir, implementing this plan involves SMUD, ENF, and the El Dorado County Sheriff's office. SMUD is responsible for installing capital improvement measures and accomplishing heavy maintenance of Project recreation facilities; ENF is responsible for operating and maintaining capital improvements, including enforcing any rules for their use; and the El Dorado County sheriff is responsible for enforcing boating laws and restrictions associated with designated water surface zones as established by this plan.

5.1 Buoys and Signage

In consultation with ENF, SMUD will design and install signs, buoys, and buoy lines specified in this Plan. This will include buoys near boat ramps, as necessary, to notify reservoir users of existing speed restrictions. ENF approval of this plan designates the swimming area at Fashoda and authorizes buoy placement as described in Section 4.0, "Water Surface Management."

5.2 Operation and Maintenance

SMUD will operate and maintain buoy lines at the powerhouses and spillway, and ENF will operate and maintain all other buoys and buoy lines. ENF will maintain signs specified in this Plan.

5.3 Monitoring and Plan Revision

Monitoring recreational use at Union Valley Reservoir is included in the recreation use monitoring program required by Forest Service 4(e) condition no. 42 and FERC regulations at 18 C.F.R. § 8.11. In particular, monitoring will include reviewing the effectiveness of signage, swimming area designation, and buoy locations and will report information about boating use including boat density, boat-related accidents, and user conflicts. SMUD will compile this information for review with the ENF and El Dorado County Sheriff boat patrol every 6 years concurrent with the filing of every FERC Form 80, and Report on Recreational Resources detailed in Forest Service 4(e) condition no. 42. In addition, monitoring by Forest Service staff will include ongoing review of those issues not specifically addressed in this plan but were identified as concerns in its development through interviews and comment periods. Monitoring may also identify new or unforeseen issues through information reported about recreation use and overcrowding, including but not limited to: recreation-related incident reports and citations, user conflicts, comments reported by visitors on the National Recreation Reservation System, visitor use reported by concessionaire, National Visitor Use Monitoring data and other various forms of official data and documentation. Issues identified during this monitoring effort may trigger revisions to this plan.

6.0 REFERENCES

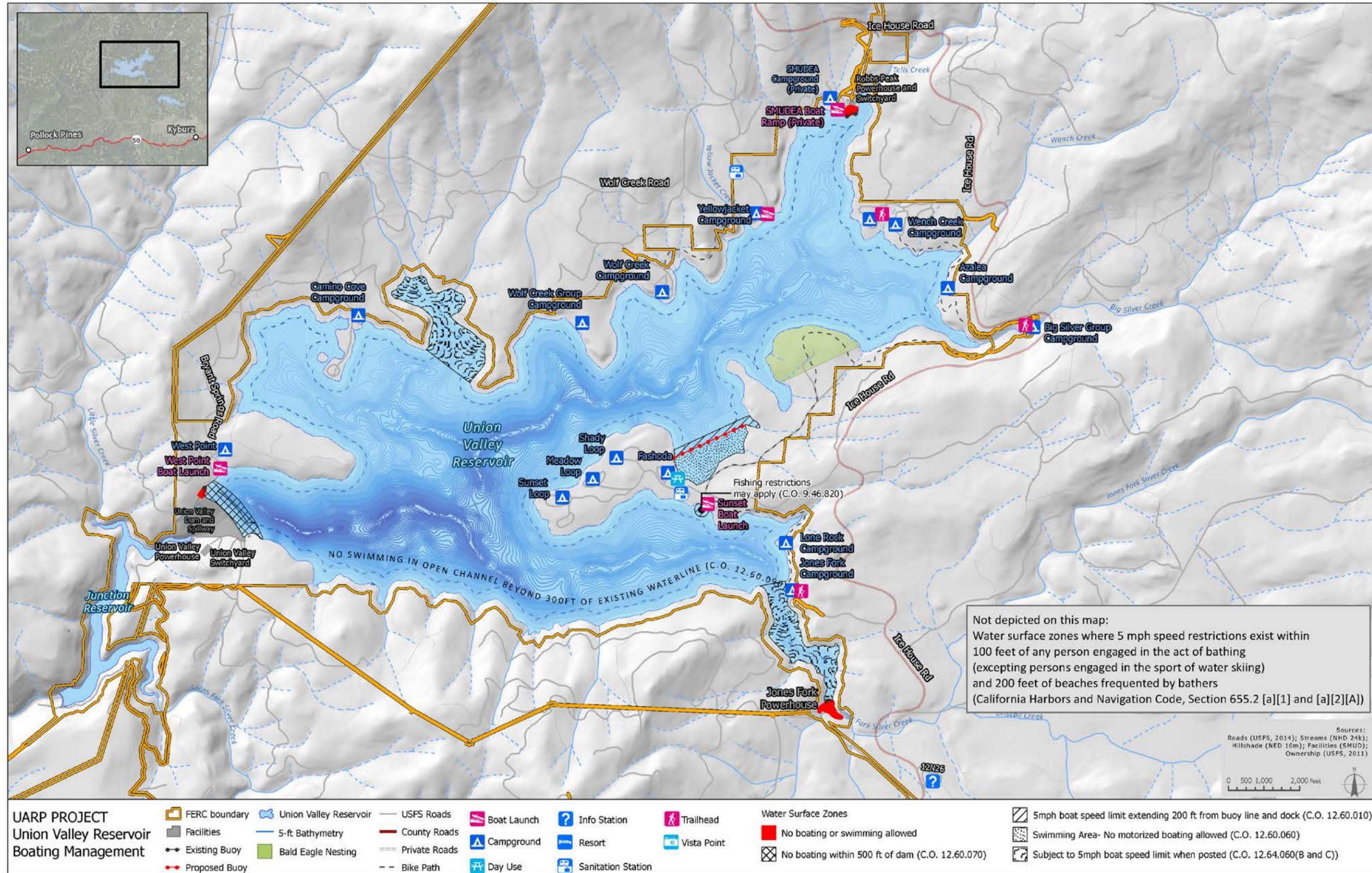
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APPENDIX A**Union Valley Reservoir Boating Management Plan Map**

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APPENDIX B**Union Valley Boating Plan Interviews**

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Union Valley Boating Plan Interviews with Ben Ellis, Louis Berger.

Key Contact	Discussion
<p>John Young American Land and Leisure 530-306-3125 September 21, 2015</p>	<ul style="list-style-type: none"> • The Eldorado National Forest (ENF) uses its concessionaire, American Land and Leisure, to manage boat ramps and campgrounds. American Land and Leisure has been the United States Department of Agriculture, Forest Service (Forest Service) selected concessionaire for greater than 10 years, and John Young is the area manager for American Land and Leisure. Of the three boat ramps at Union Valley Reservoir, only one—Sunset Boat Ramp—is operated by the concessionaire. The Forest Service operates two boat ramps—Yellowjacket and West Point Boat Launches; however, American Land and Leisure operates Yellowjacket Campground. • American Land and Leisure collects fees for the use of Sunset Boat Launch on Union Valley Reservoir. Mr. Young maintains records of use, and he has provided these records to ENF and SMUD. • Sunset Boat Launch requires improvements to handle congestion on summer and holiday weekends from July 4th through Labor Day. • Generally congestion and user conflicts occur when launching or taking out boats. Boaters often need to queue and wait their turn to launch and take out; boaters who have been waiting a long time get frustrated and create problems. • Sunset Boat Ramp either needs to have a second lane constructed on the west side (preferred), or because the boat ramp is sufficiently wide, the steel rail and dock could be moved to the center and two lanes separated by the rail could be created. • Another issue at Sunset Boat Ramp is insufficient parking. On holidays, the parking area always exceeds capacity and people park their vehicles along the access road, creating a safety concern for people accessing the day use area, especially when large vehicles take up too much space. A larger parking area, a designated overflow area, or a place to park overflow trailers would help address this parking need. • Once boats are on the lake, there are no on-water congestion or crowding issues. • A small number of accidents have occurred when boats hit rock ledges located north of Sunset Point a few hundred feet off the shore. No manmade obstacles in the lake pose hazards to boaters. • Two identified needs are to reinstall the boat barrier at the swimming beach on the north side of Sunset and to install swimming docks at the campgrounds. • No wildlife-boating related issues occur at Union Valley Reservoir. The Forest Service used to close the bike path that is in proximity to an eagle nest, but it does not close the path now and the eagles seem to be unaffected. No issues with harassment of wildlife by boaters or conflicts between boaters and bears, or illegal hunting. • The powerhouses and intake are safe, but people sometimes remove the buoys in the tailrace.

Key Contact	Discussion
<p>Richard Thornburgh District Ranger rthornburgh@fs.fed.us 530-647-5410</p>	<ul style="list-style-type: none"> Left message on September 22, 2015.
<p>Sergeant Bryan Brown El Dorado County Boat Patrol brownb@edso.org</p>	<ul style="list-style-type: none"> The Crystal Basin area is a series of high mountain lakes. Several different sized lakes are located in the basin and Union Valley Reservoir is the largest. It draws the majority of the boating traffic in the area, but it is rarely crowded. Although the boat patrol sees all types of watercraft—kayaks, small fishing boats, party boats, ski boats, and personal watercraft—on the reservoir, it does not see any conflicts between the vessels on the lake. While wildlife issues occur at the campgrounds (bears), the boat patrol has not had boater/wildlife issues on the reservoir. The boat patrol has had to deal regularly with traffic problems at Sunset Campground dock, which American Land and Leisure operates. Because the dock is small, it cannot handle the traffic during the most popular put in/take out times of day. The boat patrol has often experienced verbal disturbances because of this issue. The other six ramps around the lake do not have docks, and the boat patrol has not has problems with them. At low water levels, rocks, islands, and sand bars emerge all over the Union Valley Reservoir, resulting in boat hitting rocks. Many boats (mostly unreported) hit rocks causing damage, from minor damage to sinking. The boat patrol took only one vessel accident (report #15-5705) and one injury report (#15-6774) in the 2015 season. The El Dorado County Sheriff's office has jurisdiction for law enforcement on the lake and is funded by the state. Its mission is about safety and education. No speed zones, buoys, or navigation markers are on the lakes in Crystal Basis. Only the larger, multi-jurisdictional lakes with marinas such as Lake Tahoe have those things. The only aides on the lakes are boom barrier buoys around the dams and pump houses. The boat patrol is only on the lake Friday, Saturday, and Sunday because of budget constraints. Managing hazards would be a major undertaking on Union Valley Reservoir like this. The lake would have to be charted, marked with information and regulatory buoys, and monitored/moved as the water levels change. It would be pretty easy right now with the water as low as it is. The management agency for the lake (Forest Service) is responsible for the markers and buoys and takes on the liability if something happens. Users are used to the mountain lakes being "use at your own risk," and they do pretty well. Boaters are given verbal warnings on where the hazards are and these hazards often change daily. Marking the hazards on Union Valley Reservoir would making boating safer. At Fashoda, installing regulatory buoys to mark the "swimming area" would prohibit boats from coming into the area and improve safety.

Key Contact	Discussion
	<ul style="list-style-type: none"> • If the Sunset dock were extended and/or another dock were added on the other side of the ramp, traffic issues should be resolved. Adding a dock at Yellowjacket and one at West Point would balance the launch traffic nicely. Signage telling the boaters not to block the ramps/docks and not to leave boats unattended on the docks would be appropriate. • Regulatory buoys stating "5 mph" near these docks would help maintain slow boating speeds and would improve safety because these areas also are used by swimmers. Sergeant Brown recommends a "5 mph" zone at Jones Fork and SMUD Cove and at the coves on the north end of the reservoir between Wolf Creek and Camino Cove because all of these areas are used by swimmers. • The only other issue is the danger of swimmers swimming across a boating channel and not knowing this activity is prohibited. The boat patrol often encounters people swimming across the open channel without a support vessel. Signage advising this is a violation would be appropriate. • Hard statistics for the last 10 years at this lake are unavailable. The El Dorado County Sheriff's office usually takes 5 to 10 accident reports county-wide each year and about 1 to 2 vessel accident reports for Union Valley Reservoir a season. Sergeant Brown believes that approximately 10 to 20 reportable accidents occur on the lake each year. Reportable accidents cover just about anything that happens while the boat is underway; it does not always mean a vessel versus another object). Because the boat patrol is on the water from only Memorial Day weekend through Labor Day weekend, Friday through Sun, Sergeant Brown believes most of the accidents go unreported.
El Dorado County Records	<ul style="list-style-type: none"> • Left message and sent email request on September 22, 2015. • Records department will work with Bryan Brown to collect the information.
Cindy Oswald Forest Recreation Program Manager coswald@fs.fed.us 530-621-5213	<ul style="list-style-type: none"> • Left message and sent email request on September 22, 2015
Becky Shufelt Acting District Recreation Officer Pacific Ranger District rrshufelt@fs.fed.us 530-647-5432	<ul style="list-style-type: none"> • Left message and sent email request on September 22, 2015. Spoke on September 24, 2015. • Becky Shufelt, Acting District Recreation Officer, is on a temporary detail until mid-October. • Although she does not know Union Valley Reservoir very well, she will look through the files and try to get recreational use data. • SMUD sent a follow-up email. • Called on October 4, 2015, for an update.

Key Contact	Discussion
Charis Parker Resource Officer cparker@fs.fed.us	<ul style="list-style-type: none"> • Charis Parker, Resource Officer, stated that she is not as familiar with boating issues as compared to dispersed use and camping issues. • She is not aware of particular boat-related user group issues on Union Valley Reservoir. User groups split up in Crystal Basin—more motorized boating, jet skiing, and water skiing occur at Union Valley Reservoir while more non-motorized kayaking, canoeing, and fishing occurs at Loon Lake Reservoir. Haven't heard of any on-water boating conflicts at Union Valley. • Haven't heard of wildlife conflicts. Some boaters may chase waterfowl, but Charis Parker is not aware of anything related to sensitive species or eagles. Some boaters disperse camp at the reservoir and that may increase issues with bear activity. Bear issues exist at Union Valley Reservoir campgrounds but the problem has not risen to the level of calling fish and wildlife agencies. The new Bear Management Plan will help reduce issues with bear conflicts. • Conflicts may occur between boaters and swimmers at Fashoda Day Use Area and swimming beach. The day use area used to have a floating boat barrier, but the Forest Service did not have the tools to manage the placement or maintenance. Jurisdiction for installing and maintaining the barriers was unclear, so this issue should be addressed in the Boating Management Plan to clarify who pays, who is responsible to install and maintain, what the liability issues are, and who has jurisdiction to close off parts of the lake. In the past SMUD put up the boat barrier at Fashoda, but more recently SMUD had concerns about safety and liability and has been unwilling to maintain the barrier. The absence of a floating boat barrier presents a safety issue and one should be installed again. • Boat barriers at Fashoda are the same issue with boat barriers in the cove with active nesting eagles. The Forest would like to see the closure at the mouth of the cove and the closure is in SMUD's 2004 plan from, but the Forest Service and SMUD could not agree on management responsibility. The Boating Management Plan has to address the legal requirements and funding, and identify the entity responsible for the installation, ownership, and maintenance of boat barriers. The Forest Service does not have the staff or funds to install or maintain the barriers, but they are needed. There are old buoys in the storage yards but no one knows if they are safe. • User conflicts between non-boaters and boaters occur at the Sunset dock. Swimmers and anglers want to spend time there and boaters need the dock to launch. Because there are no docks for other uses around the lake, SMUD should consider establishing a few designated swimming and fishing docks at the campgrounds or elsewhere, expanding existing dock at Sunset, or adding new docks at the other launches. • Research shows eagles can be disturbed by recreational use including boating and biking, but the success/failure of the eagle nest at Union Valley Reservoir is more weather related than affected by recreational activities. Late spring snows seem to kill the eggs.

Key Contact	Discussion
	<ul style="list-style-type: none"> • Charis Parker is unaware of any manmade obstacles or objects in the lake that affect boating. • On the busiest weekends, Sunset Boat Launch has been significantly crowded. Once the ramp is backed up, boaters have to take turns on the launch. Boat ramp and parking constraints serve as a bottleneck that may limit total use on the lake and also create conflicts between users. One approach would be to implement a permitting system, but such a system does not seem necessary yet. Another approach would be to improve Sunset Boat Launch by adding signage, making more efficient use of the parking area, and redirecting boaters to the other ramps without expanding parking or the boat ramp. After that, need to consider expanding capacity by adding another boat launch and improving/expanding parking. • Before any expansion of boat launch facilities is considered, SMUD should determine carrying capacity of the lake to ensure that the expansion does not degrade or create safety issues on the lake. • The Forest Service does not really do much at Yellowjacket Boat Launch. American Land and Leisure operates the campground, but the boat launch is essentially self-managed. Occasionally, a Forest Service patrol will visit but primarily to address a complaint. More regular patrol occurs at West Point Boat Launch because no concessioners manage the site. The Forest Service maintains West Point and ensures that people are parking correctly, trash is removed, and the beach and toilets are clean. The Forest Service does not track user numbers at either Yellowjacket or West Point Boat Launches. • The Forest Service does not maintain good recreational use numbers at Union Valley Reservoir. American Land and Leisure provides most data for the campgrounds and Sunset Boat Launch because it collects fees for launching. • Becky Shufelt is the best person to contact for data.
<p>Diana Erickson FS Liaison for Recreation Facility Designs / Landscape Architect dkerickson@fs.fed.us 530-621-5214</p>	<ul style="list-style-type: none"> • Spoke on September 22, 2015. • Diana Erickson participated in some of the boating facility planning. Expansion of Sunset Boat Launch was completed using funds from boating waterways grants. Some problems exist with the dock/rail system where it gets hung up/submerged or stranded, often requiring manual adjustment. Also, winds blow the dock toward the east and can constrict the boat ramp and make the wheels bind. • It would be good to know how often Sunset Boat Launch is crowded and how often the boat launches reach capacity. American Land and Leisure started collecting fees in 2014. The concessionaire could do a better job collecting use data and could help guide people to other facilities around the lake. • Crowding at Sunset Boat Launch could possibly be addressed by expanding parking and the ramp. Potential options for additional parking might be to the east of Sunset where there seems like there is room for expansion. The size of Sunset Boat Launch was established years ago and has not been sized to current use levels. Also, boaters

Key Contact	Discussion
	<p>could be redirected to other sites.</p> <ul style="list-style-type: none"> • Diana Ericson has no knowledge of manmade underwater hazards, but she will ask previous recreation officer and check settlement rationale document. • The boat barrier at Fashoda was important for safety and it would be important install buoys near the eagle nest and 5 mph buoys near the boat launches.
<p>Jennifer Ebert Forest Env. Coordinator Supervisors Office Jebert@fs.fed.us</p>	<ul style="list-style-type: none"> • The Forest Service land management plan from 1988 is the most current; however, the Forest Service is planning to launch a plan revision within the next year. • Because of the issue of protecting the nesting eagles from boats, the Forest Service closed the area around the nest but not the cove. • Although two boat-in campgrounds are located in the area, Jennifer Ebert is not sure how much boat-in use they get versus entering from Icehouse Road, where people can boat, walk or bike in. • In the past, the Forest Service managed buoys at Fashoda. She does not understand jurisdiction of buoys defining navigational waters. The Forest Service should designate shoreline and boating uses and identify the locations to protect; then, the Licensee can fund the installation and the Forest Service can manage the buoys. • The Forest Service has an agreement with county sheriff for vehicle patrol of Crystal Basin and boat patrol of the lakes. • The biggest problem with buoys is that they require substantial maintenance because the reservoir levels at Union Valley Reservoir change so much.
<p>Anna Ewing California Department of Fish and Wildlife Anna.Ewing@wildlife.ca.gov (916) 358-2384</p>	<ul style="list-style-type: none"> • Anna Ewing stated that she does not know much about the reservoir and she did not go through the relicensing process. Her work is now focused on implementation of the License and she has only visited Union Valley Reservoir one time. • From her experience, the issues are related to bear human interaction, typically at campgrounds. She has personally fished in the nearby lakes and has had encounters with bears at boat launches, but she does not know of any at Union Valley Reservoir. She has heard of bear interactions at the Union Valley campgrounds but this issue will be addressed in the Bear Interaction Plan, a separate document that is being developed. • Shelly Blair, the Wildlife Biologist for Eldorado County, would know more about previous interactions with wildlife, and she can be contacted at 530-295-3510. • The California Department of Fish and Wildlife and SMUD are developing a Bald Eagle Management Plan that includes nest monitoring. Eagles are state listed and fully protected, and actions affecting eagles may require an incidental take permit. If there are issues related to the boats and eagles, they will be captured in the plan.

Key Contact	Discussion
	<ul style="list-style-type: none">• She is unaware of navigational hazards and has not heard about any recreational issues, but the California Department of Fish and Wildlife typically would not because recreation issues are not under its jurisdiction.• She is not aware of issues with hunting.

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