EXHIBIT E
ENVIRONMENTAL REPORT

Section 4.51(5) of Title 18 of the Code of Federal Regulations (CFR) describes information that an applicant for a new license (Application for License for Major Project – Existing Dam) must include in Exhibit E, recreational resources of its license application. 18CFR §4.51(6) states:

The report must discuss existing and proposed recreational facilities and opportunities at the project. The report must be prepared in consultation with local, state, and regional recreation agencies and planning commissions, the National Park Service, and any other state or Federal agency with managerial authority over any part of project lands. Consultation must be documented by appending to the report a letter form each agency consulted indicating the nature, extent, and results of the consultation. The report must contain:

(i) A description of any existing recreational facilities at the project, indicating whether the facilities are available for public use;
(ii) An estimate of existing and potential recreational use of the project area, in daytime and overnight visits;
(iii) A description of any measures or facilities recommended by the agencies consulted for the purpose of creating, preserving, or enhancing recreational opportunities at the project and in its vicinity (including opportunities for the handicapped), and for the purpose of ensuring the safety of the public in its use of project lands and waters;
(iv) A statement of the existing measures or facilities to be continued or maintained and the new measures or facilities proposed by the applicant for the purpose of creating, preserving, or enhancing recreational opportunities at the project and in its vicinity, and for the purpose of ensuring the safety of the public in its use of project lands and waters, including an explanation of why the applicant has rejected any measures or facilities recommended by an agency and described under paragraph (f)(5)(iii) of this section; and
(v) The following materials and information regarding the measures and facilities identified under paragraphs (f)(5) (I) and (iv) of this section:
  (A) Identification of the entities responsible for implementing, constructing, operating, or maintaining any existing or proposed measures or facilities;
  (B) A schedule showing the intervals following issuance of a license at which implementation of the measures or construction of the facilities would be commenced and completed;
  (C) An estimate of the costs of construction, operation, and maintenance of any proposed facilities, including a statement of the sources and extent of financing;
  (D) A map or drawing that conforms to the size, scale, and legibility requirements of § 4.39 showing by the use of shading, cross-hatching, or other symbols the identity and location or any facilities, and indicating whether each facility is existing or proposed (the maps or drawings in this exhibit may be consolidated); and
(vi) A description of any areas within or in the vicinity of the proposed project boundary that are included in or have been designated for study for inclusion in, the National Wild and Scenic Rivers System, or that have been designated as wilderness area, recommended for such designation, or designated as a wilderness study area under the wilderness Act.

7.0 RECREATIONAL RESOURCES

7.1 Zone of Potential Effect

The Spring Gap-Stanislaus Project is located in Northeastern California and its significant watersheds hold some of the most attractive, unspoiled and popular recreation resources in the State. Section 7.3 contains a cursory description of recreational opportunities available to the public both within the region and the Project vicinity.

The ZPE for recreation is considered to be the area within the FERC Project boundary. A 200-foot wide area on either side of the MRSR, SFSR, and SR reaches downstream of Relief Reservoir, Spring Gap Powerhouse, Sand Bar Diversion Dam, Pinecrest Lake, and Philadelphia Diversion Dam is also included in the ZPE because, if current operation of the Project was significantly altered, recreation in this reach could be affected.

7.2 Applicable Statutes and Comprehensive Plans

Recreational resources in California are controlled and managed under an intricate system of federal, state, and local laws. These laws, in conjunction with regulations, comprehensive plans, and policy directives, provide resource agency staff with specific management direction. The major laws, regulations, and plans that pertain specifically to recreational resources in the Project ZPE and surrounding area are discussed below.

7.2.1 Federal Power Act

Section 2.2.9 in the Report on Water Use and Quality describes the Federal Power Act (FPA) including Sections 4(e), 10(a) and 10(j). These sections apply to recreational resources as well as to water use and quality.

The Project's FERC License requires the Licensee to construct, operate and maintain the Project in accordance with License requirements and Project purposes (i.e., public recreation, environmental protection etc.). Consistent with these license responsibilities, a Licensee may, with FERC approval, authorize specific uses and occupancies of the Project reservoir shoreline that are not related to hydroelectric power production or other Project purposes. Additionally, Federal Energy Guidelines in 18 CFR Part 2 § 2.7 provides for the Licensee of recreational facilities within the boundaries of a project to charge reasonable fees to help defray the cost of constructing, operating, and maintaining such facilities.

7.2.2 California Outdoor Recreation Plan

The objectives of the 1993 California Outdoor Recreation Plan (SCORP) are to determine outdoor recreation issues that are currently the problems and opportunities most critical in California, and to explore the most appropriate actions by which state, federal and local agencies might address these issues. The plan also provides valuable information on the State's recreation policy, code of ethics, and statewide recreation demand, demographic, economic, political, and environmental conditions. The plan lists the following major issues: 1) improving resource stewardship; 2) serving a changing population; 3) responding to limited funding; 4) building strong leadership; 5) managing aging facilities; 6) expanding legislative support and minimizing legal setbacks; 7) improving recreation opportunities through planning and research; 8) responding to the demand for trails; and 9) halting the loss of wetlands. The SCORP applies to state and local park and recreation agencies and recognizes that the State has much less influence over federal and private-sector recreational providers. The Project is not directly subject to the SCORP.

7.2.3 Public Opinions and Attitudes in Outdoor Recreational Survey

The 1992 Public Opinions and Attitudes in Outdoor Recreation (POAOR) provide information used in the development of the 1993 SCORP. The POAOR identifies: 1) California's attitudes,

opinions, and values with respect to outdoor recreation; and 2) demand for and participation in 42 selected outdoor recreation activities. As with the SCORP, this document applies to state and local park and recreation agencies and recognizes that the State has much less influence over federal and private-sector recreational providers. Consequently, the Project is not directly subject to the POAOR.

7.2.4 United States-Owned Land

Portions of the land within the FERC Project Boundary are located on United States-owned lands administered by the Stanislaus National Forest (STF). The STF's Land and Resource Management Plan (LRMP) applies to these lands and is described in Section 2.2.10 in the Report on Water Use and Quality. The portions of the LRMP that pertain specifically to recreational resources in the ZPE are discussed below.

The LRMP discusses developed and dispersed recreation within the STF, and identifies STF's recreation goals, objectives, management practices and general directions. As stated in the LRMP (USDA Forest Service 1991, pg. IV-4, 5), STF recreation goals are:

> Provide a wide range of recreation opportunities directed at various experience levels to meet current and projected demand, including campgrounds, hiking trails, picnic areas, OHV trails, etc. Develop recreation management plans for existing and potential areas of concentrated public use. These plans shall address such aspects as:
>
> 1) Planned mixes of summer and winter activities for public and private sector responsibilities, development scales, site locations, number of units and PAOTs (people at one time), family and group facilities, existing and potential on-site problems, facilities needed to serve dispersed activities, lakes or reservoir surface activity management, as well as implementation and/or expansion phasing.
>
> 2) Develop and implement programs to inform forest users about recreation opportunities, and interpret forest management activities and the forest environment for the visitor. Provide a variety of off-highway vehicle (OHV) recreational opportunities in a manner consistent with protection of wildlife and other resources, and with non-motorized recreation. (USDA Forest Service 1991, pg. IV-4, 5)

In addition, the STF uses the Recreation Opportunity Spectrum (ROS) as a method for planning and managing outdoor recreation areas on National Forest System lands. The ROS system categorizes recreation areas based on their size, distance from roads, and degree of development (primitive, semi-primitive non-motorized, semi-primitive motorized, roaded-natural, rural, or urban). Management prescriptions are then developed for each recreation area in order to achieve the desired recreation experience of the ROS class. The goal of ROS is to provide recreationists opportunities to participate in preferred activities within preferred settings in order to realize desired recreation experiences.

7.2.5 Stanislaus National Forest Central Stanislaus Watershed Analysis

The origin, purpose, and basic framework of the STF's Central Stanislaus Watershed Analysis (CSWA) are presented in Section 2.2.11 of the Report on Water Use and Quality. The CSWA process and resulting documents are not subject to NEPA and are not decision documents. As discussed in that section, the STF developed a number of "desired conditions," indicators and measures for the area. The STF's desired conditions that apply to recreation resources are presented in Table E7.2-1 below.

TABLE E7.2-1
Desired conditions, indicators and measures related to recreational resources developed by the Stanislaus National Forest and presented in the Central Stanislaus Watershed Analysis dated August 2002.

#	*Desired Condition*	*Indicator*	*Measure*
		SOCIAL/CULTURAL HIERARCHY	
		Economics and Subsistence	
22	Ecosystem management activities and recreation contribute to the economic viability of the local community.	Recreation use	• Recreation Visitor Days (RVDs) increase at a level commensurate with service area demographics.
		Employment related to ecosystem management (EM) activities	• EM-generated economic contributions keep pace with the overall employment earnings.
		Invention and Diffusion	
23	The Stanislaus National Forest provides accurate and timely natural and cultural information and education.	User preferences	• User preferences for information and interpretation are the baseline data from which programs, media, and sites offered are measured. This "baseline" will be reevaluated every 5 years.
		Interpretive program implementation	• The Stanislaus National Forest Interpretive Plan will be updated every 5 years to include user preference information.
		Interpretive services offered	• Programs, media, and sites offered increase from baseline at a rate commensurate with user population demographics and adjusted every 5 years through user preference surveys.
		Written and oral information	• Information provided at Forest Service sites is ≥ 90% accurate.
24	A Forest Service presence is provided at all developed and concentrated dispersed recreation sites.	Visitation standards	• All developed recreation facilities are visited at the frequency determined in Forest Service Meaningful Measures standards
		Lifestyles and Lifeways	
27	Appropriate recreation opportunities are identified and facilities are well maintained, accessible, appropriate to the setting, and meet future population demands in an environmentally sound way.	User preferences	• All existing and proposed recreation opportunities and facilities meet present and future user preference needs.
		Population demographics	• Participation in recreation activities reflects demographics of the service area.
		Facility occupancy	• Recreation facilities are constructed within 3 years of determining that occupancy/use (as measured by RVDs or PAOT—whichever is appropriate) has exceeded 90% seasonally adjusted capacity for two consecutive years.
		Facility condition	• Meet Forest Service Meaningful Measures Standards/INFRA Accessibility Design Guidelines.
28	FERC licenses contain adequate mitigations for project-induced activities and facilities.	Facilities and activities financed	• 100% financing of recreation facilities and activities attributable to present and projected public demand generated by the FERC project.
		Material Culture	

29	The road system provides adequate access for public and administrative uses.	Needed roads	• Miles of road retained
		Unneeded roads	• Miles of road decommissioned
		Roads maintained	• Miles of road maintained to standard

TABLE E7.2-1 (continued)

#	*Desired Condition*	*Indicator*	*Measure*
		SOCIAL/CULTURAL HIERARCHY	
30	The trail system outside wilderness connects communities and accesses other popular locations.	Community-linked trail opportunities	• Miles of non-motorized community-linking trail constructed
		Motorized and non-motorized trails outside wilderness	• Miles of trail constructed
		Motorized and non-motorized trails maintained	• Miles of trail maintained to standard

7.2.6 California Department of Boating and Waterways (CDBAW)

California boating laws and regulations cover boating and related activities on all waters of the State and are compatible with Federal laws and regulations. The State of California Harbors and Navigation Code Section 660(a) (CDBAW 2002) allows other entities including local counties to establish regulations that pertain only to time-of-day restriction, speed zones, special-use areas, and sanitation and pollution control that are not in conflict with other provisions in the section or other regulations adopted by the CDBAW. Boats are not permitted in swimming areas at Pinecrest Lake and this area is clearly identified with buoys. There are no swimming areas at Relief Reservoir and swimming and boating are prohibited at Stanislaus Forebay. The Tuolumne County Sheriff's Department enforces the boating laws and regulations.

7.3 Background Information

The Licensee consulted with federal, state and local agencies, interviewed private business owners, and conducted general literature reviews to discover historical and existing information regarding recreational resources in the ZPE. The result of this effort is summarized below.

7.3.1 Historical Overview

Recreational activities in the area of the Spring Gap-Stanislaus Project developed over four general time periods. The first time period began with settlement of this area of the Sierra Nevada in the 1850s with the nearby discovery of gold. Miners combed the hills and streams for gold and by the 1860s the forested hills that later became the STF saw the first recreation use by settlers. The initial recreation use probably consisted of fishing and swimming in the MFSR, SFSR, and their tributaries. During this early period of recreation use, visitors were also probably camping near these watercourses.

During the second period from the 1860s to the early 1900s, the area saw an increase in extractive uses of the forest such as mining, grazing, and logging. As a result, roads and railroads were developed to support these uses and as well as vast water delivery systems for the downstream communities. In 1897 the STF was established and public lands were being viewed for their recreational value as well as their commercial resources. With improved access, it was possible for more people to access the area for recreation, yet their use was still probably limited to fishing, camping, and swimming since motorboats and camping equipment were not yet available. Even though many of the streams had been diverted for water supplies and hydraulic mining beginning in the 1850's, development of the watercourses for hydropower purposes began in the early 1900's. This further improved access into the mountain area for the growing population of California and construction of reservoirs at the hydropower developments now provided new opportunities in the form of flatwater recreation and attractive settings for camping.

The third time period occurred between the early 1900s through the 1950s as hydropower projects continued to be built. Flatwater boating joined the list of popular recreation activities during this time period however these uses evolved at the reservoirs that did not have developed recreation facilities. As use increased, the Forest Service began hardening the sites being used for recreation by constructing campgrounds, day use areas and boat launches. The federal government further encouraged the use of public land near some of the reservoirs by offering long term leases for summer residences. By the 1950s, the area was well established as a recreation area for visitors with abundant access, a variety of recreation opportunities, and facilities for visitors. Technological advances further enabled people to enjoy recreational activities with the development of camping and boating equipment.

The fourth time period occurred from the 1950s through today. During this period of time, whitewater boating and wilderness use started to emerge as popular recreational activities in California. In the 1970s when these uses were increasing in popularity, land was designated as wilderness within national forests and parks with land management direction to maintain these areas for their natural character. In the vicinity of the Project, the Carson-Iceberg and Emigrant Wildernesses were established and the lower MFSR was designated as a wild trout fishery. Around this same time, a growing number of people were enjoying whitewater boating. Multi-person rafts and kayaks were used on California rivers but recreation activity in the vicinity of the Spring Gap-Stanislaus Project had evolved toward camping, fishing, and flatwater use. The Project reaches in the vicinity of the Project were eventually boated as the skill level of boaters and technology improved. The stream reaches where whitewater opportunities have been identified relative to this Project are below: 1) Relief Dam (Kennedy Meadows to Donnells Reservoir), 2) Pinecrest Dam (Strawberry to Lyons Reservoir), and 3) Sand Bar Diversion (Sand Bar to Stanislaus PH).

7.3.2 Recreational Facilities in the Project Vicinity

The STF provides opportunities for a broad range of recreation activities. Lakes, rivers, and streams, and land features ranging from foothills to high mountain peaks are the attractions for nearly 2.6 million recreation visitor days (RVD) each year (USDA 2001); more than half of this use occurs on the Summit Ranger District (USDA 1991). A recreation visitor day is equal to one visitor for a 12-hour period. Highways and roads make a large proportion of the Forest accessible and provide an easy escape from the heat waves of the San Joaquin Valley. Sonora and Ebbet's passes, as well as other high country areas, are scenic attractions. Unique recreation experiences can be obtained in the Emigrant, Carson-Iceberg, and Mokelumne wildernesses. Persons desiring developed recreation facilities and variety of activities visit the recreation complexes at Pinecrest and Lake Alpine, as well as other developments adjacent to the major highways.

Recreation opportunities are provided in developed areas, at both private and public facilities, as well as in undeveloped or dispersed areas. Facilities developed and operated by the private sector include lodges, resorts, organization camps, recreation residences, and alpine ski resorts. Public facilities include picnic areas, campgrounds, boat ramps, vista points, and interpretive sites that are operated by the STF or by their concessionaires. The undeveloped areas of the Forest provide opportunities for dispersed activities such as scenic driving, camping, hiking, boating, Nordic skiing, horseback riding, hunting, fishing, and off-highway vehicle use. According to the STF LRMP (USDA Forest Service 1991), in 1989, 56.6 percent of all recreation in the Forest took place at developed recreation sites, while 43.4 percent took place in dispersed areas, including designated wilderness areas.

The Pinecrest Lake/Dodge Ridge area is in the central part of the Forest on the Highway 108 corridor and features recreation residences, campgrounds, day use areas, Dodge Ridge Ski Area, a marina, resorts, stores, and a pack station. Pinecrest Lake is the most popular recreation area on the Forest. Major activities are developed camping, picnicking, boating, hiking, biking, and swimming.

7.3.3 Whitewater Boating Opportunities

Whitewater boating is a growing recreational activity in California. A review of "California Whitewater: A Guide to the Rivers" (Cassady and Calhoun 1995), "The Best Whitewater in California: a Guide to 180 Runs" (Holbek and Stanley 1998) and "California Boating and Water Sports" (Stienstra 1996) identifies 10 whitewater runs in the overall SR watershed with a total distance of over 75 miles. Those runs are summarized in Table E7.3-1 below and shown in Figure E7.3-1. It should be noted that most of the runs are Class IV and V levels of difficulty and require portages even at these levels.

Insert Figure E7.3-1

TABLE E7.3-1
Description of whitewater boating runs in the Middle and South forks of the Stanislaus River and season of use of those runs as identified by Holbeck and Stanley (1998) and hydroelectric facilities that may affect those runs.

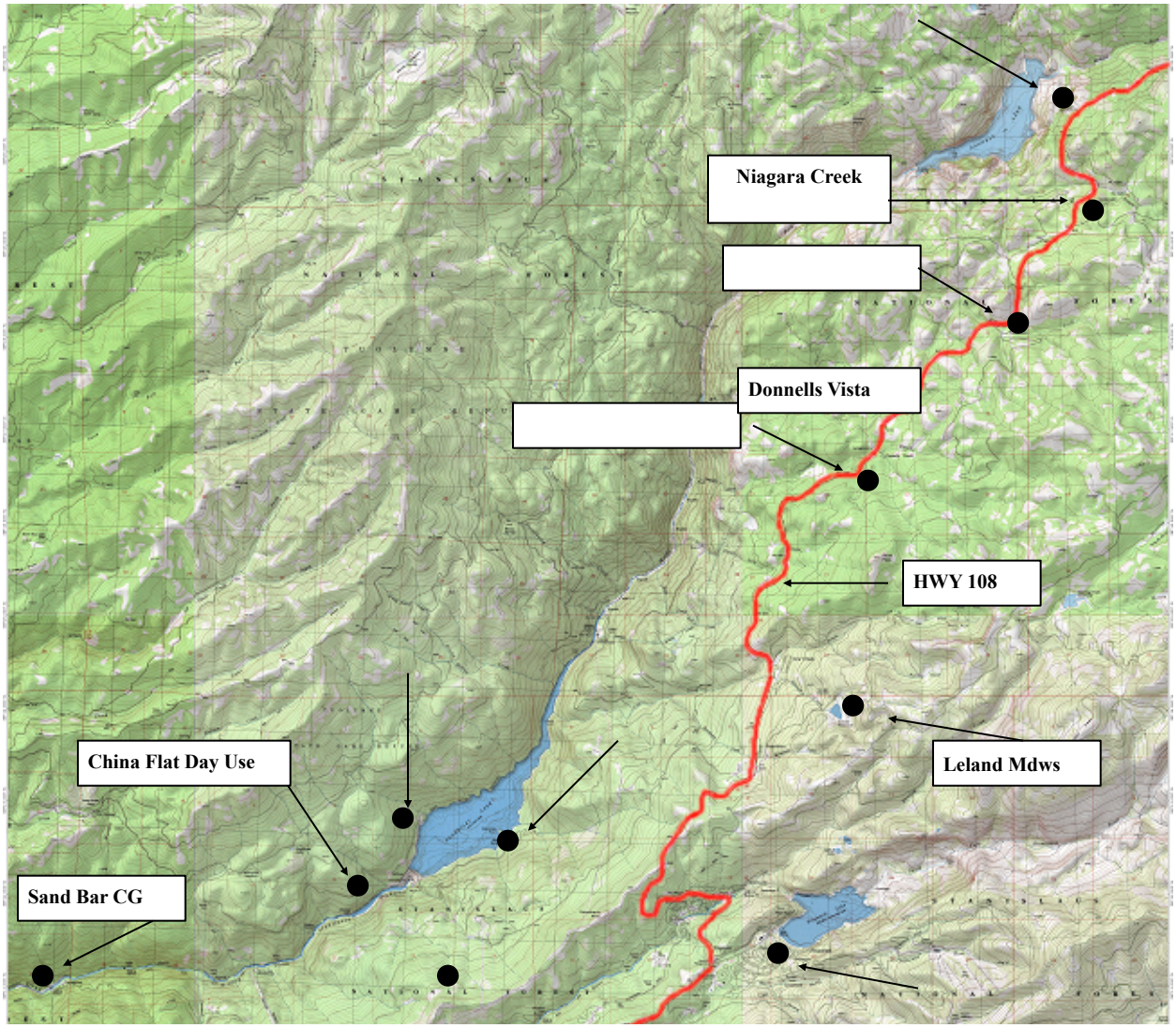
RIVER REACHES AFFECTED BY THE HYDROELECTRIC PROJECTS				*WHITEWATER BOATING INFORMATION FROM HOLBECK AND STANLEY (1998)*					
River Reach	*Project Facilities that may Affect Flow*	*Amount of Water that may be Stored[1] Above or Diverted Around the Reach*	*Maximum Release Capacity into the Reach (excludes spill past a dam)*	*Name of Whitewater Run*	*Put-In and Take-Out*	*Length (miles)*	*Gradient (feet per mile)*	*Class*	*Season of Boating Use*
Relief	Relief dam	15,558 af may be stored in relief reservoir/no water is diverted around the reach	800 cfs can be released through a low level outlet in relief dam when the reservoir is at full pool	Dardanelles	Baker Campground to Clark Fork Bridge	9	95	IV-V with 4 portages	Spring
				Donnells	Clark Fork Bridge to Donnells Reservoir	6	115	IV-V with 3 portages	Spring
Donnells[3]	Donnells Dam and Donnells Diversion Tunnel	64,325 af may be stored in Donnells Reservoir/750 cfs may be diverted around the reach into Donnells Powerhouse	1,333 cfs can be released through two low level outlets in Donnells Dam when the reservoir is at full pool	None listed	Donnells Dam to Hells Half Acre[2]	8.3[2]	183[2]	Not listed	Not listed
Beardsley Afterbay[3]	Beardsley Dam, Beardsley Afterbay Dam, and Sand Bar Diversion Tunnel	98,157 af may be stored in Beardsley Reservoir and Beardsley Afterbay/650 cfs may be diverted around the reach into Sand Bar Powerhouse	500 cfs can be released through a low level outlet in Beardsley Afterbay Dam when the afterbay is at full pool	None listed	Beardsley Afterbay Dam to Sand Bar Diversion Dam[2]	4.2[2]	91[2]	Not listed	Not listed
Spring Gap	Spring Gap Powerhouse	None	60 cfs from the South Fork Stanislaus River may be released into the reach when Spring Gap Powerhouse is operating at full load						
Sand Bar	Sand Bar Powerhouse and Diversion Dam and Stanislaus Diversion Tunnel	45 af may be stored in Sand Bar Reservoir/530 cfs may be diverted around the reach into Stanislaus Powerhouse	650 cfs may be released into the reach when Sand Bar Powerhouse is operating at full load. Water passes into the reach below Sand Bar Diversion Dam by spilling over the dam	Sand Bar Flat	Sand Bar Dam to Mount Knight Trail	6	153	IV-VI with 4 portages	Spring
				Mount Knight	Mount Knight Trail to Stanislaus PH	8	90	V with 3 portages	Spring
Pinecrest	Pinecrest Dam	18,312 af may be stored in Pinecrest Lake/no water is diverted around the reach	350 cfs can be released through a low level outlet in Strawberry Dam when the reservoir is at full pool	Strawberry	Highway 108 Bridge to Lyon's Reservoir	12	93	V With 1 portage	Spring
Philadelphia	Philadelphia Diversion Tunnel	1 af may be stored in Philadelphia Reservoir/60 cfs may be diverted around the reach into Spring Gap Powerhouse	No water passes into the reach below Philadelphia Diversion Dam except by spilling over the dam.						
Lyons[3]	Lyons Dam and Main Tuolumne Canal	6,228 af may be stored in Lyons Reservoir/52 cfs may be diverted around the reach by the Main Tuolumne Canal	10 cfs can be released through two low level outlets in Lyons Dam when the reservoir is at full pool	Italian Bar	Italian Bar to New Melones Reservoir	6	136	V with 1 portage	Winter and Spring

[1]Gross storage
[2] Not identified by Holbeck and Stanley as a whitewater boating run. Information for this reach reflects the Licensees' best estimate.
[3]Non-project reach

7.3.4 Recreational Facilities in the Highway 108 Corridor

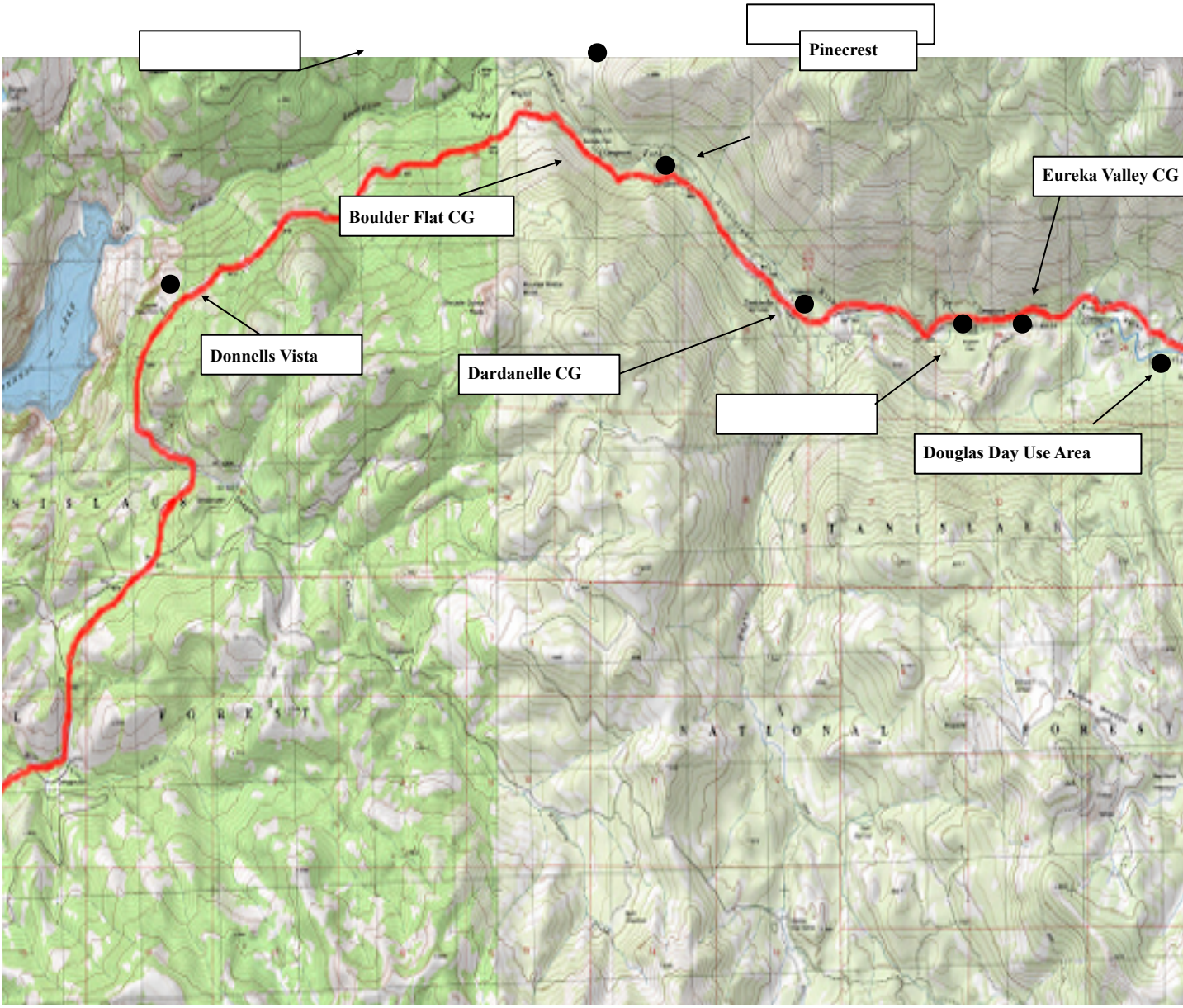
State Highway 108 traverses Sonora Pass, connecting State Highway 120 and 49 near Sonora in the west to Highway 395 on the east side of the Sierra Nevada mountain range. Highway 108 is closed at higher elevations (around the 5,000 foot elevation) in the winter. Summer recreational activities in the Highway 108 Corridor from Sonora to the Sierra Nevada summit include camping, picnicking, hiking, fishing, boating, swimming, and sightseeing. Public recreational opportunities are abundant. Most of the facilities have been developed by the STF, and are operated by the STF through a concessionaire or directly by the STF. As a reference, based on the information below there are 22 STF campgrounds (not including group campgrounds and trailhead camping) on the Highway 108 corridor with a total of 926 campsites. A map showing the approximate location of the facilities along the Highway 108 corridor is shown is Figure E7.3-2.

FIGURE E7.3-2
Recreation facilities including campgrounds, day use areas and overlook in the Highway 108 corridor.



Beardsley CG

Beardsley Day Use



During the winter months recreational activities available in the area include snowmobiling, nordic and alpine skiing, and snowshoeing. There are over 30 miles of groomed snowmobile routes including Highway 108 and roads in the area of Eagle Meadow; there are also ungroomed and unmarked routes in the area. Alpine skiing takes place at the Dodge Ridge Ski Area near Pinecrest. There is a SNOPARK at the gate where Highway 108 is closed for the winter where the public can park to enjoy winter sports for a fee of $5 a day or $25 for a season pass. This area mainly provides parking associated with snowmobile use however nordic skiing and snowshoeing activities also occur here; there are no designated sledding areas at this location.

7.3.4.1 Brightman Recreation Complex

The Brightman Recreation Complex is a group of recreation facilities located along Highway 108 about 16 miles northeast of Pinecrest. It includes seven concessionaire-operated campgrounds, one organized camp, a day use area, one interpretive trail, and a trailhead for the Emigrant Wilderness. Elevations range from 5,600 to 6,200 feet. Amenities at the Brightman Complex are described in Table E7.3-2.

TABLE E7.3-2
Recreational opportunities at the Brightman Recreation Complex.

Facility	*Name*	*Capacity*	*Comments*
Campground	Boulder	20 camp sites	Located 21 miles east of the Summit Ranger Station at an elevation of 5,600 feet. This area has community potable water and vault toilets.
	Brightman Flat	33 camp sites	Located one mile past Boulder Campground at an elevation of 5,700 feet. This area has vault toilets, but no running water.
	Dardanelles	28 camp sites	Located one mile past Brightman Campground across from Dardanelle Resort at an elevation of 5,800 feet. This area has vault toilets, community potable water, and two river access trails.
	Pigeon Flat	7 camp sites	Located 2 miles east of Dardanelle Resort and is accessible by "walk-in" only. This campground is located at an elevation of 6,000 feet.
	Eureka Valley	28 camp sites	Located one mile east of Pigeon Flat Campground at an elevation of 6,100 feet. This area has three hand wells for potable water, vault toilets, and a river access trail.
	Baker	44 camp sites	Located at the junction of Highway 108 and Kennedy Meadow Road at an elevation of 6,200 feet.
	Deadman	17 camp sites	Located one mile from Highway 108 on the Kennedy Meadow Road at an elevation of 6,200 feet.
Day Use Areas	Douglas Picnic	7 picnic sites	Located 25 miles east of the Summit Ranger Station at an elevation of 6,100 feet. This area has seven sites (three fully accessible), a vault toilet, a paved access trail to the MFSR, but no potable water.
Trails	Kennedy Meadow	3 camp sites (one night camping limit)	Located across from Deadman Campground, this area has a paved parking lot with trailer parking, three picnic sites, potable water and accessible vault toilets, and a horse unloading zone. This trailhead accesses the Emigrant Wilderness.
	Column of the Giants		An interpretive trail next to the Pigeon Flat Campground, with a paved parking lot, vault toilets, and a bridge over the Stanislaus River.

There are two resorts in or near the Brightman Recreation Complex. Kennedy Meadow Resort is located on land owned by the Licensee and is operated by a lessee. The resort is located three miles from Highway 108 at the end of Kennedy Meadow Road. Available amenities include a restaurant, a store, cabin rentals, limited campsite rentals, pack rentals, and trail rides. Dardanelle Resort is located on Highway 108. This resort is owned and operated by a permittee of the STF. Available amenities include cabin rentals, a store, a restaurant, gasoline sales, camping with some full hookups, and a public telephone.

7.3.4.2 Clark Fork Recreation Complex

This Clark Fork Recreation Complex is a group of facilities located off Clark Fork Road 20 miles northeast of Pinecrest and adjacent to the Clark Fork. It includes three STF campgrounds (two of the three campgrounds are concessionaire operated), a horse camp, a day use area, and two organized camps (Peaceful Pines and Liahona), all operated by concessionaires. Elevation at the complex range ranges from 5,600 feet to 6,200 feet (Table E7.3-3).

TABLE E7.3-3
Recreational opportunities at the Clark Fork Recreation Complex.

Facility	*Name*	*Capacity*	*Comments*
Campground	Clark Fork A and B Loops	88 camp sites	Located 5 miles from the junction of the Clark Fork Road and Highway 108 at an elevation of 6,200 feet. Amenities include flush toilets, RV dump station, and fee showers.
	Clark Fork Horse Camp	14 camp sites	Located next to Clark Fork Campground at an elevation of 6,200 feet. This area has three vault toilets and no potable water. There are scattered tables and fire rings.
	Sand Flat	68 camp sites	Located one mile west of Clark Fork Campground at an elevation of 6,200 feet. Fifty-three of the sites are drive-in and 15 are walk-in sites. This area has vault toilets and six hand pumps for potable water.
	Fence Creek	34 camp sites	Located one mile from Highway 108 just after the Clark Fork Bridge at an elevation of 5,600 feet. This area has three pit toilets and one vault toilet. No water is available.
Day Use Areas	Cottonwood	7 picnic sites	Located 3.5 miles from the Highway 108 and Clark Fork Road junction at an elevation of 5,900 feet. This area has an accessible vault toilet and is very popular for fishing.

7.3.4.3 Donnells Vista Point

Donnells Vista Point is located off Highway 108 about 12 miles northeast of Pinecrest at an elevation of about 6,100 feet overlooking Donnells Reservoir. The area includes a paved parking area, restrooms, three picnic tables, a vista overlook, and a paved quarter-mile-long trail connecting the parking area and overlook. Some interpretive signs have been provided by the STF. The vista point was constructed by the STF with funds provided by Tri-Dam Project, and is operated and maintained by the STF. The STF has received $384,850 to reconstruct the site including the parking area improvement and expansion, accessible trail, overlook and an accessible approach to the restroom. The STF has completed the design work and will begin construction in 2002 (pers. comm. K.Caldwell 2/12/02).

7.3.4.4 Niagara Creek Campground

Located on Highway 108 ten miles northeast of Pinecrest at an elevation of about 6,600 feet, the Niagara Creek Campground includes 20 campsites. The campground is located adjacent to Niagara Creek and is operated by the STF. A daily fee is required. No days use areas, group campgrounds, or trailheads are associated with this campground.

7.3.4.5 Mill Creek Campground

The Mill Creek Campground is located on Highway 108 nine miles northeast of Pinecrest at an elevation of about 6,200 feet. The campground has 17 campsites, requires a daily fee, and is located adjacent to Mill Creek. This campground is operated by the STF. No days use areas, group campgrounds, or trailheads are associated with this campground.

7.3.4.6 Cascade Creek Campground

The Cascade Creek Campground is located on Highway 108 seven miles northeast of Pinecrest at an elevation of about 6,200 feet. The campground has 17 campsites, requires a daily fee, and is located adjacent to Mill Creek. This campground is operated by the STF. No days use areas, group campgrounds, or trailheads are associated with this campground.

7.3.4.7 Herring Creek Complex

Located on Herring Creek Road 4 miles east of Pinecrest at an elevation of about 7,300 feet, the Herring Creek Complex includes two campgrounds with a combined total of 52 campsites. Both campgrounds are located adjacent to Herring Creek and are operated by the STF. A daily fee is required. No days use areas, group campgrounds, or trailheads are associated with this campground.

7.3.4.8 Pinecrest Lake Recreation Complex

This Pinecrest Lake Recreation Complex is a group of recreation facilities located 29 miles east of Sonora on State Highway 108 at an elevation of about 5,600 to 5,800 feet. The complex is forested with a mixture of pine, fir, and cedar trees with some willow trees and scattered brush. It is has been designated a California State Wildlife Viewing Site by the California Department of Fish and Game. The Pinecrest Complex lies within the STF; no private property is located within the complex. The Complex offers camping, picnicking, swimming, fishing, boating, and hiking. The day use area, including the fishing pier, picnic sites, restrooms, amphitheater and trails, are owned, operated and maintained by the STF. Some of the amenities in the complex are described in Table E7.3-4 below and shown in Figure E7.3-3.

The STF owns the campground facilities and currently operates and maintains them through a permit with a concessionaire. All campgrounds in the Pinecrest Lake Recreation Complex are equipped with a table, metal stove/fireplace, and a paved parking spur. All restrooms have flush toilets and potable water. Pinecrest Campground requires a reservation; however, campsites in Meadowview Campground are available on a first come-first serve basis. All campsites require daily fees.

Besides the amenities described in the Table E7.3-4, the Pinecrest Lake Recreation Complex includes privately owned facilities located on public land. These include a general store, restaurant, post office, fee showers, a sports shop in the commercial center, and Pinecrest Lake

Resort. The resort has tennis courts, bike rentals, snack bar, marina, rental boats, and fishing supplies. Next to the Resort is a boat launch with a dock. All of these facilities are operated under special use permits from the STF. Within the Complex, there are 385 privately owned recreation cabins and four organized camps: Lair of the Bear, Sylvester, Pinebrook, and Chinquapin. The cabins and the camps are all operated under special use permits from the STF.

FIGURE E7.3-3
Pinecrest Recreation Area map that shows the locations of the Pinecrest Campground, Meadowview Campground, Pioneer Group Campground, Pinecrest Day Use Area, Pinecrest Lake National Recreation Trail, Shadow of the Me-Wok Trail, and Trail of the Survivors.

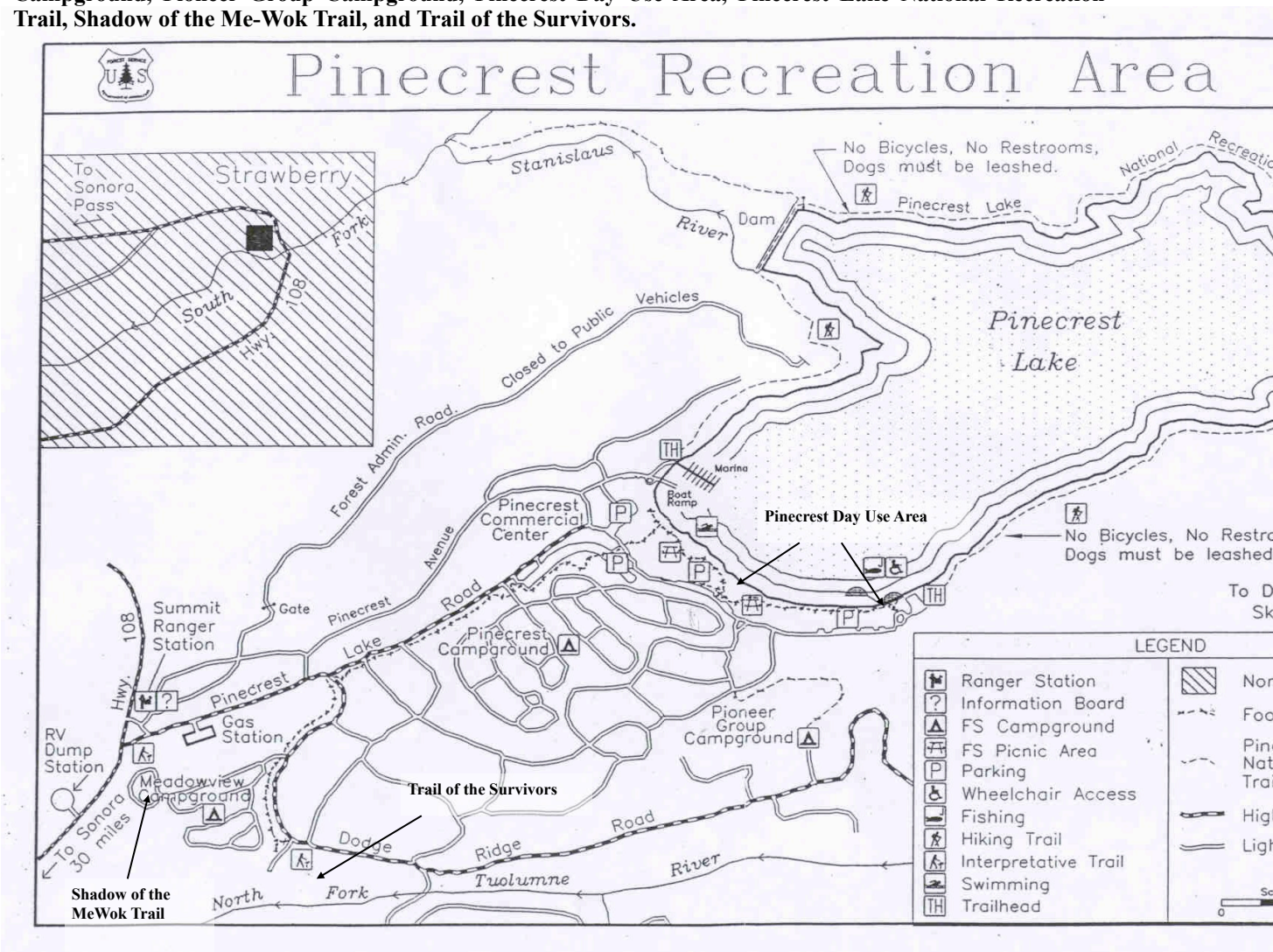


TABLE E7.3-4
Recreational opportunities at the Pinecrest Lake Recreation Complex.

Facility	*Name*	*Capacity*	*Comments*
Campground	Pinecrest	200 camp sites	Closest camping to Pinecrest Lake and the most popular campground.
	Meadowview	100 camp sites	Operated on a first come/first serve basis
Group Campgrounds	Pioneer Trail Group	3 sites with combined capacity of 200 PAOT	Two of the sites will accommodate 50 PAOT each and the other site 100 PAOT. Reservations are required.
Day Use Areas	Pinecrest Picnic	55 picnic sites	Located on the southwest shore of Pinecrest Lake. There is also a swimming area, accessible fishing pier, fish cleaning stations, and four restrooms at the Day Use Area.
Trails	Trails of the Survivors	0.25 mile	Self-guided Interpretive Hiking Trail
	Shadow of the Me-Wok	0.25 mile	Self-guided Interpretative Hiking Trail
	Pinecrest Lake Loop	4.0 miles	Hiking Trail (designated National Recreation Trail)
	Cleo's Bath	1.5 miles	Hiking Trail (begins on the Pinecrest Lake Loop trail near the SFSR inlet to Pinecrest Lake)
	Catfish Lake Trail	1 mile	Hiking Trail (begins on the Pinecrest Lake Loop trail near the north side of the dam)
	Pinecrest Peak	3 miles	Hiking Trail (between Catfish Lake and Pinecrest Peak)

.9 Beardsley Reservoir Complex

The Beardsley Reservoir Complex is a group of recreation facilities located on the MFSR near Beardsley Dam and about four miles northwest of Pinecrest. The complex is accessed from Highway 108 by taking USFS Road No. 5N02, a paved road, for about seven miles to the dam site. The complex is composed of a campground on the north side of the reservoir, a day use area with a boat launch on the south side of the reservoir, and a day use area located downstream of the dam. Each of these facilities is owned, operated and maintained by the STF, and no fees are required for use. Amenities at this complex are described in Table E7.3-5. The STF LRMP indicated that STF planned to rehabilitate five acres of the Beardsley Day Use Area in 1996 at an estimated cost of $150,000. According to STF staff, the Forest has not received the necessary funding and this work has not been done (pers. comm. Dave Martin, STF, October 25, 1999). Currently, the STF still has no funding to complete any of the work identified in the LRMP.

TABLE E7.3-5
Recreational opportunities at the Beardsley Reservoir Complex

Facility	*Name*	*Capacity*	*Comments*
Campground	Beardsley Dam	26 camp sites	Located on the north side of Beardsley; Reservoir near the dam at an elevation of about 3,400 feet. This primitive campground includes 26 fire rings and a vault toilet. No tables, formal parking, or water is provided.
Day Use Areas	Beardsley Day Use	22 picnic sites	Located on the south side of Beardsley Reservoir near the dam at an elevation of about 3,400 feet. This site includes 22 tables, 10 fire grills, and a flush toilet. A boat ramp is located at the site.
	China Flat Day Use Area	Informal parking for approx. 10 cars	Located on the north side of Beardsley Afterbay, accessible by vehicle from Beardsley Dam or trail. Parking and single vault toilet.
Trails	China Flat	0.5 mile	Hiking trail located on the north end of Beardsley Dam traversing down to the China Flat day use area near the Beardsley Afterbay.
	Trail at Beardsley Day Use Area	0.25 mile	Short hiking trail adjacent to the Beardsley Reservoir shoreline located between the beach and boat launch.
	Sand Bar Trail	5 miles	Hiking trail paralleling the MFSR downstream of Beardsley Afterbay. Used mainly for fishing access to the river between China Flat and Sand Bar

7.3.4.10 Fraser Flat Campground

The Fraser Flat Campground is located adjacent to the SFSR on Forest Service Road No. 4N01 off Highway 108 four miles west of Pinecrest at an elevation of 4,800 feet. The campground has 38 campsites with tables and stoves, and includes a vault toilet and drinking water. Two accessible fishing piers are associated with the campground. A daily fee is required. This campground is operated by the STF through a private concessionaire. No day use, group camping, or trailheads are associated with the complex.

7.3.4.11 Sand Bar Flat Campground

The Sand Bar Flat Campground is located adjacent to the MFSR on Forest Service Road No. 4N85 off Highway 108 eight miles west of Pinecrest at an elevation of 3,000 feet. The campground has 14 campsites with tables, fire rings with grills, vault toilets, and drinking water. The campground is operated by the STF. There are no facilities for day use, group camping, or trailheads associated with the complex.

7.4 Recreation Within the Zone of Potential Effect

7.4.1 Recreation at Relief Reservoir

Relief Reservoir can be accessed from Highway 108 by the one-mile paved road to Kennedy Meadow Resort and a three-mile trail along Relief Creek through the Emigrant Wilderness, or by a longer dirt road via Eagle Meadow and Silver Mine Creek roads (Forest Service Road No. 5N01). The reservoir is surrounded on three sides by the Emigrant Wilderness. There are no developed recreation facilities at the reservoir. Typical dispersed recreation use occurs, including hiking, camping, fishing, and hunting.

7.4.2 Recreation at Pinecrest Lake

Pinecrest Lake is the most popular recreation area on the Forest, and can be accessed from Highway 108 by the one and one-half mile paved Pinecrest Lake Road. The area features recreation residences, resorts, marina and developed recreation sites. Specific facilities are listed in the preceeding section in Table E7.3-4 and shown in Figure E7.3-3. Major activities are developed camping, picnicking, boating, fishing, hiking, and swimming.

Based on Licensee's 1997 FERC Recreation Report (Form 80), the annual total of daytime recreation days at the boat ramp and picnic area was 518,761, and the peak weekend average was 6,566. The estimated facility capacity was 70 percent at the boat ramp and 50 percent at the picnic area. Data from the 2000 recreation study is included in Section 7.5.2.

7.4.3 Recreation at Spring Gap Powerhouse

Spring Gap Powerhouse can be accessed from Highway 108 by approximately five miles of Forest Service system roads and an approximately one-mile long steep and winding road which is located entirely on land owned by the Licensee. The road is gated to vehicular use but the public may walk on the road to access the river. There are no developed recreation facilities, and there is little dispersed recreation due to the difficult access and steep topography.

7.4.4 Recreation at Stanislaus Forebay and Powerhouse

Stanislaus Forebay is accessed off Parrotts Ferry Road, via Camp Nine Road approximately eight miles from Parrotts Ferry Road, then turning south off Camp Nine Road onto Forest Service Road Nos. 3N03 and 4N05 for approximately six miles to the forebay. These Forest Service roads have dirt or gravel surfaces. The forebay site is mostly used by fishermen and there is a minor amount of dispersed camping that occurs at the site. A portable restroom was removed from this site in 2001 due to continued vandalism. Based on Licensee's 1997 FERC Recreation Report (Form 80), the annual total of daytime recreation days at the fishing access was 5,200, and the peak weekend average was 82. The estimated facility capacity was 60 percent. Data from the 2000 recreation study is included in Section 7.5.4.

Stanislaus Powerhouse is accessed off Parrotts Ferry Road via Camp Nine Road, a nine mile paved road to the powerhouse. There are no recreation facilities available at the site. However, there are fishing trails that run west to east, located on the south side of the powerhouse/ switchyard fence and along the canal.

7.4.5 Recreation at Sand Bar Diversion Dam

Sand Bar Diversion Dam can be accessed from Highway 108 by approximately seven miles of Forest Service system roads. There are no developed recreation facilities within the Project Boundary. The Sand Bar Flat Campground, which is near the Sand Bar Diversion Dam and part of the Sand Bar Project (FERC No. 2975), is operated by the STF and is outside of the Project Boundary. It has 14 sites and is open from May to November. Approximately six miles downstream of the Sand Bar Diversion there is a fishing access trail (Mount Knight Trail) to the MFSR that is maintained by the STF. It is a steep 2-mile trail between the end of the access road and the river.

7.5 Licensee's Studies

As stated in the Executive Summary to this application, Tri-Dam Project and PG&E Company (Licensees) coordinated the relicensing of their four Projects on the Stanislaus River watershed. To facilitate the relicensings, the Licensees formed a collaborative group known as the Stanislaus Planning Action Team, or SPLAT, in July 1999. SPLAT is open to any participant and the participants to date have included the Licensees; federal, state and local agencies; non-governmental organizations; local concerned groups; commercial enterprises; and private

individuals. All SPLAT activities are documented in the SPLAT Record, which can be viewed on the Stanislaus Relicensing Website (www.stanrelicensing.com).

Three major tasks undertaken by SPLAT were: 1) identifying relicensing issue questions; 2) determining if sufficient information existed in the historical record to answer the issue questions; and 3) if historical information was deemed not adequate, developing study plans to gather the necessary information needed to address the questions. Each study plan was formally submitted to FERC and can be found on the Stanislaus Relicensing website. The specific issue questions and study plans developed by SPLAT that pertained to recreation resources are listed in Table E7.5-1. The results of these studies are provided in this report.

TABLE E7.5-1
Recreation Issue Questions and study plans developed by SPLAT. For a listing of other Issue Questions and details of each study plan, refer to the Licensee's 2000 Study Plan Report.

Category	*Issue Question Designation*	*Issue Questions*	*SPLAT-Identified Study Plan*
Public Access	R-14	What is the public access on Project roads and trails?	Public Access Study
	R-22	Will additional access (roads, trails, etc.) be required in order to meet current and future recreation demand?	
Impacts Within the Project Boundary	R-3	Does the Project induce recreational uses, and if so what kinds, how much and where are they?	Pinecrest Lake Recreation, Relief Reservoir Recreation, Stanislaus Forebay Recreation and Pinecrest Lake Level Studies
	R-5	Does the Project include any recreational facilities? Are there opportunities for additional recreation? What are the projected demands? How would additional facilities be prioritized?	
Impacts Within the Project Boundary	R-6	Does the Project have direct impacts on recreation, and if so what?	
	R-11	Does the Project affect current levels of recreational use, and if so, which uses, and how?	
	R-21	What is the social and resource carrying capacity related to the Project's recreation areas? What would the carrying capacity be for various combinations of recreation use?	
	R-15	How accessible are the Project facilities to persons with disabilities?	
	R-13	What effect does the Project have on existing Pinecrest Lake levels? Should a rule curve be established for operation of the Pinecrest Lake?	
	R-17	How will the pool level of Pinecrest Lake (Strawberry Reservoir) be affected during the recreation season and at other times of the year? Can the draw down to levels that affect recreation be held off until later in the recreation season?	
	R-18	Can mitigation for public use around Pinecrest Lake be included, specifically, can restroom facilities along the lake loop trail and a means to collect and remove trash from around the lake be provided?	
	R-19	Can off-project camping and other recreational facilities be created to relieve pressure at Pinecrest?	
	R-2	Does the Project cause recreational impacts/benefits outside of the Project boundaries, and if so what are they?	Regional Recreation Study
	R-8	Does recreation at the Project affect Project or local economics, and if so how? What is the potential benefit to local community if boating (lake or river) at the Project increases? Are there opportunities to increase socio-economic benefits?	
Public Notices/ Information	R-9	Does the Project advertise/communicate recreation access points to the public, and is this advertisement/communication adequate or should it be improved?	None needed
	R-10	Does the Project advertise/communicate safety issues to the public, and is this advertisement/communication adequate or should it be improved?	
	R-16	What does the licensee do to provide public notice of public recreation opportunities?	
Sport Trout Fishing	R-20 (A-12)	Does the Project affect sport trout fishing between Spring Gap and Sand Bar Diversion?	

TABLE E7.5-1 (continued)

Category	*Issue Question Designation*	*Issue Questions*	*SPLAT-Identified Study Plan*
Reservoir Recreation	R-12	How is flatwater recreation on the Project reservoir managed and enforced? How should it be regulated?	Flatwater Recreation Management Study
Whitewater Recreation	R-4	Does the Project affect recreational whitewater boating/kayaking including access and if so, how? Does the Project create opportunities for recreational boating/kayaking and, if so, what and where are they?	Whitewater Boating and Availability of Boating Flow Information Studies
	R-7	Does the hydro Project provide information about whitewater boating flows, and if so, how? (e.g., is flow information available on a real-time basis?	

7.5.1 Public Access (Study 8.3.9)

Issue Questions Addressed – ***R-14 and R-22.*** *R-14: What is the public access on Project roads and trails? R-22: Will additional access (roads, trails, etc.) be required in order to meet current and future recreation demand?*

7.5.1.1 Study Objectives and Study Area

SPLAT recommended that the Licensee review the adequacy of the existing public access associated with the Project and determine if additional access to recreation opportunities is needed to meet current and future demand. SPLAT recommended that the study area include all Project access roads and trails to Project facilities from the facility to their intersection with another road or trail.

7.5.1.2 Study Methods

The Licensee's study methods conformed to methods recommended by SPLAT which were to: 1) complete an inventory of Project roads and trails within the study area including their conditions and capacity; 2) identify maintenance responsibility and standards; and 3) estimate current use of roads and trails.

A Project road is defined as a road maintained by the Licensee for Project purposes. There were five roads identified as Project roads however, in order to provide a complete description of how the public may access the Project, the Licensee extended this study beyond the Project roads to encompass the main routes of travel that provide access to the reservoirs. Since most of these roads are part of the Forest Service road system, the STF was contacted to determine applicable standards, condition, and estimated use for these roads. The Licensee inspected these roads on various dates during field visits in 2000 and 2001.

7.5.1.3 Study Results

Project Roads

There were five Project roads identified in completing the study: 1) the one mile long Spring Gap Powerhouse Road is a gated road located entirely on land owned by the Licensee leading to the Spring Gap Powerhouse from Forest Service Road No. 4N88, 2) the 1.3 mile long Forest Service Road No. 4N86 is a gated road that provides access to the Spring Gap Forebay, 3) the nine mile long Camp Nine road provides access to the Stanislaus Powerhouse from Parrots Ferry Road near Vallecito, 4) a 1.5 mile long section of Forest Service Road No. 4N05 provides access to the Stanislaus Forebay from Forest Service Road No 3N03, 5) the six mile long Forest Service Road No. 4N01 is considered a Project road (during the winter only) when the Licensee plows the road for access to the Spring Gap Forebay. The road is gated at during this time for public safety. Maps of these roads are provided in Figures E7.5.1 to E7.5.3 below.

The Licensee inspected the Spring Gap Powerhouse Road, 4N01 and 4N86 on October 30, 2000 and the Camp Nine Road and 4N05 on September 1, 2000. The Licensee's review of both the Project roads and non-Project roads revealed no road maintenance deficiencies and the results of the review are described in Section 2.6.4.

FIGURE E7.5-1
Road Nos. 4N01, 4N86, and Spring Gap Powerhouse Road, Spring-Gap Stanislaus Project.

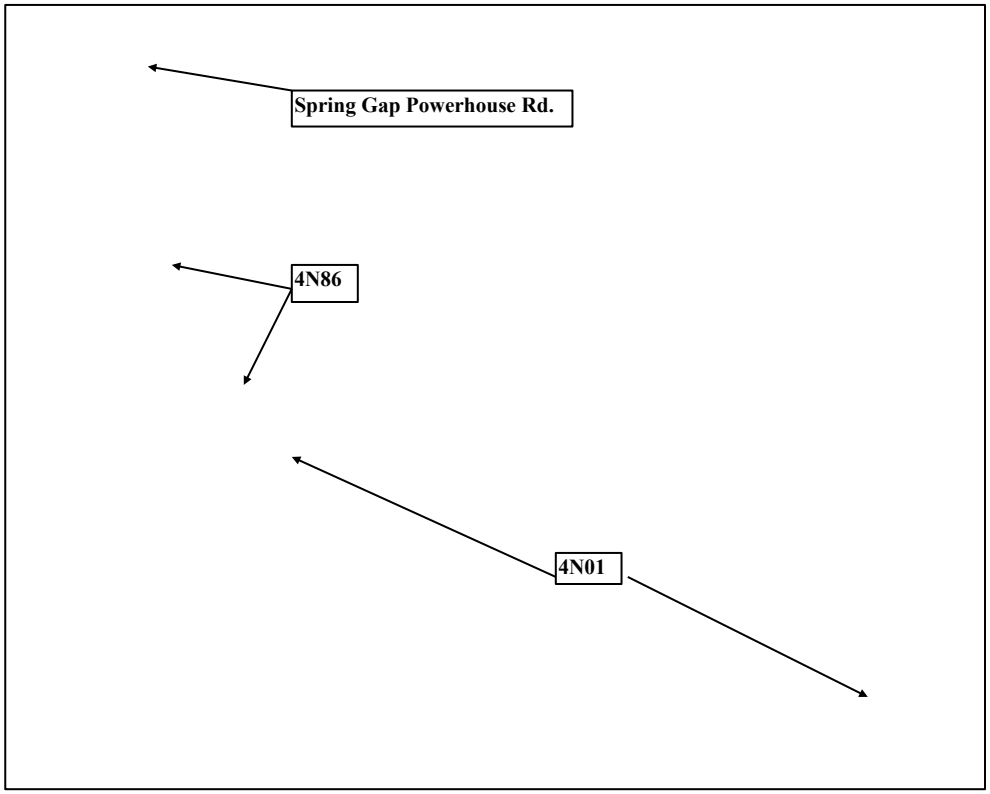


FIGURE E7.5-2
Camp Nine Road, Spring Gap-Stanislaus Project.

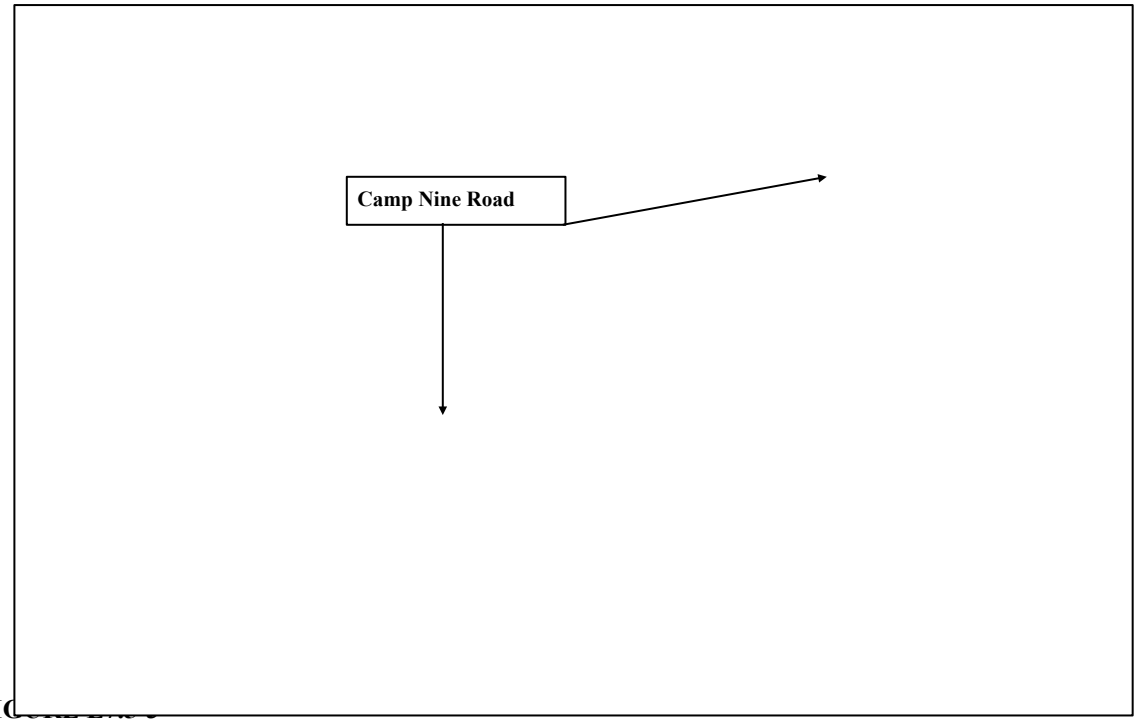
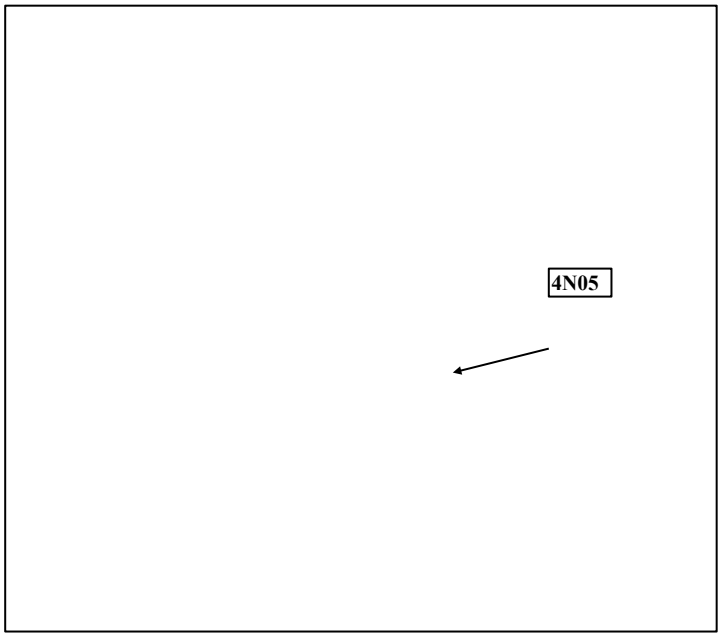


FIGURE E7.5-3
Stanislaus Forebay Road, Spring Gap-Stanislaus Project.



The Camp Nine Road is a rough, paved one-lane road with turnouts. It provides access to the MFSR arm of New Melones Reservoir near the Stanislaus Powerhouse. The road also provides access to private homes along the first mile of the road from the intersection with Parrots Ferry

Road. Although the road has a rough surface, it is easily passable to 2-wheel drive vehicles. The Licensee shares maintenance responsibility for this road with the Northern California Power Agency (NCPA). Located in the lower elevations of the Project, this road rarely receives snowfall and provides year-round access to the area. The road does not access any Project recreation facilities. The take-out location for the Mt. Knight whitewater boating run is also accessed by way of this road.

FS road 4N05 is a dirt surfaced one-lane road that provides vehicular access to Stanislaus Forebay. The road is rough and passable to 2-wheel drive during the dry months of the year and may be seasonally inaccessible due to snow or muddy conditions. There is one section of the road located on a turn near the forebay that has ruts and although passable it could cause damage to or high center a vehicle if a driver does not choose the path carefully. The Licensee maintains this road for access to Project facilities and it is classified by the STF as a level two road with an estimated use of less than 15 trips per day. The road provides access to the forebay, which is used, for recreational fishing however there are no developed Project recreation facilities at this location.

The Spring Gap Powerhouse road is a gravel surfaced one-lane road, which is located on land owned by the Licensee and terminates at the powerhouse. Public access by vehicle is not allowed because of the steep and narrow character of the road, however visitors are allowed to walk down the road to access the river. The Licensee maintains the road and the gate at the road intersection with FS road 4N88. The road leads to the Spring Gap PH which is located adjacent to the MFSR, however there are no developed recreation facilities at this location. Near the powerhouse there is a cable suspension footbridge across the river that connects with a fisherman's access trail on the north side of the river. The bridge is neither owned nor maintained by the Licensee.

Forest Service Road No. 4N86 begins at 4N39, passes through the compound of Project facilities at the Spring Gap Forebay and terminates at Forest Service Road No. 4N88. The road is a dirt surfaced one-lane road, which is essentially a short-cut route of travel from the Spring Gap Forebay to other Project facilities on the MFSR. In the past when the road was open to public vehicles, the Licensee experienced vandalism at their buildings located at the compound adjacent to the forebay. In order to prevent vandalism to their facilities and to provide for public safety, the road is gated at both ends to restrict public access to the Project facilities at the forebay. The Licensee maintains the road and the gates at either end of the road. This road is classified by the STF as a level one road because it is not open to the public. This road does not provide access to any Project recreation facilities, reservoir or reach.

The fifth Project road is Forest Service Road No. 4N01 which provides access to the Spring Gap Forebay from Hwy. 108. The road is gated during the winter months when the Licensee plows the road for access to Project facilities. During this time when the road is closed to public access, the road is considered a Project road. The maintenance standard for the road is level five

between Hwy. 108 and Fraser Flat Campground and level two between Fraser Flat and Spring Gap Forebay. Road maintenance responsibilities are shared between the Licensee and the STF. This road does not provide access to any Project recreation facilities.

Non-Project Roads and Trails

Other main routes of travel which are not Project roads yet provide access to Project facilities that the Licensee evaluated are listed below in Table E7.5-2.

TABLE E7.5-2
Other access roads and trails providing public access to the Project.

Road/Trail	*FS Maintenance Level*	*Location*
3N03	2	Between the Camp Nine Rd. near Stanislaus Powerhouse and 4N05 (access road to Stanislaus Forebay)
4N01	2	Between Hwy 108 approx. 1 mi. west of Cold Springs to the turnoff to Spring Gap forebay
4N88	2	Between 4N86 and Spring Gap Powerhouse Rd.
4N85	2	Between 4N88 and Sand Bar Diversion Dam
5N01	2 (8.9 miles) 3 (5.6 miles)	Eagle Meadow Road beginning at Hwy 108 near Niagara Campground to end (near Relief Reservoir)
Unclassified	2	Beginning at 4N13 and terminating at the Philadelphia Diversion Dam
Pinecrest Road	5	Between Hwy. 108 and Pinecrest (east end near fishing access)
Relief Trail	N/A	Between Kennedy Meadows and Relief Reservoir (3 miles)
Pinecrest Loop Trail	N/A	Trail encircles Pinecrest Lake, crosses the dam (4 miles)
Mt. Knight Trail	N/A	Trail from 4N01 to MFSR (fishing and whitewater boating access route to the river)

The seven non-Project roads that were evaluated are STF roads that are open to the public and provide general forest access for a variety of purposes including timber harvest, fire suppression as well as recreational activities. The Licensee inspected Forest Service Road No. 3N03 on September 1, 2000 and roads 4N01, 4N88, 4N85 and the unclassified access road to Philadelphia Diversion on October 30, 2000. The roads are maintained to their assigned maintenance levels.

Tuolumne County maintains the Pinecrest Road. This is a county road that provides the main route of access to Pinecrest Lake. In addition to access, there are numerous parking spaces and a county parking lot, which provide public parking for day users at the reservoir. The road is paved and is adequately maintained.

The STF is responsible for maintaining the other roads listed in Table E7.5-2. The Forest staff explained that roads with a level two maintenance standard receive general custodial care which is generally described as blading, cleaning out culverts and repairing waterbars once every three years. On occasion, the Licensee has voluntarily assisted the STF in maintaining these roads. No maintenance needs were identified during the Licensee's inspection.

Road 5N01 (Eagle Meadow Road) was not inspected by the Licensee however STF staff reports that there are no known outstanding maintenance needs on this road (pers. comm. Rusty LeBlanc, 4/11/02). The first 5.6 miles of road has a chip seal surface and the last 8.9 miles of

road has a native surface. This 14.5-mile road also provides access to numerous privately owned parcels of land. Many of the parcels have been subdivided into four to five-acre parcels with summer residences. Although the unpaved portion of the road has a level two maintenance standard, the homeowners maintain this portion of the road to a higher standard through a special use permit with the STF. This road also provides a route used by a few people for access to Relief Reservoir. Visitors with 4WD vehicles can drive their vehicles to the end of the road and hike down to Relief Reservoir, which is approximately one-quarter to one-half of a mile away. Although this means of access is feasible, the end of the road is extremely challenging and only a few visitors choose to use this route. The STF staff does not encourage vehicles in this area because of the proximity to the wilderness and has made a decision to decommission the last 0.1 mile of the road prevent vehicular access to this area (USDA 2002b). The Licensee has used this route of access on a few occasions to complete major maintenance activities and, upon completion of the work, has closed the road to prevent vehicular access to the reservoir.

The Licensee reviewed the condition of two non-Project trails that provide access to Project reservoirs and one non-Project trail leading to the MFSR. Site visits were conducted at the Pinecrest Loop Trail on August 10, 2000, the Relief Trail on September 6, 2000 and Mt Knight Trail on October 30, 2001.

The Pinecrest Loop Trail is a popular foot trail used by visitors to Pinecrest. It is a loop trail approximately four miles in length that encircles the Project reservoir and is partially within the Project boundary. The STF is responsible for maintenance of this trail and it is a designated National Recreation Trail. The trail has a few deficiencies such as erosion, deteriorating trail tread and poor signage. During the site visit the Licensee also observed trash along the trail that was left behind by visitors and evidence of improper disposal of human waste. The Licensee does not use this trail for access to its facilities however it is heavily used by visitors to Pinecrest Lake.

The Relief Trail is mainly used by hikers and pack stock for access to the Emigrant Wilderness. The trail extends approximately three miles between the trailhead at Kennedy Meadow and Relief Reservoir. The STF is responsible for maintenance on this trail and the Kennedy Meadow pack station also assists in maintaining the trail. The trail appeared adequately maintained. The Licensee's use of this trail is minor since the Licensee accesses Relief Reservoir primarily by helicopter to accomplish necessary maintenance.

The Mount Knight Trail is mainly a fishing access trail to the MFSR. Whitewater boaters have also used this trail to access the river. The trail is approximately two miles long and the STF is responsible for maintenance on this trail. The trail is long and steep however it appears to be adequately maintained.

7.5.1.4 Analysis and Discussion

The public has access to recreational opportunities by way of Project and non-Project roads and trails. The main recreation opportunities associated with the Project are at Pinecrest Lake, however dispersed recreation activities also occur along the Project stream reaches, Stanislaus Forebay and at Relief Reservoir.

Pinecrest Lake is easily accessed by Hwy. 108 and Pinecrest Road, which are both paved, two-lane roads that are adequately maintained by Tuolumne County. The Pinecrest Loop Trail provides access to the entire shoreline of this most popular recreation area on the STF. Although there are some maintenance issues on the trail, the location of this trail affords easy and abundant access to the Project reservoir.
The areas with occasional dispersed use near the Project include the Stanislaus Forebay and Canal, Philadelphia Ditch, the community of Strawberry, Clark Fork, Fraser Flat and Relief Reservoir. The public can easily access these areas by using the STF road and trail system, which includes the ungated Project roads, and these routes are adequately maintained to allow two-wheel drive access during the recreation season. The public is also allowed to use the gated Project roads but vehicles are prohibited.

Public access to Relief Reservoir is probably the most challenging since there is only trail access to the shoreline. Vehicular access by way of Eagle Meadow is also challenging and ends approximately one-quarter of a mile from the shoreline. Since there are no developed recreation facilities at Relief Reservoir and it is adjacent to the wilderness, it is appropriate and consistent with STF direction that access to this area should be restricted to foot and pack stock means of travel. The trail is adequately maintained to allow this means of public access.

The Camp Nine Road currently has a rough surface from years of patching potholes and it is likely that the road will need to be resurfaced in the near future. The decision to resurface the road will be made considering the terms of the road maintenance agreement with the Licensee, NCPA and Calaveras County Water District. Under this agreement the scope of work needs to be agreed to by all parties before undertaking the maintenance activity and once agreed to, the cost would be shared equally between the Licensee and NCPA. Consequently, the decision to resurface the road involves the Licensee as well as other parties.

Project road 4N05 has one section near the Stanislaus Forebay that may require maintenance to achieve safe access for the public to Stanislaus Forebay. Although this is a level two road, it should be maintained to allow the public's safe travel to the reservoir.

An appropriate level of access currently exists to all of the Project reservoirs. Where it is safe and consistent with STF LRMP direction, the public has vehicular access to Project reservoirs. Relief Reservoir is the only Project reservoir with no vehicular access however a trail provides the public with access consistent with LRMP direction. As the population in California continues to grow, there will likely be higher recreation use in the vicinity of the Project in the future. Although there may be higher use, there will be no new recreation opportunities

associated with the Project (i.e., no new reservoirs or features). In addition, respondents to recreation interviews did not indicate a need for new developed Project recreation facilities that would require access beyond what currently exists (see Section 7.5.2).

7.5.1.5 Conclusions

With adequate existing access and no additional recreation facilities anticipated in the future, the current routes of access will be adequate to meet future recreational access needs. In general, it is the roads and trails within the STF system, and not the Project roads, which provide access to the Project. The Licensee shares in the maintenance of some of the roads and, with the exception of a short segment of 4N05, they are all maintained to a standard that allows adequate access for the public.

Opening the Project roads that are presently closed to public vehicular access would not provide additional access routes for the public to recreational opportunities. Although this action might result in easier access for the public, the decision to restrict public vehicular access on these roads was based on public safety, and this circumstance has not changed since it was originally determined to restrict access. Public safety considerations include both the presence of Project facilities as well as the design of the roads that are narrow and steep with few turnouts; these roads are not designed to accommodate recreational use. Additional access will not be needed in the future since all of the Licensee-proposed recreation facility improvements are located at existing recreation sites. Pedestrian access to Relief Reservoir is appropriate and adequate.

7.5.2 Pinecrest Lake Recreation Study (Study 8.3.8)

The Pinecrest Lake Recreation Study was designed to answer many issue questions that overlapped with other studies (Pinecrest Lake Level and Regional Recreation). The list of all issue questions addressed by this study are included here for comprehensiveness however, the answers to some of these questions are included in the conclusion sections of the other studies as noted below.

Issue Questions Addressed – R-2, R-3, R-5, R-6, R-11, R-13, R-15, R-17, R-18, R-19 and R-21. *R-2: Does the Project cause recreational impacts/benefits outside of the Project boundaries and if so, what are they? R-3: Does the Project induce recreational uses and, if so, what kinds, how much and where are they? R-5: Does the Project include any recreational facilities? Are there opportunities for additional recreation? What are the projected demands? How would additional facilities be prioritized? R-6: Does the Project have direct impacts on recreation and, if so, what? R-11: Does the Project affect current levels of recreational use and, if so, which uses and how?* (see Pinecrest Lake Level Study) *R-13: What effect does the Project have on existing Pinecrest Lake levels? Should a rule curve be established for operation of the Pinecrest Lake?* (see Pinecrest Lake Level Study) *R-15: How accessible are the Project facilities to persons with disabilities? R-17: How will the pool level of Pinecrest Lake (Strawberry Reservoir) be affected during the recreation season and at other times of the year? Can the draw down to levels that*

affect recreation be held off until later in the recreation season?" (see Pinecrest Lake Level Study) *R-18: Can mitigation for public use around Pinecrest Lake be included specifically, can restroom facilities along the lake loop trail and a means to collect and remove trash from around the lake be provided? R-19: Can off-Project camping and other recreational facilities be created to relieve pressure at Pinecrest? R-21: What are social and resource carrying capacities related to the Project's recreation areas? What would the carrying capacity be for various combinations of recreation use?*

The subjects of these issue questions have been organized in five categories: 1) Existing Facilities and Opportunities, 2) Current Recreational Use, 3) Future Demand and Needs, 4) Carrying Capacity and 5) Additional Facilities.

7.5.2.1 Study Objectives and Study Area

In general, SPLAT recommended that issue questions related to the reservoirs and forebays be addressed by conducting a suite of recreational studies including: 1) facility inventory; 2) existing use estimates; 3) demand surveys; 4) carrying capacity estimates (this study was modified from the original Pinecrest Reservoir Recreation Study Plan and was subsequently approved by SPLAT); 5) needs assessment; and 6) facility suitability. The study area included the area surrounding Pinecrest reservoir.

7.5.2.2 Study Methods

The Licensee's methods conformed to methods recommended by SPLAT. These were to: 1) identify existing recreational facilities and opportunities; 2) estimate current use; 3) identify future demand and needs; 4) estimate carrying capacity; and 5) if appropriate, identify potential additional facilities.

Existing Facilities and Opportunities

The Licensee identified recreational opportunities and facilities at Pinecrest Lake by visiting the reservoirs and the existing facilities. Pinecrest Lake is the only Project reservoir with developed recreation facilities; however, these were constructed and are maintained by the STF and are not Project recreation facilities. The Licensee evaluated these STF facilities for accessibility using the proposed guidelines of the U.S. Architectural and Transportation Barriers Compliance Board, which is consistent with Forest Service policy (USDA 2000).

Current Recreational Use

The Licensee estimated recreational use using three methods: 1) the Licensee's direct observations of recreation activity and resource impacts; 2) the Licensee's face-to-face interviews of recreationists and; 3) responses to a mail-in questionnaire.

The study plan called for observations and interviews on two weekdays, three weekends, and three holiday weekends. At Pinecrest Lake, the locations for observations and interviews were the Pinecrest Day Use Area, Pinecrest Loop Trail and the Pinecrest Campground. Surveys dates and times were randomly selected from Memorial Day through Labor Day. During the summer of 2000, the Licensee completed observations and interviews on two weekdays (Thursday, July 13, 2000 and Thursday, September 21, 2000), eight weekends (June 2-4, 2000, September 15-17, 2000 and every Saturday, September 23 through October 28) and three holiday weekends (Memorial Day Weekend, May 26 through 28; July Fourth Weekend, June 30 through July 4; and Labor Day Weekend, September 1 through September 4). A single "observation" was considered to be one observer visiting any of the sites at Pinecrest Lake listed above and counting the number of recreationists observed at this location and noting the activity of each recreationist. Once all the recreationists were counted in a location, the observation was considered complete. Most observations took between 5 and 40 minutes. A copy of the observation survey form is included in the Appendix.

During the course of performing direct recreation observations, the Licensee conducted face-to-face interviews with 204 randomly selected recreationists and completed a questionnaire for each interview. The questionnaire included 33 questions, which were reviewed by STF and approved by SPLAT prior to the study, including questions that provided an opportunity for the respondent to offer general comments. A copy of the questionnaire form and the summarized data is included in the Appendix.

Additional information was also obtained through 230 mail-in questionnaires that were sent in October 2000 to over 400 private individuals and commercial businesses that have Special Use Permits with the STF at Pinecrest. This questionnaire included 20 questions related to patterns of use, sense of crowding, aesthetic quality of the reservoir and desired management changes and included an opportunity for providing general comments. A copy of the questionnaire form is included in the Appendix.

The method the Licensee used to estimate recreational boating use at Pinecrest Reservoir was a series of aerial surveys to count active watercraft on the reservoir surface. This consisted of four fixed-wing flights over the entire reservoir around 9:00 in the morning and 1:30 in the afternoon on two Saturdays: June 30 and July 28, 2001. The June 30 date was chosen to represent a holiday summer weekend (Fourth of July) and July 28 was chosen to represent a non-holiday summer weekend. All watercraft that were on the reservoir surface and not in docks or moored were counted, and pictures were taken to document use patterns. The Tuolumne County Sheriff also provided boat counts to the Licensee from aerial surveys they performed for 2000 and 2001.

Future Demand and Needs

The methods used by the Licensee to assess future demand and needs included the recreation user interviews and reviews of existing Forest Service, county and state plans and the publication Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends (Cordell 1999).

Carrying Capacity

Developing a carrying capacity estimate is a component of the Pinecrest Reservoir Recreation Study. During the course of completing the study, the Licensee met with the STF to further define the task to address the agency's concerns at Pinecrest Lake. The STF identified their concern to be focused on the effects of changing the mix of recreation uses and not on the capacity of the reservoir surface or recreation facilities. Based on consultation with the STF, the study focused on trading-off the uses which require the most space to allow for more uses that are less space-intensive. The three potential changes in management that were evaluated in this study were: 1) eliminating large motor boats (i.e., party boats) from the reservoir, 2) zoning the beach between the point on the west shore and the fishing pier on the south shore for swimming only and remove the boat moorings and 3) creating more parking.

Additional Facilities

The methods used to assess the need for additional facilities included gathering and analyzing the responses to the recreation user interviews that indicated what recreational facilities the respondents would like to see at Pinecrest Lake. Responses to the mail-in questionnaires and the Licensee's site inspections were also included in the analysis. Consultation with the STF staff and a review of their LRMP were used to evaluate the appropriateness and prioritization of additional facilities.

7.5.2.3 Study Results

Existing Facilities and Opportunities

The recreational opportunities and facilities at Pinecrest Lake are described in detail in Section 7.3.4.

Pinecrest Lake is the most popular recreation areas on the STF with many developed recreation facilities including campgrounds, day use area, boat launch, resorts, and recreation residences. These developed facilities include amenities such as potable water, flush toilets and nearby commercial stores that are attractive to visitors desiring a high level of comfort and convenience. The busiest season of use is during the summer however there are also visitors to the area from the Dodge Ridge Ski Area which is located less than five miles away from Pinecrest. The campgrounds usually open on the first or second weekend in May and close in October.

Occupancy levels for the campgrounds at Pinecrest from 1998 to 2001 are shown on Table E7.5.3 below.

TABLE E7.5-3
Occupancy data for the Campgrounds at Pinecrest.

Period of Time/weekend or weekday	*% Occupancy of Campgrounds at Pinecrest*											
	1998			*1999*			*2000*			*2001*		
	PC[1]	*MV*[2]	*PI*[3]	*PC*	*MV*	*PI*	*PC*	*MV*	*PI*	*PC*	*MV*	*PI*
Before Memorial Day												
weekday	8	30	3	8	13	0	6	40	0	10	N/A	N/A
weekend	9	0	16	22	0	N/A	15	closed	0	25	N/A	N/A
Memorial Day to Labor Day												
weekday	70	60	40	72	64	51	73	29	34	79	63	N/A
weekend	84	80	88	91	88	89	91	42	70	96	87	N/A
After Labor Day												
weekday	34	15	15	N/A	N/A	N/A	11	closed	0	27	N/A	N/A
weekend	42	3	44	N/A	N/A	N/A	38	closed	83	88	N/A	N/A

[1]Pinecrest Campground
[2]Meadowview Campground
[3] Pioneer Group Campground

The Licensee reviewed the STF facilities at Pinecrest Campground, day use area, and boat launch to evaluate their condition and accessibility to persons with disabilities. The Licensee inspected these areas on May 17, 2001. The results of the accessibility assessment are included in the Appendix.

1. Pinecrest Campground – The facility was constructed in the 1960's and is maintained by the STF. There are 200 units with spurs, fire rings and tables. Potable water is available and trash receptacles are provided. The restrooms are in good condition but many do not meet accessibility standards because of the approach, slope barriers, door width and fixtures. The STF has received funding to retrofit two of the restrooms but there are still deficiencies within the campground. New accessible paths have been constructed that connect the campground to the day use area and commercial businesses. Many paths of travel within the campground that connect campsites with the restrooms, water or trash receptacles have broken and cracked asphalt and slopes that exceed accessible standards. Some of the campsites have spurs with deteriorating asphalt surfacing and some spurs are too short to accommodate recreational vehicles. Some of the wooden barriers along the access road are broken or missing. The STF has replaced the fixtures on the water spigots with accessible handles and installed accessible picnic tables at many of the campsites. The Pinecrest Campground is operated and maintained by a concessionaire through a permit from the STF. Under the terms of the permit, the concessionaire collects all fees and is responsible for 'tenant' types of maintenance (i.e., repairing locks/restroom fixtures, painting). In addition, the concessionaire may, with permission from the Forest Service, elect to offset up to 25 percent of the fees due to the STF per year by replacing

worn infrastructure in the campground. The STF has listed Pinecrest Campground as its number one priority on the Forest's Accessibility Action Plan (USDA 1999).

2. Pinecrest Day Use Area – The day use and facilities restrooms were constructed and are maintained by the STF. The day use area includes picnic sites, trail, restrooms, amphitheater and fishing access pier. The picnic sites are clean and well maintained by the STF. The STF has installed accessible tables at some of the sites. New paths were constructed in the day use area in 1999, which are accessible, however there are drinking fountains and benches adjacent to the path that do not have a connecting surface to the path. Some modifications have been made to increase accessibility but there are deficiencies such as approach, fixtures and door width. The restrooms are clean and well maintained however the sinks, toilets, floors, walls and hardware appear dated and worn. The amphitheater is not accessible to persons with disabilities and the STF has funding to rebuild this facility in 2002 and 2003. The fishing access pier is well maintained by the STF and it is accessible to persons with disabilities. Several deficiencies were noted on the Pinecrest Loop Trail. These include: areas of erosion, poor signage, trash along the trail, evidence of improper disposal of human waste near the trail to Cleo's Bath, and unmaintained trail tread and waterbars. The STF has listed Pinecrest Day Use Area as the number two priority on the Forest's Accessibility Action Plan (USDA 1999).

3. Boat Launch – The boat ramp was constructed by and is maintained by the STF. The boat launch has a paved ramp and courtesy dock located near the marina and day use area, which are both in good condition. The length of the boat ramp provides paved launch access during the recreation season and as the reservoir lowers in the fall, becomes unusable in early October. The courtesy dock is not accessible to persons with disabilities and it is also out of the water at the end of the recreation season when the reservoir level is low.

Current Recreation Use

The Licensee performed a total of 211 observations of recreational use at the Pinecrest Campground, day use area and loop trail over the course of 29 days. In general the observations at the reservoir showed that the highest period of use occurred in the afternoon and more people were observed at the reservoir on weekends and holidays than on weekdays. On the reservoir surface the most frequently observed activities were motorized boating, sailboating and paddle boating. Based on the observation data, the percentage of the type of watercraft observed were: motorized boats 51.9 percent, motorized party boats 7.2 percent, non-motorized kayaks, canoes and row boats 16.9 percent, sailboats 7.9 percent, and paddle boats 16.1 percent. Speed restrictions on the reservoir do not allow high-speed boating activities such as waterskiing, and personal watercraft (PWC) use are not permitted to operate on the reservoir. Along the shoreline fishing, swimming and sunbathing were the most frequently observed activities and the loop hiking trail around the reservoir receives a high level of use. Adjacent to the reservoir, many visitors enjoy the reservoir by camping at the 200-unit Pinecrest Campground. A detailed summary of the direct observation data is provided in the Appendix.

The Licensee conducted two types of recreation surveys to capture differences in attitudes and preferences between two users groups. These groups are 1) special use permit holders including recreation residence owners and commercial recreation businesses and 2) visitors to the area that are staying in campgrounds or visiting for the day. The surveys mailed to special use permit holders and returned to the Licensee are referred to in this report as '*questionnaires*' and the on-site surveys by the Licensee at different locations with recreation activity are referred to as '*interviews*'. Notable differences exist between these two groups. Questionnaire respondents have a broader perspective of Pinecrest Lake since many of the respondents have been coming to the area for generations; they have seen changes in use patterns over time. Additionally, the attitudes and preferences of this group are based, for most users, on multiple visits to the area during different times of year. This group of users has more of a residential perspective of the area as opposed to those interviewed who may only visit the area once during the year as their family vacation.

The Licensee conducted face-to-face interviews with 204 recreation users over the course of 29 days. In general, the age of the median respondent was between 41 and 50 years with a median party size of four to six people. The primary activity and secondary activities identified by most users was resting and relaxing. This can be viewed as a general response that does not provide specific activity information; the second most common primary and secondary activities were fishing and hiking. The overall visitors' average length of stay was two days. For those visitors staying overnight, the average length of stay was three nights. As part of the recreation user questionnaire, visitors were asked to provide their place of residence. The cities listed by the visitors were grouped by regional area and this data is presented in Table E7.5-4 below. A more detailed summary of the recreation user interviews is provided in the Appendix.

TABLE E7.5-4
Percentage of visitors by regional origin based on 204 interviews by the Licensee at Pinecrest Lake in 2000.

Regional Origin of Visitors	
California-Bay Area	35%
California-Central Valley	34%
California-Southern	4%
California-Northern	2%
California-Central Foothill/Mountain Communities	22%
Unknown and Out-of-State	2%

Pinecrest Lake receives high visitor use especially on holidays, and visitors experience crowding. Day users, in particular, have a difficult time finding parking. Considering this circumstance, the questionnaire included a question about whether visitors would be willing to park at another location and ride a shuttle to Pinecrest Lake. Thirty five percent responded that they would be

willing to park and take a shuttle to the area, 59 percent said they would not and 6 percent did not answer the question. The main reason people gave for not wanting to take a shuttle was inconvenience.

User satisfaction ratings were generally high. On a scale of ten, the average rating for the most popular activity, fishing was 8.2 and the average overall rating was 9.1.

Of the 400 questionnaires that the Licensee sent to Special Use Permit holders at Pinecrest Lake, 230 responses were received. The age of the median respondent was between 61 and 70 years of age and most respondents visited their vacation residence or operated their business in July and August. Their use during the winter months from November to April is approximately half of that which occurs in July and August. The primary consideration respondents cited for determining their visits to Pinecrest Lake was season of year or climate. Similar to the recreation users, the most popular activities that the respondents enjoy at Pinecrest Lake include boating and fishing. Sailboating was more popular with this group of users than the respondents to the Licensee's face-to-face interviews conducted at the reservoir.

The effects of the lowering reservoir level were identified in the responses to the question on the mail-in questionnaire, "*Are there any activities that you enjoy participating in at Pinecrest Lake that are affected by the level of the lake?*" There were 230 completed surveys returned to the Licensee; 133 of the survey responses to this question were 'no' or a response was not provided on the survey form. There were 102 affirmative responses on the survey forms of which 33 comments (32% of the affirmative responses) said that boating and swimming become dangerous activities as the lowering reservoir level exposes rocks. There were 30 responses (29% of the affirmative responses) which stated that boating and fishing become restricted when the boat ramp is out of the water and 13 (13% of the affirmative responses) stated that swimming areas become muddy and unattractive.

The questionnaire also had specific questions addressing the aesthetic quality of the reservoir at various times of the year. In general, most respondents were pleased with the visual quality of the reservoir during the summer months from Memorial Day weekend through Labor Day. A summary of the responses to the question regarding the visual quality of the reservoir during the year is presented in Table E7.5-5 below.

TABLE E7.5-5
Summarized results of 230 responses (in terms of percentage of responses) to mail-in questionnaires regarding the visual quality of Pinecrest Lake.

Description of Visual Quality	*Percent of Responses by Time of Year*								
	Jan. 1	*Mar. 1*	*May 1*	*Memorial Day Weekend*	*Fourth of July*	*Aug. 1*	*Labor Day Weekend*	*Oct. 1*	*Dec. 1*
Lake is full/no high water mark visible and visually pleasing	3	4	26	71	56	25	7	0	0
Lake is mostly full/only slight drop in lake elevation but still visually pleasing	0	3	20	7	20	43	28	7	.1

Lake is drawn down/high watermark is noticeable and beginning to interfere with visual enjoyment	.1	7	5	.1	.1	13	34	27	2
Lake is drawn down/high watermark is apparent and disturbs visual enjoyment	6	10	2	.1	0	1	11	30	13
Lake is at minimum level/high watermark dominates the view/visually unattractive state	33	16	1	0	0	0	.1	9	45
N/A - don't notice the lake level	13	12	5	2	2	2	2	6	10
No Response	45	48	41	20	22	16	17	20	29

General comments were also received regarding the reservoir fluctuation. There were 39 comments from respondents that indicated that they enjoy the reservoir when it is drawn down. They stated that it is visually pleasing to them when it is covered with snow and it provides an area for sledding and cross-country skiing. A detailed summary of the responses to the mail-in questionnaire is provided in the Appendix.

Pinecrest Lake is the most heavily used recreation area on the STF and the vast number of visitors to the reservoir, particularly on holiday weekends, made counting visitors and their respective activities difficult. Because of this, the Licensee reviewed other data sources including the STF use estimates for 1996 to 2000, and the use data from 1998 to 2001 for the Pinecrest, Meadowview and Pioneer campgrounds to develop the visitor use estimates. Information from these two sources is discussed below followed by the Licensee's recreation use estimate for Pinecrest Lake.

Table E7.5-6 below summarizes the use estimates for 1996 through 2000 provided by the STF staff. These estimates were developed from STF staff observations and campground use information received from the campground concessionaire which assumed five people per campsite in the campgrounds and five people per car in the day use area.

TABLE E7.5-6
STF data for estimated annual use at Pinecrest facilities.

	Number of Visitors					
	1996	***1997***	***1998***	***1999***	***2000***	***Average***
Pinecrest Campground	79,000	89,800	87,300	80,500	79,500	83,220
Meadowview Campground	41,500	42,900	38,800	36,000	33,700	38,580
Pioneer Group Campground	5,800	4,300	4,800	4,500	4,500	4,780
Pinecrest Day Use Area	219,000	221,000	209,000	not available	203,000	213,000

Table E7.5-7 below summarizes the use estimates for 1998 through 2001 provided by Dodge Ridge, which is the concessionaire that has operated the STF campgrounds at Pinecrest during this period of time. These estimates were developed assuming five people per campsite in the campgrounds.

TABLE E7.5-7

Estimated annual overnight use at Pinecrest, Meadowview and Pioneer Campgrounds from concessionaire (Dodge Ridge) data.

	Number of Visitors				
	1998	***1999***	***2000***	***2001***	***Average***
Pinecrest Campground	94,715	78,570	94,230	92,925	90,110
Meadowview Campground	36,535	34,255	33,900	32,530	34,305
Pioneer Group Campground	9,750	9,000	5,700	not available	8,150

Although the above data could be used to estimate use, there appears to be some variation in these use figures from the different sources. The Licensee considered this data and evaluated the observation data collected as part of the Pinecrest Lake Recreation Study Plan to estimate use levels and determined that a more accurate estimate could be prepared using campground use data and responses to the interview questions conducted at the Pinecrest day use area and Pinecrest Loop Trail. This approach is more desirable than using the observation data for the following reasons. First, the observations were difficult to complete because of the high density of people on the beach and day use sites at the lakeshore. In some cases the observer reported use counts for only one-third of the beach area because it was not physically possible for the observer to view and count all of the persons sitting side by side on the beach; it was simply too crowded. The effects of this alone may account for the observation data being three times less than the estimates calculated by using data from the STF and the campground concessionaire. Secondly, in the campground, the observers were not always able to see visitors that may have been in tents, campers, recreational vehicles or otherwise out of view. Also, use counts were not conducted at Pioneer and Meadowview campgrounds. And finally, the campground use estimates provided by the concessionaire have a high degree of reliability since accurate record keeping is required under the terms of their Special Use Permit to operate the campgrounds.

The estimated annual use at Pinecrest is a composite of overnight and day use visitors. Overnight visitors stay at the three nearby campgrounds listed in Table E7.5-7, private cabins or homes, private resorts and organization camps. Day use visitors travel to the area from their homes in nearby communities. Overnight use from the campgrounds can be most accurately estimated from the campground concessionaire use data. These figures are listed above in Table E7.5-7.

The remaining components of recreation use are estimated based on the responses to the interviews conducted at the Pinecrest day use area and the Pinecrest Loop Trail. Analysis of the data with regard to party size for each respondent show that 293 of the visitors represented by the interview respondents stayed at one of the three campgrounds listed in Table E7.5-7. The remaining 913 visitors were visiting the area for the day or staying at cabins, homes, private resorts and organization camps. This number of people is approximately three times the number of people who are staying in the campgrounds. Assuming all of the visitors in the campgrounds are visiting the day use areas at Pinecrest Lake, it is reasonable to assume that the campground estimates from the concessionaire data accurately estimates the proportion of day use attributed to visitors staying at in the campgrounds. Based on the interview responses, the remainder of the

day use can be estimated proportionate to the estimated campground use. Using this approach, the recreation use estimates for Pinecrest Lake are calculated below in Table E7.5-8.

TABLE E7.5-8
Licensee's estimated annual recreation use at Pinecrest Lake.

	Number of Visitors				
	1998	***1999***	***2000***	***2001***	***Average***
Pinecrest Campground	94,715	78,570	94,230	92,925	90,110
Meadowview Campground	36,535	34,255	33,900	32,530	34,305
Pioneer Group Campground	9,750	9,000	5,700	not available	8,150
Estimated day use from visitors staying in the campgrounds					132,565
Estimated day use from day users and visitors staying at private cabins/homes, private resorts, organization camps Ratio of these users to day users staying in the campgrounds is 3:1 (132,565 visits X 3)					397,695
Estimated Annual No. of Visits					530,260

During the course of completing the recreation studies the Licensee had many visits to Pinecrest at various times of the year and discussed recreation use at Pinecrest with the STF staff. These opportunities afforded the Licensee with direct observations of recreational use and an understanding of the management issues that the STF staff face in managing this important recreational area that are not captured in visitor surveys. The sheer numbers of people that visit Pinecrest cause a variety of management issues that the STF staff deal with on a daily basis. Parking and traffic circulation cause frustration to many users. As described in the Land Management and Aesthetics section of the application, high visitation also translates into law enforcement problems such as parking violations, illegal fires, vegetation and environmental damage, vandalism, drug use and theft. The STF must also manage conflicting uses as space for individual activities becomes limited. Examples of this are dogs off of leashes, swimmers in the mooring areas, and fishing near swimmers, noise from the campers affecting the enjoyment of recreation residence owners and vice versa.

The STF struggles with requests for additional recreation development from permit holders however they realize that there are physical limitations at Pinecrest and that building additional facilities will not solve their management problems. The Licensee understands the STF's assessment of Pinecrest Lake to be that: (1) the current summer recreation use is too high for what can be safely and environmentally provided, (2) the recreation facilities are in need of replacement because they are old, outdated, there are issues of health and safety and do not meet visitor expectations, (3) the high use causes law enforcement and management issues that exceed what the agency can handle at their current funding level, and (4) visitor use will continue to be high at Pinecrest however, actions to improve visitor information and providing additional opportunities away from Pinecrest may provide visitors with alternative areas to enjoy the Forest.

Future Demand and Needs

Literature Research on Recreation Trends and Forest Service, County and State Plan Review

The publication Outdoor Recreation in American Life: A National Assessment of Supply and Demand Trends (Cordell 1999) discusses trends and forecasts demand for recreational activities at both national and regional levels. Nationally, the trends and future projections point toward continued increases in the number of participants, trips, and activity days for outdoor recreation across almost all types of recreation activities. Land-based activities, rather than activities that occur on water or snow and ice, constitute the largest single category of outdoor recreational participation. Land-based activities experiencing the most growth since 1982 include bird watching, hiking, backpacking, primitive area camping, off-road driving and walking. Activities experiencing declining trends in popularity include fishing, hunting, sailing and horseback riding. Although these activities are declining in popularity, there are still increasing numbers of users participating in fishing, sailing and horseback riding; hunting is experiencing a decline in popularity as well as a decline number of participants projected in the future. Water-based activities experiencing the most growth since 1982 include motorboating, swimming and water skiing; across all forms of recreation, swimming ranks among the top five in overall popularity.

Regionally, the Pacific Coast will see the greatest number of activities (75%) for which primary-purpose trips will grow faster than the population. The findings in this report conclude that for water and land-based activities there will be a general shift toward fewer primary-purpose trips per capita while at the same time there will be more days spent on these activities as well as more participants in these activities. The projected growth in various recreational activities is summarized below in Table E7.5-9.

TABLE E7.5-9
Baseline estimates (1995, in millions) and projected indexes of change in participation for activities in the Pacific region from 1995 to 2050[1].

	Projection Index						
	1995	***2000***	***2010***	***2020***	***2030***	***2040***	***2050***
Water-based Activities							
Canoeing	1.2	1.06	1.21	1.30	1.51	1.69	1.89
Motorboating	6.3	1.07	1.22	1.32	1.52	1.69	1.88
Non-pool swimming	11.6	1.06	1.19	1.29	1.43	1.57	1.72
Rafting/Floating	2.3	1.05	1.2	1.3	1.52	1.73	1.97
Visiting Beach or waterside	20.70	1.08	1.21	1.33	1.46	1.6	1.72
Fishing	7.5	1.05	1.12	1.20	1.23	1.30	1.38
Hunting	1.7	0.94	0.85	0.79	0.73	0.67	0.64
Non-consumptive Wildlife Activities	16.70	1.08	1.23	1.37	1.52	1.65	1.77
Land-based Activities							
Backpacking	3.80	1.05	1.12	1.23	1.24	1.34	1.46
Hiking	1.09	1.08	1.23	1.34	1.53	1.67	1.85
Horseback riding	2.40	1.05	1.18	1.29	1.46	1.61	1.77

Off-road driving	4.70	1.04	1.10	1.20	1.20	1.26	1.33
Primitive camping	5.60	1.05	1.13	1.23	1.27	1.35	1.44
Rock Climbing	1.70	1.03	1.06	1.16	1.12	1.21	1.34
Biking	9.80	1.06	1.19	1.29	1.41	1.53	1.65
Developed camping	8.80	1.06	1.19	1.32	1.45	1.59	1.73
Family gathering	19.30	1.07	1.20	1.30	1.42	1.54	1.65
Picnicking	15.80	1.07	1.20	1.31	1.44	1.54	1.63

TABLE E7.5-9 (continued)

	Projection Index						
	1995	***2000***	***2010***	***2020***	***2030***	***2040***	***2050***
Land-based Activities							
Sightseeing	18.50	1.09	1.26	1.42	1.58	1.74	1.87
Visiting Historic Places	13.80	1.08	1.22	1.33	1.46	1.58	1.68
Walking	133.70	1.03	1.12	1.21	1.30	1.39	1.46

[1]Cordell 1999

The STF LRMP also provides estimates of supply and demand for recreational resources. The report concludes that the Forest has the capacity to provide additional developed recreation opportunities that would provide for an estimated 3.6 million RVD's and additional dispersed recreation opportunities that would provide for an estimated 5.1 million RVD's. Projected recreation use by the year 2040 for developed and dispersed recreation is estimated to be 3.8 and 3.1 million RVD's, respectively. From this data it is expected that by 2040 the demand for developed recreation opportunities will exceed the supply by 214,000 RVD's per year if all potential developed sites are constructed. The excess use may overflow onto adjacent dispersed areas that may not be able to withstand the increased use such as Herring Creek. However, the STF LRMP states that the potential capacity for dispersed recreation on the STF can accommodate the predicted dispersed use. The management emphasis for developed recreation sites identified in the LRMP includes: picnic areas, campgrounds, parking areas, boat ramps, visitor information centers, vistas and overlooks, resorts, organization camps and recreation residences.

In 1979 the STF prepared a planning document, *Pinecrest-Herring Creek Recreation Composite Study* to respond to projected growth in recreational demand at Pinecrest. Although more recent planning decisions by the STF have been documented in the LRMP, the STF referred the Licensee to this earlier planning document to provide background information and an understanding of the STF's emphasis on recreational development to respond to recreational demand in the vicinity of Pinecrest. In general, the STF envisioned limited developed recreation facilities and extensive trail development for hikers and equestrian use in the Herring Creek area. At Pinecrest, the plan recognizes the physical limitations of the area to accommodate additional development. The plan states that there should be no further development of day use facilities, campground capacity should be reduced, and parking should be relocated away from the reservoir.

The California Outdoor Recreation Plan prepared by the California Department of Parks and Recreation (SCORP 1993) describes the state's population growth as doubling every 20 years and the rate of population growth to be twice that of the national rate of population growth. The high-growth rate counties were primarily located in the San Joaquin and Sacramento valleys, through the foothills and in Southern California. The population growth trend combined with more than three-quarters of the state's citizens feeling that outdoor recreation is important to the quality of their lives, the demand for public and private outdoor recreation opportunities and open space will continue to grow. In addition to rural recreation experiences, the demand for urban-type of recreation services will also increase with growing urban populations. Technological advances in sports equipment and apparel, electronics and the development of powerful engines that transport recreationists over land, water, snow and through the air have added a new dimension to many existing activities (i.e., PWC as a form of boating). In addition, technological advances have added a new category of adventure-based sports to the spectrum of outdoor recreation experiences including hang-gliding, free-style skiing, whitewater sports, snow boarding, and bungee jumping. Less adventurous sports and activities include paint ball games, rollerblading, and mountain biking. Outdoor forms of recreation activities will continue to be most popular with walking, hiking, camping, beach play, turf play and nature study expected to retain their popularity for the foreseeable future. Issue No. 8, Responding to the Demand for Trails, is among the issues and actions for the next five years identified in the SCORP. The plan places an emphasis on developing and maintaining motorized and non-motorized trails opportunities in the state.

The Tuolumne County General Plan pertains to the non-federal land within the county and this plan includes a recreation element that primarily addresses recreation needs for residents in the developed communities in the county. One aspect of the plan pertinent to this Project relates to trails. The plan identifies several goals and programs intended to improve the trail system within the county. Included in these programs are: 1) construct trails to create a regional trail system, 2) locate new facilities and trail routes on or adjacent to publicly owned land, and 3) provide and promote visitor access to the regional trail system.

State and Local Demographic Information

The State of California Department of Finance reports demographic information at state and county levels. The Licensee obtained this information and summarized data for the areas of origin of the recreation users interviewed during the reservoir recreation studies. Actual data is provided for 1990 through 1999 and projected figures are included for 2000, 2010, 2020, 2030, and 2040 in Table E7.5-10 below.

TABLE E7.5-10
State and County demographic and ethnographic data. Figures for 2000 through 2040 are projections. Data obtained from California Department of Finance website (www.dof.ca.gov/html/demograp/repndat) on 03/15/2002.

		Percent of Total Population by Race/Ethnicity

Location	*Total Population*	*White*	*Hispanic*	*Asian/Pacific Islander*	*Black*	*Native American*
California						
1990	29,944,000	57	26	9	7	1
1995	32,063,000	54	28	10	7	1
1999	34,036,000	51	30	11	7	1
2000	34,653,395	50	31	12	7	1
2010	39,957,616	45	35	13	6	1
2020	45,445,627	40	39	14	6	1
2030	51,868,655	35	43	15	6	1
2040	58,731,006	31	48	15	6	1
Alameda						
1990	1,284,800	53	14	15	17	1
1995	1,347,700	49	16	17	18	0
1999	1,448,600	45	17	19	18	0
2000	1,470,155	44	18	20	17	0
2010	1,654,485	37	21	25	17	0
2020	1,793,139	31	23	29	17	0
2030	1,938,547	25	26	32	16	0

TABLE E7.5-10 (continued)

Location	*Total Population*	*Percent of Total Population by Race/Ethnicity*				
		White	*Hispanic*	*Asian/Pacific Islander*	*Black*	*Native American*
Alameda						
2040	2,069,530	19	29	36	16	0
Calaveras						
1990	32,350	91	5	1	1	2
1995	36,950	91	6	1	1	2
1999	38,350	91	6	1	1	2
2000	42,041	90	7	1	1	2
2010	53, 989	87	10	1	1	2
2020	62,688	84	12	1	1	2
2030	71,289	81	15	1	1	2
2040	80,329	79	17	1	1	2
San Francisco						
1990	727,900	47	14	29	11	0
1995	751,500	43	15	32	10	0
1999	797,100	40	16	34	10	0
2000	792,049	40	16	33	10	0
2010	782,469	37	18	35	10	0
2020	750,904	34	20	36	10	0
2030	724,863	29	23	38	9	0
2040	681,924	24	27	40	9	0
San Joaquin						
1990	483,800	59	24	12	5	1
1995	524,600	56	25	13	5	1
1999	562,600	54	26	14	5	1

2000	579,712	54	26	15	5	1
2010	725,868	49	28	17	5	1
2020	884,375	45	31	17	6	1
2030	1,060,442	41	35	18	6	1
2040	1,250,610	38	38	18	6	1
Santa Clara						
1990	1,504,400	58	21	17	4	0
1995	1,603,300	53	23	20	4	0
1999	1,717,600	49	24	23	4	0
2000	1,763 ,252	48	24	24	4	0
2010	2,021,417	38	27	31	4	0
2020	2,196,750	30	31	36	3	0
2030	2,400,564	22	34	40	3	0
2040	2,595,253	15	38	44	3	0
Stanislaus						
1990	375,200	70	22	5	2	1
1995	413,800	68	24	6	2	1
1999	439,800	65	25	6	2	1
2000	459,025	65	25	7	2	1
2010	585,519	60	29	8	2	1
2020	708,950	55	32	9	2	1
2030	846,998	50	37	10	3	1
2040	998,906	45	41	11	3	1
Tuolumne						
1990	48,650	87	8	1	3	2
1995	51,500	87	8	1	3	2
1999	52,800	87	8	1	3	2
2000	56,125	87	8	1	3	1
2010	68,404	86	9	1	3	1
2020	77,350	84	10	1	4	1
2030	86,024	83	11	1	4	1
2040	95,023	81	12	1	4	1

The publication, Campers in California, Travel Patterns and Economic Impacts (Dean Runyan Assoc. 2000) provides demographic information for camping activity in 1999-2000 relative to ethnic groups. Although this data is specific to camping, this data is presented to provide a context for trends in outdoor recreation. Important findings in this report that relate to the Project include:

- The majority of camping trips are one week or less.
- Most camping trips are to locations within 300 miles.
- Vehicles used to travel to campgrounds are most often trailers or motorhomes/RV's.
- Over half of all campers have no children at home; more than eight out of ten campers have one or two adults.

- Few campers are under thirty years old; nearly two-thirds are over 50.
- About one out of eight campers is non-white.
- Walking/day hiking, sightseeing and picnicking are popular with all campers.
- More than one-third of all public camping expenditures are in the High Sierra and Central Coast regions.
- California campers are predominantly empty nesters and retired people.
- Non-whites in California are relatively less likely to be campers.

Comparative data between non-white and white users is also included in the report. In general, the data show that non-white users tend to have fewer camping trips per year and travel shorter distances to camp than white users. Fifty one percent of non-white users camp using tents whereas only 20 percent of white users camp in this manner; the majority (38.8%) of white users prefer motorhomes/RV's. Although both ethnic groups tend to camp with at least two family members, 48 percent of non-white users and 25 percent of white users camp with three or more adults. Additionally, 15.2 percent of non-white users camp with seven or more adults as compared to 5.5 percent of white users.

The top 12 most popular activities listed in the report by percentage of interview responses are listed below in Table E7.5-11. The most notable comparison is for fresh water fishing.

TABLE E7.5-11
Most popular camping activities, 1999-2000 by ethnic groups (Dean Runyan and Associates 2000)

Activity	*Non-White Users (% of respondents)*	*White Users (% of respondents)*
Walking/Day Hiking	82.4	73.4
Sightseeing	57.7	68.0
Picnicking	55.1	29.2
Photography	39.7	27.9
Museum/Historical Site	23.0	27.5
Swimming	37.4	25.2
Bike Riding	30.9	23.0
Fresh Water Fishing	46.7	18.7
Nature Study	27.0	18.9
Group Outing/Reunion	19.2	19.1
Bird Watching	19.4	15.3
Attend Fair	12.4	12.8

The report concludes that non-white campers are more than twice as likely to travel in an auto, van or truck with a tent than white campers; white users tend to camp in motorhome/RV's. Non-white campers are with family and friends slightly more often and average 5.9 years younger than white campers. Non-white campers are more than twice as likely to participate in fresh water fishing. Conditions that would be necessary to motivate people to take more camping trips were also summarized in the report. Although the most popular response was 'Easier to Reserve Sites', non-white users had more responses to this question than white users. This seems to

indicate that there are more circumstances that would have to change in order to motivate non-white users to take more camping trips. Most notable is that twice as many non-white campers than white campers would take more trips if they had more participation of family/friends in their trips. Two and one-half times as many non-white campers said that 'Safer Campgrounds' would motivate them to take more camping trips.

Planned Facilities

The Licensee reviewed the STF LRMP for management direction pertaining to facility development, consulted STF staff to determine any future plans that the Forest Service has for these areas, and reviewed the STF Capital Investment Program, which identifies planned and funded facility development through 2004. At Pinecrest Lake, the STF has received funding for a number of projects, many of which are associated with improving the accessibility of the area to persons with disabilities. These improvements include constructing paths, upgrading restrooms, campsite and day use site modification (including spurs, surfacing, tables and fire grills) and reconstructing the amphitheater. Most of this work has been completed, however the work remaining to be completed as of 2001 includes the amphitheater and modifications to some of the day use sites and campsites.

The Draft CSWA (USDA 2001) identifies general desired conditions that are listed in section 7.2.5. The landscape analysis, which includes Pinecrest Lake, identifies the following opportunities relevant to this Project to achieve the STF's draft desired conditions: emphasize lower-use periods (shoulder seasons, mid-week, winter), emphasize on-season use in less crowded areas, emphasize new facility development outside of the Pinecrest Basin, increase STF presence using funding from various funding sources, non-recreation STF personnel and volunteers, concentrate facility upgrades and change in areas of highest use giving priority to those which address resource concerns, construct community linking trails, decommission or discourage use on trails that receive minimal use, prioritize trail maintenance toward heavily used trails and utilize 4(e) authority to ensure that Pinecrest Lake trail is maintained to standard.

Future Demand as Identified by Users

During the interviews conducted by the Licensee and the mail-in questionnaires, recreation users had the opportunity to express their opinion on what would have made their visit more enjoyable. Users stated that they would like to see fewer people and updated facilities, however the respondents did not generally desire additional facilities. This is explained in more detail under the discussion on 'Additional Facilities'.

Carrying Capacity

During the morning and afternoon of the June 30 aerial surveys, the Licensee counted 42 and 92 active watercraft on the surface of Pinecrest Lake. On July 28, the Licensee counted 50 watercraft during the morning and 75 watercraft during the afternoon survey. In general,

approximately half of the boats observed appeared to be motorized and many of these had people who were fishing, especially in the morning. During the afternoon fishing boats were still observed but they were joined by paddle boats, canoes, kayaks, sailboats and motorized party boats. Fishing activity appeared to be especially popular near the dam.

Boat counts were provided by the Tuolumne County Sheriff's Department for Pinecrest Lake for 2000 and 2001. There were 27 boats counted on October 21, 2000, 420 boats counted on June 17, 2000 and 43 boats counted on July 14, 2001.

Relative to recreation facilities, the parking areas near the marina and day use area were observed to be filled to capacity during the summer on holiday, weekends and many weekdays. Law enforcement data also show a high number of parking violations in this location. The beaches appeared crowded throughout the summer months. The campgrounds are also at or near capacity on holidays, weekends and many weekdays between Labor Day and Memorial Day (see Table E7.5-3). On holidays and most summer weekends the beaches were so crowded that the Licensee could not count the number of visitors.

Many user conflicts were identified by those interviewed as part of the recreation studies. Specifically the conflicts identified were between: swimmers and anglers, recreationists and dogs not on leashes, sailboat users and anglers, sailboat users and swimmers, swimmers and motorized boat users. Currently there is a designated swimming area where boats and anglers are prohibited between the areas posted as Beach 1 and Beach 3. To the east of this swimming area there is a gently sloping beach where many people moor sailboats and other non-motorized watercraft. Continuing toward the east along the shoreline the gently sloping portion of the beach ends near the end of the Pinecrest Lake Road. There is a fishing platform at this east end of the beach and this portion of the shoreline is popular with anglers.

Areas that were evaluated for additional parking included the area adjacent to the existing day use parking area on the south side of Pinecrest Lake Road that is currently used for parking boat trailers and the undeveloped land on the north side of Pinecrest Avenue across from the Pinecrest Snackbar. Both areas are suitable for developing into parking areas and are public land administered by the STF. The undeveloped area on the north side of Pinecrest Avenue could provide parking for approximately 24 car/trailer and 15 car parking spaces and the existing boat trailer parking area could provide parking for approximately 30 cars. The STF staff believes that locating boat trailer parking near the boat ramp so visitors would not have to travel the main roads to launch and retrieve their boats could reduce congestion. If the existing boat trailer parking was relocated to the area near the marina, the existing boat trailer parking area could provide additional day use parking.

There is also day use parking available in the gravel-surfaced parking area near the marina and Beach 1. Currently the surface of this parking area is not striped or formalized to optimize the number of vehicles that may park in this area. Many times visitors will park leaving excessive space between vehicles such that the area cannot be used to its capacity. During the Licensee's studies the maximum number of vehicles observed in the parking lot was 20. By formalizing and expanding the existing parking area, approximately 90 vehicles could be accommodated in this parking area.

Additional Facilities

The desire for additional facilities was evaluated through responses to the Licensee's face-to-face interviews and mail-in questionnaire. In the face-to-face interviews, visitors were asked what would have made their visit more enjoyable. Thirty four percent said 'nothing' or had no response. Of the 187 affirmative responses, the most frequent response, which accounted for 13 percent of all responses, was the need for showers. The second most frequent response, 10 percent, would like to see the restrooms upgraded to include items such as hot water, lights, and mirrors). Other responses included a desire for less crowded beaches (7%), more commercial services like delicatessens or restaurants (6%) and RV hookups at the campgrounds (6%).

Respondents to the mail-in questionnaire were provided a list of various recreational facilities and asked if they would like to see these additional recreational facilities at Pinecrest Lake. In general most respondents do not desire additional facilities. Ninety seven percent of the respondents stated that there are enough campgrounds and 92 percent thought that there are enough swimming beaches. The highest response recorded for additional facilities was for trails and paths however there were only 10 percent of the respondents that thought these facilities are needed. One area of concern that was identified by some respondents is at the inlet to Pinecrest Lake on the loop trail. Out of 182 general comments received, there were 39 general comments regarding the need for restrooms, garbage containers and a source of drinking water at the inlet where the trail to Cleo's Bath meets the loop trail; 25 comments were received stating the desire to see a lodge constructed at the reservoir.

The STF ROS classification of this area is 'Roaded Natural' which is characterized by a predominantly natural appearing environment with moderate evidence of the sights and sounds of man. Resource modification and utilization practices are evident but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities.

7.5.2.4 Analysis and Discussion

Existing Facilities and Opportunities

Pinecrest Lake provides a setting for water-based activities as well as camping and day use. Although Pinecrest Lake has year-round access, the majority of use occurs in the summer months when visitors come to the mountains to camp, fish, swim and use their boats. Pinecrest Lake receives the highest level of recreation use on the STF and there are a variety of facilities available to accommodate this use including campgrounds, day use area, fishing pier, and trails. There are also commercial businesses including a grocery store, restaurant, marina, motel rooms and cabin rentals.

The reservoir provides boating opportunities, however because the reservoir is small, there is a 20 mph speed limit, and PWC use and waterskiing are not allowed. A boat launch constructed and maintained by the STF provides public access for launching boats. There is also a designated swimming area where boating and fishing are restricted to provide a safe swimming area for the public. Both of these facilities as well as the fishing pier located at the shoreline near the east end of Pinecrest Road are located on the southwest end of the reservoir where the land has a very gentle slope. Consequently, as the reservoir is lowered, these facilities are out of the water. It should be noted that beach area increases as the reservoir is lowered from its maximum elevation. Consequently, there is a positive effect on recreational activities if the reservoir is not filled to capacity, however as the reservoir is lowered, there is a point after which the beaches become muddy and unattractive. This usually begins to occur one to two weeks after Labor Day, however by this time, there are few visitors to Pinecrest. The reservoir level rises quickly in the spring and these facilities are serviceable at the beginning of the recreation season, usually one to two weeks before Memorial Day weekend in all types of water years.

Pinecrest Lake appears to be operated at levels that allow use of the boat ramp and provide an acceptable level of visual quality during the summer recreation season. Based on observation data, and responses to interviews and mail-in questionnaires, the majority of the use occurs between Memorial Day and Labor Day. The reasons for this appear to be related to vacation schedules and weather. The respondents did not indicate reservoir level to be a significant factor influencing the timing of their visits. Consequently, most of the use takes place during the approximately 98 days between Memorial Day and Labor Day. During that time in a normal year, there are approximately 77 days during the summer months when the paved portion of the boat ramp extends into the water; this amounts to 79 percent of the summer recreation season. In wet and dry years there are 136 and 83 days, respectively, when the end of the boat ramp extends into the water during the year; this amounts to 100 percent of the summer recreation season in wet years and 85 percent in dry years. Even as the reservoir lowers and the end of the boat ramp is exposed, launching is still possible, but it is less convenient for visitors to use. Consequently, these figures do not correlate to lost days of launching opportunities during the summer months, but this data does serve as an indicator of trend and presents the effects of the Project in terms of an important physical recreation feature, the end of the boat ramp.

The Pinecrest Campground has 200 campsites that are usually open to the public between May 5 and November 1. A few campsites are made available during the winter for snow camping.

Nearby Meadowview Campground has an additional 100 sites and Pioneer Campground has three group campsites with a capacity of 200 PAOT. The Pinecrest Campground is in good condition; however, the facilities are out-dated. Although the restrooms are functional, they show signs of wear and have less quality than current visitors expect and desire. Although not every structure is accessible to persons with disabilities, the STF has made accessibility modifications to two restrooms in the Pinecrest Campground and at the restroom at the amphitheater. The campground was built in the 1960's with design standards to accommodate a family with one car and tent. Today however, the visitors to Pinecrest bring more than their tent and car. Many visitors use recreation vehicles and travel trailers and these require longer spurs. People using these vehicles often desire hookups at the campsites. Reconstruction of the Pinecrest Campground would allow for the campground to be designed to current standards to meet visitor needs.

Many visitors enjoy hiking during their visit to Pinecrest. The loop trail around the reservoir is a popular hike and it is designated a National Recreation Trail by the Forest Service. This trail has areas of erosion where the trail needs reconstruction. Poor signage along the trail may cause visitors to lose their way and could be the cause of multiple user defined trails that stray from the main trail.

Current Recreation Use

Located within a two to three-hour drive of major population centers in the Central Valley and the San Francisco Bay Area and less than one hour from nearby Sonora, Pinecrest receives extremely high visitor use. Based on the use estimates developed by the Licensee for 2000 of 530,260 visits, current recreation use can be characterized as extremely high considering total recreation use at all developed sites on the STF was estimated to be 1,750,000 visits in 2001 (USDA 2001). There are almost equal percentages of visitors coming from the Bay Area and Central Valley, which accounts for more than two-thirds of the visitors interviewed. Current users consist of people staying overnight in the campgrounds, recreation residences, Pinecrest Resort, organization camps and the nearby community of Strawberry. Day users come from Sonora, Twain Harte and there are church and youth associations that bring large groups of people on busses to Pinecrest from the Central Valley, particularly Modesto.

The campgrounds are usually filled to capacity on weekends and holidays between Memorial Day and Labor Day. Day use is extremely high during this time as well and the parking spaces in the parking lots and along Highway 108 are also often filled to capacity. From mid-June through Labor Day, weekday occupancy at Pinecrest Campground is also usually near capacity; day use parking can be difficult to find during this period of time as well. Congested vehicles and filled parking spaces lead to moving and parking violations that need to be handled by law enforcement personnel. After Labor Day there is minimal weekday use and weekend use continues as long as there is good weather.

Many of those interviewed first came to Pinecrest with their parents when they were young and now they are returning to Pinecrest with their children. With the high visitor use levels and a high return rate of visitors to Pinecrest, the effects of crowding on visitor use are a concern, particularly on holidays. Even though visitors experience a high degree of crowding, they rank their recreational experience highly and 98 percent indicate that they will return to Pinecrest in the future. This circumstance illustrates how the existing visitors acknowledge crowding at Pinecrest. However it does not appear to affect the quality of their recreational experience.

Future Demand and Needs

Based on the review of various planning documents and publications, it is clear that as the population of California grows, demand for recreation opportunities will also likely increase. In addition, certain recreation activities will experience growth rates in excess of the population growth trends. Specific to the Project, the types of recreation activities that will be in most demand based on projected use levels will include walking or hiking, visiting a beach or waterside and activities at developed sites such as campgrounds and picnic areas. Looking at the Project from a regional perspective, the most consistent theme noted in each of the documents reviewed is the importance of developing and maintaining a system of trails for both non-motorized and motorized types of use. Narrowing the focus from a regional perspective to a more local level, the STF projects that over the entire forest there will be an unmet demand for developed recreation facilities by 2040. Since most of the recreation use on the Forest occurs at Pinecrest Lake, it is likely that this is where much of the unmet demand would exist. The STF projects that the demand for dispersed activities in 2040 could be met with the projected supply of dispersed opportunities.

Carrying Capacity

The physical carrying capacity of the reservoir is a function of the size and configuration of the reservoir surface, any restrictions on boating activity that exist, enforcement of regulations and the type of watercraft using the reservoir. There are approximately 300 acres of reservoir surface at normal water surface elevation of Pinecrest Lake. The entire reservoir has a 20 mph speed restriction and state boating regulations limit speeds to 5 mph within 100 feet of docks and swimming areas. Based on the Licensee's observations, it appears that 60 percent of the boats are motorized and 40 percent of the boats are non-motorized boats.

Boating density standards have been published in research literature and established as standards in planning documents. A publication prepared for the USDI, Bureau of Outdoor Recreation (Urban Research and Development Corporation, 1977) determined maximum desired boating densities for non-power watercraft on flat water to be 1.3 acres per boat and limited power watercraft on flat water to be 4.3 boats per acre. Based on these standards, the physical carrying capacity on the reservoir can be estimated in Table E7.5-12.

TABLE E7.5-12
Estimated reservoir surface carrying capacity at Pinecrest Lake.

Type of Watercraft	*No. of Watercraft*
Motorized (60% of the watercraft observed)	(300 acres x 60%)/4.3 boats per acre = 42 boats
Non-motorized (40% of the watercraft observed)	(300 acres x 40%)/1.3 acres/boat = 92 boats
Estimated physical carrying capacity of the reservoir surface	**134 boats**

This estimate may be slightly high considering: high level of swimming activity, docks in several locations around the reservoir shoreline, shallow water depth (particularly near the marina), and the low level of boating regulation enforcement.

Comparing the study data to the estimated carrying capacity of 134 boats, it appears the level of boating use on the reservoir is well below the physical carrying capacity. With the exception of one boat count reported by the Tuolumne County Sheriff's Department, the data ranged from 27 to 92 boats counted on the reservoir at one point in time. This is considerably less than the estimate of 134 boats as derived from boating safety standards. The June 17, 2000 boat count by the Tuolumne County Sheriff Department of 420 boats on the reservoir is not consistent with the other data gathered by the Licensee. It is so widely divergent from the range of boats observed by the Licensee that the Licensee believes it may have been misreported and this figure was not included in the carrying capacity analysis.

The high number of conflicting uses identified by the visitors indicates that management changes may be desirable along the shoreline. Many of the conflicts appear to be related to the area adjacent to the designated swimming area where sailboats and other non-motorized watercraft are moored. It may be advisable to eliminate overnight boat mooring or, alternatively, designate a portion of this area for boat mooring only. By eliminating or at least concentrating boat mooring in one area of the shore there would be more beach available to accommodate a variety of activities and reduce user conflicts. Placing use restrictions along the shoreline is not an action within the purview of the Licensee. This is a land allocation type of action that should be addressed through the STF's land and resource management planning process.

Although boating use on the lake surface appears to be within carrying capacity, boating use on Pinecrest Lake causes carrying capacity issues in the adjacent parking areas. With the exception of the small trailer parking lot next to the county parking lot, boat trailer parking occupies spaces that are also used for day use parking. Ways to provide more day use parking would be to: 1) create additional parking for boat trailers, 2) relocate boat trailer parking away from Pinecrest, 3) charge for day use parking and 4) possibly even restrict motorized boating on the reservoir.

In theory, removing one boat trailer from a parking area at Pinecrest would provide an additional parking space for day use parking. Also, if the combination of the types of boating use on Pinecrest Lake shifted to more non-motorized use such as canoeing and kayaking, there would be a higher carrying capacity on the reservoir surface because this type of non-motorized use requires less space for operating boats in a safe manner than motorized use. Fewer motorized boats would mean fewer boat trailers, which would translate into additional day use parking.

In order for an off-site parking area for boat trailers to be effective, a trailer parking restriction would need to be instituted and enforced. If there were nowhere to park boat trailers at Pinecrest, it would be difficult for day users to bring their boats to Pinecrest and these users would essentially be eliminated. Although this reduction in use may be beneficial, this management action appears undesirable because many day users would be displaced or could not participate in recreation activities they have traditionally enjoyed at Pinecrest.

If there were a charge for day use parking, overnight visitors to Pinecrest would be less likely to drive to the beach and marina. This would also create additional parking for day users. This may be the best alternative to creating additional parking for day users from outside of Pinecrest and it would have a secondary effect of reducing congestion on the local roadways. The additional parking areas and formalizing the existing day use parking near Beach 1 would also help to create additional capacity for day use parking.

Considerations regarding the types of boating use allowed on Pinecrest Lake and charging for parking on National Forest System land are not management actions that are within the purview of the Licensee however the STF may address this issue through their land management planning process for Pinecrest Lake. The STF is in the process of developing an amendment to the LRMP for Pinecrest but this has not yet been completed. Considerations related to the parking areas may be addressed in the Licensee's proposed resource measure for recreation facilities.

Additional Facilities

The need for additional facilities (including facility replacement) at the Project reservoirs as identified by the responses to the interviews and mail-in questionnaires are mainly associated with Pinecrest Lake. At Pinecrest Lake visitors indicated a desire to see the restrooms improved and shower facilities constructed in the campgrounds. Based on the ADA inventory, there are elements of the developed facilities such as the restrooms, amphitheater, paths of travel, spurs, fire grills and trash receptacles that could be modified to improve the accessibility of the site to persons with disabilities. Some, but not all, of these modifications are currently in the plan of work of the STF. The responses to the mail-in questionnaire indicated a need for restrooms, potable water and trash collection along the Pinecrest Loop Trail near its intersection with the trail to Cleo's Bath.

The ROS classification for Pinecrest Lake and Stanislaus Forebay is 'Roaded Natural' and the types of recreation facilities identified by the users would be consistent with this designation.

7.5.2.5 Conclusions

R-2: Does the Project cause recreational impacts/benefits outside of the Project boundaries and if so, what are they?

Camping, hiking and day use are the primary recreational uses associated with the Project that occur adjacent to the Project boundary. The main Project feature where these activities occur is at Pinecrest Lake. The benefits include a pleasant waterside setting for visitors to enjoy recreational activities and access for visitors to the public land adjacent to the Project. Recreational impacts at Pinecrest Lake include overnight visitor use near the reservoir, and erosion, trash and sanitation problems along the Pinecrest Lake Loop trail. Traffic and parking spaces filled to capacity, especially on weekends and holidays, cause congestion along Pinecrest Road from Highway 108 to the terminus of the road near the fishing pier. Consequently, this circumstance creates a need for law enforcement personnel to enforce parking restrictions and manage the traffic at Pinecrest during periods of high visitor use. Additional discussion of law enforcement is included in the Land Management and Aesthetics section, E8.5.2.

R-3: Does the Project induce recreational uses and, if so, what kinds, how much and where are they?

Boating, camping, fishing, hiking, and swimming are the primary recreational uses induced by the Project. Most of the use at Pinecrest Lake occurs during the summer months of June to September. There are an estimated 530,260 annual visits associated with the various recreation activities related to Pinecrest Lake. Recreation activities occur around the entire reservoir, however most of the recreational use occurs at the south end of the reservoir, which is where the campground, day use area and designated swimming area, are located. Pinecrest Lake has a tradition of family use as evidenced by the generations of returning visitors. Although there is year-round access to the reservoir, visitors prefer to visit during the warm summer months between Memorial Day and Labor Day.

R-5: Does the Project include any recreational facilities? Are there opportunities for additional recreation? What are the projected demands? How would additional facilities be prioritized?
R-18: Can mitigation for public use around Pinecrest Lake be included specifically, can restroom facilities along the lake loop trail and a means to collect and remove trash from around the lake be provided?

There are no Project recreation facilities at Pinecrest Lake although the beach area, fishing pier and portions of the Pinecrest Loop Trail and boat ramp, owned and operated by the STF, are within the Project boundary. There are also STF recreation facilities adjacent to the Project boundary at Pinecrest Lake which include day use areas, and campgrounds. There are also privately owned resorts, marina and commercial businesses that serve visitors to the Pinecrest area.

The Licensee's review of regional recreation indicates that demand for developed facilities may increase over the term of the next license. Similarly, the demand for developed recreation

facilities may also increase at Pinecrest Lake as succeeding generations of families continue to return to Pinecrest.

In reviewing the responses to interviews and the mail-in questionnaires, it appears that visitors at Pinecrest Lake are mostly concerned with the quality of the existing facilities rather than additional facilities. This is consistent with the view held by the STF and others that the Pinecrest Lake area has reached its carrying capacity. Visitors expressed the desire for showers in the campgrounds and to see the restrooms brought up to date with electricity, mirrors and hot water. The condition surveys revealed dated and worn fixtures and buildings, and the existing campgrounds are not designed according to current Forest Service standards (i.e., longer spurs, access road width and turning radii to accommodate recreational vehicles and trailers). Barriers to accessibility have been reduced with the STF's recent modifications to paths and restrooms, however deficiencies still exist. Also, the gentle slopes of Pinecrest make it possible to increase and enhance the accessible opportunities in the area with minimal site modification. Rehabilitating or updating some facilities at the STF Pinecrest campgrounds and the restrooms at the day use facility could be considered in response to health and safety concerns, to provide accessible facilities to persons with disabilities and to respond to the existing user needs.
Consideration should also be given to rehabilitating/improving the Pinecrest Loop Trail. This action would be consistent with the emphasis on trail systems that has been expressed by the STF, Tuolumne County and the State of California in their various planning documents, and with the growing demand for walking and hiking opportunities. Rehabilitating/improving could include repairing erosion and trail tread, eliminating multiple trails and providing clear signage. In addition, a restroom could be considered along the trail near the intersection with the trail to Cleo's Bath. This would alleviate sanitation problems noted during field surveys and would be responsive to the existing users needs. A regular patrol of the trail for litter would improve the visitor's experience and could be considered.

In general, priority should be given to making modifications to existing facilities before considering new facilities. First priority for modifications should be given to address health and safety concerns and resource protection; second priority should be given to meeting accessibility standards; and third priority should be given to enhancing accessible opportunities for persons with disabilities. When considering new facilities, priority should be given to the types of facilities that align with the areas of emphasis of the STF recreation program. An exception to this general prioritization would be situations where funding opportunities become available specifically for facilities that are not of the highest priority.

R-6: Does the Project have direct impacts on recreation and, if so, what?

The Project has direct impacts on recreation use in terms of the quantity and quality of available beach and water, the utility of the boat ramp, and visual quality, all at Pinecrest Lake. The operation of the Project begins to draw the reservoir down just prior to Labor Day; the total drop in reservoir elevation is between 71 and 94 feet and the minimum reservoir elevation usually

occurs in April in normal water years and in January and February in wet and dry types of water years, respectively. As the reservoir lowers, it reaches an elevation of 5,600 feet around September 6, September 12, and October 13 in normal, dry, and wet types of water years, respectively. This elevation is the approximate end of the paved portion of the boat ramp, and correlates to the point in time when visitors perceive the beaches to be muddy and unattractive. In general, the reservoir elevation begins to rise one to two feet per day in May and an elevation of 5,600 feet is achieved as early as April 23 in dry water years and as late as May 21 in normal water years. Project impacts to recreational use of the beach, boating use on the reservoir, boat ramp and visual quality can be considered minor because these impacts mainly occur outside of the main season of recreational use, summer. Also, the Licensee's interview and questionnaire responses indicate that the level of recreation use appears to be driven by seasonal patterns rather than by factors controlled by the Project. The Project impacts to recreation are more pronounced during the shoulder season as the reservoir lowers, and this would be the time when recreation use levels may be affected. Swimming and boating opportunities may be lost and visual quality may be less than satisfactory to visitors. Holding the reservoir higher during the fall would be a way to reduce this impact. However, the Licensee fully recognizes the recreational value of the reservoir and already operates the Project to begin drawdown as late as operationally feasible considering the capacity of the low-level outlet, minimum instream flow requirements of the license and consumptive water contractual obligations to TUD, to insure that these impacts are minimized. This has resulted in fairly consistent and predictable reservoir levels that enable substantial recreation use of the reservoir and create a visually pleasing setting for visitors throughout the summer recreation season between Memorial Day and Labor Day.

R-15: How accessible are the Project facilities to persons with disabilities?

There are no developed Project recreation facilities associated with Pinecrest Lake. However, the Licensee reviewed the extensive recreation facilities adjacent to the Project at Pinecrest Lake that are owned by the STF and operated and maintained under a permit to a concessionaire. Accessibility improvements have been made to some of the restrooms, paths and water spigots related to these facilities. The STF has additional plans to make accessibility modifications to their facilities. However at this time, there are several deficiencies, and STF's planned actions will not result in all of the elements of the campground and day use sites being accessible to persons with disabilities.

R-19: Can off-Project camping and other recreational facilities be created to relieve pressure at Pinecrest?

The most important recreation issue at Pinecrest is the high level of recreation use, particularly along the reservoir shoreline. Recreation facilities at Pinecrest are numerous and the limiting factors for recreation use has become parking spaces and day use facilities (picnic sites and beach). Local demand will likely increase as succeeding generations of families continue to return to Pinecrest. Although demand will likely increase, there are no locations to site

additional recreation facilities close to Pinecrest Lake. An option to provide off-site parking and shuttle busses to the reservoir is feasible, but this idea is not favored by the existing users. Related to this would be the concept of providing off-site camping. This would not likely serve the needs of users considering their unfavorable opinions of off-site parking. A strong theme in the interview responses was that visitors are at Pinecrest for the reservoir and the ancillary businesses that create the setting; an off-site campground would not have the setting and would not meet the needs of the existing users. Also, if an off-site campground were constructed near Pinecrest Lake, the additional users would only exacerbate the existing crowded conditions at the day use area. Thus, while camping and recreation facilities could be created away from the Project, they would be of limited effectiveness in relieving pressure at Pinecrest Lake.

R-21: What are social and resource carrying capacities related to the Project's recreation areas? What would the carrying capacity be for various combinations of recreation use?

In conducting the recreation studies, the STF staff requested the Licensee to focus on the physical component of carrying capacity at Pinecrest Lake and to evaluate options to reduce crowding and user conflicts. The study plan designed to answer this question was modified and SPLAT did not expect the Licensee's study to produce an answer to this issue question in terms of a finite number of users. The management options that could provide additional recreation use, enhance the visitor's experience and reduce user conflict include: 1) eliminate overnight boat mooring or designate a small area for mooring at the east end of Pinecrest Beach near the end of Pinecrest Lake Road, 2) create a parking area on Pinecrest Avenue across from the Pinecrest Snack Bar near the marina, 3) convert the existing boat trailer parking area on Pinecrest Lake Road into day use parking, 4) eliminate or limit motorized boating use on Pinecrest Lake, 5) charge for day use parking, and 6) develop an off-site boat trailer parking facility and prohibit boat trailer parking at Pinecrest.

7.5.3 Pinecrest Lake Level (Study 8.3.7)

Issue Questions Addressed – R-11, R-13, and R-17. *R-11: Does the Project affect current levels of recreational use and, if so, which uses and how? R-13: What effect does the Project have on existing Pinecrest Lake levels? Should a rule curve be established for operation of the Pinecrest Lake? R-17: How will the pool level of Pinecrest Lake (Strawberry Reservoir) be affected during the recreation season and at other times of the year? Can the draw down to levels that affect recreation be held off until later in the recreation season?*

7.5.3.1 Study Objectives and Study Area

The Pinecrest Lake Level Study also included the objectives to determine the effect of the Project operations on: 1) the end date of the summer recreation season; 2) physical limitations on the reservoir related to drawdown (end of boat ramp, swimming beaches, underwater hazards, etc), 3) and to identify any regulatory limitations on reservoir levels (flood control).

7.5.3.2 Study Methods

The methods used for completing the Pinecrest Lake Level study included identifying physical or regulatory limitations to drawdown and development of a model that demonstrates the Project related impacts of drawdown. The Licensee also prepared a model using the existing information to display the lake levels at Pinecrest Lake that have typically existed in the past under different types of water years. This information was then correlated to various elements of recreation activity such as boat ramp, swimming beaches and visual quality at Pinecrest Lake.

7.5.3.3 Study Results

The results of the Pinecrest Lake Level Study are discussed in terms of the number of days of various reservoir levels during different times of water years. The data was evaluated in ranges of elevations based on the elevation of the end of the boat ramp (approximately 5,600 ft. elevation) and the perceived visual quality expressed by visitors. The responses to the mail-in questionnaires revealed that most people were satisfied with the appearance of the reservoir between Memorial Day and Labor Day (see section Table E7.5-5 in section 7.5.2.3). During this period of time (approximately 98 days) the reservoir level ranges between 5,613 and 5,617 feet in elevation in a normal type of water year. Based on these points of reference of the end of the boat ramp and satisfactory visual quality, Table E7.5-13 displays the reservoir level data for three types of water years. A normal year is represented by 1975 and wet and dry types of water years are represented by 1995 and 1988, respectively. Table E7.5-14 displays the number of days that occur in a year in each range of reservoir elevations for different types of water years.

TABLE E7.5-13
Pinecrest Lake level data for normal, wet and dry types of water years.

Pinecrest Lake Level (in feet)

1975 - Normal Year

Day	January	February	March	April	May	June	July	August
September		October	November	December				
1	5544.1	5542.64	5540.58	5527.71	5530.93	5614.71	5617.39	5614.71
5603.04	5587.51	5577.26	5564.21					
2	5543.7	5542.57	5540.65	5527.40	5532.36	5614.71	5617.39	5614.40
5602.56	5586.83	5575.16	5563.81					
3	5543.7	5542.50	5540.71	5527.19	5533.82	5614.71	5617.39	5613.98
5602.09	5586.07	5573.26	5563.43					
4	5544.1	5542.42	5540.74	5527.19	5535.32	5614.71	5617.39	5613.57
5601.71	5585.06	5570.53	5563.04					
5	5543.7	5542.32	5540.78	5526.98	5536.84	5614.71	5617.39	5613.15
5601.32	5584.18	5570.38	5562.65					
6	5543.6	5542.25	5540.74	5526.77	5537.99	5614.71	5617.39	5612.74
5600.75	5583.32	5569.78	5562.06					
7	5543.4	5542.18	5540.71	5526.67	5539.78	5615.24	5617.39	5612.33
5600.28	5582.36	5569.12	5561.58					
8	5543.0	5542.07	5540.68	5526.56	5541.25	5615.77	5617.39	5611.92
5599.79	5581.50	5568.46	5561.11					
9	5542.8	5542.07	5540.65	5526.25	5542.28	5616.31	5617.39	5611.52
5599.11	5580.70	5567.82	5560.53					
10	5542.7	5542.00	5540.58	5525.53	5542.71	5616.31	5617.39	5611.12
5598.85	5579.86	5567.18	5560.07					
11	5542.5	5542.00	5540.48	5525.53	5544.49	5616.85	5617.39	5610.72
5598.32	5581.22	5566.55	5549.85					
12	5542.3	5542.04	5540.32	5524.72	5546.33	5616.85	5617.39	5610.32
5597.91	5581.12	5565.91	5549.57					
13	5542.1	5542.04	5540.19	5524.42	5548.71	5616.85	5617.39	5609.93
5597.39	5580.56	5565.27	5549.21					
14	5542.0	5542.04	5540.06	5524.52	5562.93	5616.85	5617.39	5609.53
5596.97	5580	5564.64	5548.96					
15	5541.9	5542.04	5539.78	5524.32	5569.68	5616.85	5617.39	5609.14
5596.46	5578.77	5564.00	5548.66					
16	5541.9	5542.04	5539.35	5524.42	5576.95	5616.85	5617.39	5608.65
5595.94	5577.46	5563.58	5548.37					
17	5542.0	5541.97	5538.93	5524.22	5582.84	5616.85	5617.39	5608.17
5595.42	5576.14	5562.94	5548.05					
18	5542.0	5541.86	5538.40	5524.03	5587.72	5616.85	5617.39	5607.68
5594.91	5576.95	5562.29	5547.78					

19	5542.0	5541.72	5537.67	5523.73	5592.76	5616.85	5617.39	5607.68
5594.40	5576.35	5561.64	5547.52					
20	5542.0	5541.55	5537.47	5523.73	5596.87	5616.85	5617.39	5607.68
5593.98	5575.46	5560.99	5547.35					
21	5542.2	5541.35	5537.27	5523.73	5600	5616.85	5617.39	5607.39
5593.57	5574.42	5562.93	5547.19					
22	5542.3	5541.15	5537.05	5524.03	5601.90	5617.39	5617.39	5607.10
5593.06	5573.84	5569.11	5547.03					
23	5542.4	5540.94	5536.54	5524.03	5603.81	5617.39	5617.39	5606.71
5592.65	5573.11	5568.56	5546.86					
24	5542.5	5540.65	5535.93	5524.22	5605.74	5617.39	5617.28	5606.22
5592.15	5572.38	5568.00	5546.69					
25	5542.6	5540.58	5535.93	5525.73	5608.65	5617.39	5617.17	5605.74
5591.44	5572.24	5567.44	5546.43					
26	5542.7	5540.58	5537.36	5526.77	5611.12	5617.39	5616.85	5605.35
5590.73	5575.46	5566.89	5546.16					
27	5542.7	5540.58	5537.05	5527.08	5612.53	5617.39	5616.52	5605.16
5590.02	5575.46	5566.33	5545.90					
28	5542.7	5540.58	5536.84	5527.08	5612.53	5617.39	5616.09	5604.77
5589.31	5579.54	5565.77	5545.64					
29	5542.7		5533.33	5528.04	5614.71	5617.39	5615.77	5604.39
5588.71	5579.54		5565.26	5545.38				
30	5542.6		5531.69	5529.45	5614.71	5617.39	5615.45	5603.91
5588.01	5578.83		5564.73	5545.12				
31	5542.6		5530		5614.71		5615.14	5603.52
5580	5544.86							

TABLE E7.5-13(continued)

Pinecrest Lake Level (in feet)
1988 - Dry Year

Day	January	February	March	April	May	June	July	August
September		October	November	December				
1	5548.1	5545.26	5546.17	5579.23	5605.64	5617.39	5616.20	5609.24
5606.22	5593.78	5575.46	5565.94					
2	5548.0	5544.95	5546.41	5580.09	5606.22	5617.39	5615.88	5609.24
5605.54	5593.47	5574.87	5565.67					

3	5548.0	5544.68	5546.69	5581.03	5606.71	5617.39	5615.56	5609.14	5604.87	5593.17	5574.28	5565.53
4	5548.0	5544.49	5546.94	5581.98	5607.19	5617.39	5614.92	5609.04	5604.68	5592.86	5573.70	5565.26
5	5548.0	5544.30	5547.23	5582.64	5607.48	5617.39	5614.61	5608.95	5603.99	5592.55	5573.26	5565
6	5548.3	5543.96	5547.52	5583.22	5607.68	5617.39	5614.50	5608.75	5603.71	5592.25	5572.97	5564.34
7	5548.3	5543.70	5547.78	5584.38	5607.68	5617.39	5614.40	5608.65	5603.33	5591.94	5572.39	5564.21
8	5548.4	5543.51	5548.09	5585.74	5607.78	5617.39	5614.19	5608.56	5602.95	5591.64	5571.81	5563.95
9	5548.3	5543.36	5548.52	5586.72	5607.78	5617.39	5613.88	5608.46	5602.47	5591.33	5571.10	5563.69
10	5548.2	5543.14	5548.96	5587.91	5608.17	5617.39	5613.67	5608.36	5601.99	5591.03	5570.53	5563.43
11	5548.1	5543.07	5549.21	5589.31	5608.46	5617.39	5613.46	5608.26	5601.80	5590.73	5569.82	5563.18
12	5548.1	5543.00	5549.63	5590.42	5609.04	5617.39	5613.25	5608.07	5601.42	5590.42	5569.39	5562.68
13	5548.1	5542.96	5555	5591.64	5610.42	5617.39	5613.15	5607.97	5601.04	5590.12	5568.83	5562.31
14	5548.0	5543.00	5560.07	5592.65	5611.92	5617.39	5612.84	5607.87	5600.66	5589.71	5568.28	5561.94
15	5548.0	5543.07	5560.30	5593.98	5613.77	5617.39	5612.53	5607.78	5600.18	5588.81	5567.86	5561.71
16	5548.0	5543.14	5560.53	5595.01	5615.24	5617.39	5612.33	5607.68	5599.89	5588.11	5567.44	5561.35
17	5547.9	5543.14	5560.76	5596.04	5616.85	5617.39	5611.92	5607.58	5599.47	5587.22	5566.89	5560.99
18	5547.9	5543.22	5561.11	5596.87	5617.28	5617.39	5611.82	5607.48	5599.05	5586.63	5566.62	5560.64
19	5547.8	5543.36	5561.71	5597.39	5617.28	5617.39	5611.62	5607.39	5598.64	5585.84	5566.21	5560.30
20	5547.7	5543.55	5562.55	5598.01	5617.28	5617.39	5611.32	5607.29	5598.43	5585.06	5566.35	5555
21	5547.6	5543.77	5563.69	5598.95	5617.28	5617.28	5610.92	5607.19	5597.91	5584.18	5566.35	5549.85
22	5546.9	5543.85	5564.60	5599.79	5617.28	5617.17	5610.32	5607.10	5597.60	5583.70	5566.21	5549.68
23	5546.6	5544.22	5565.40	5600.37	5617.28	5617.06	5609.73	5607.00	5597.08	5582.93	5566.08	5549.52

24	5546.4	5544.53	5566.49	5600.66	5617.28	5616.85	5609.73	5606.90
5596.77	5582.17	5566.08	5549.37					
25	5546.4	5544.76	5567.86	5601.14	5617.28	5616.52	5609.73	5606.80
5596.25	5581.41	5566.08	5549.26					
26	5546.2	5544.95	5569.54	5601.61	5617.28	5616.52	5609.63	5606.71
5595.83	5580.65	5566.21	5549.11					
27	5546.0	5545.38	5572.10	5602.56	5617.28	5616.85	5609.63	5606.61
5595.42	5580	5566.89	5548.96					
28	5545.9	5545.42	5574.28	5603.52	5617.28	5616.96	5609.53	5606.51
5594.91	5578.16	5566.89	5548.81					
29	5545.8		5575.61	5604.10	5617.39	5616.63	5609.43	5606.41
5594.60	5576.95		5566.49	5548.61				
30	5545.6		5577.10	5604.87	5617.39	5616.52	5609.43	5606.32
5594.19	5576.50		5566.21	5548.42				
31	5545.4		5578.31		5617.39	5617.39	5609.34	5606.32
5576.06	5548.23							

TABLE E7.5-13(continued)

Pinecrest Lake Level (in feet)
1995 - Wet Year

Day	January	February	March	April	May	June	July	August
September		October	November	December				
1	5548.1	5560.23	5566.03	5589.38	5614.85	5615.34	5615.33	5616.99
5615.32	5603.22	5590.63	5575.51					
2	5547.4	5560.76	5566.35	5589.62	5614.52	5615.30	5615.33	5616.94
5615.03	5602.83	5590.13	5574.07					
3	5546.8	5561.16	5566.96	5589.96	5614.03	5615.35	5615.32	5616.87
5614.60	5602.49	5589.65	5572.63					
4	5546.4	5561.54	5567.04	5590.63	5613.81	5615.56	5615.15	5616.83
5614.20	5602.31	5589.18	5571.45					
5	5546.2	5561.87	5567.10	5591.49	5613.57	5615.23	5615.44	5616.97
5613.83	5602.18	5588.70	5570.17					
6	5545.9	5562.14	5567.07	5592.27	5613.35	5614.63	5615.78	5617.09
5613.50	5602.04	5588.22	5568.79					
7	5545.8	5562.31	5566.98	5593.23	5613.13	5614.08	5615.71	5617.31

5613.10	5601.89	5587.71	5567.52					
8	5545.7	5562.41	5566.89	5593.73	5613.03	5613.84	5615.54	5617.30
5612.71	5601.74	5587.23	5566.16					
9	5546.2	5562.45	5573.32	5593.99	5613.15	5614.16	5615.68	5617.29
5612.29	5601.65	5586.76	5564.80					
10	5547.7	5562.44	5580	5594.18	5613.33	5614.97	5615.34	5617.22
5611.87	5601.54	5586.28	5563.43					
11	5547.7	5562.45	5581.20	5594.68	5613.58	5615.48	5615.07	5617.13
5611.56	5601.44	5585.81	5563.98					
12	5547.8	5562.45	5581.81	5595.44	5613.56	5615.54	5614.59	5616.97
5611.38	5600.98	5585.61	5568.99					
13	5548.5	5562.47	5582.36	5596.44	5613.39	5615.49	5614.42	5616.91
5611.22	5600.40	5585.56	5569.38					
14	5549.7	5562.38	5583.06	5596.91	5613.15	5614.87	5614.57	5616.78
5611.02	5599.79	5585.49	5569.24					
15	5560.0	5562.25	5583.79	5597.16	5612.97	5614.52	5614.72	5616.60
5610.81	5599.14	5585.41	5569.03					
16	5560.2	5562.07	5584.42	5597.30	5612.93	5614.01	5615.15	5616.42
5610.36	5598.52	5585.33	5568.60					
17	5560.2	5561.90	5584.89	5597.41	5613.20	5613.74	5615.42	5616.32
5609.74	5597.93	5585.28	5568.18					
18	5560.1	5561.79	5585.73	5597.49	5613.62	5614.33	5615.43	5616.13
5609.13	5597.43	5585.20	5567.67					
19	5557	5561.85	5586.53	5597.50	5614.27	5614.63	5615.55	5615.82
5608.44	5596.95	5584.87	5567.12					
20	5549.9	5562.16	5587.36	5597.56	5614.59	5614.57	5615.50	5615.70
5607.71	5596.44	5584.39	5566.55					
21	5549.8	5562.60	5587.89	5597.58	5614.68	5614.74	5615.48	5615.77
5607.34	5595.94	5583.91	5565.95					
22	5549.8	5563.11	5588.20	5597.64	5614.55	5615.15	5615.78	5615.85
5606.95	5595.39	5583.43	5565.32					
23	5549.8	5563.62	5588.43	5598.06	5614.40	5615.54	5616.64	5615.95
5606.52	5594.90	5582.95	5564.74					
24	5549.8	5564.13	5588.50	5598.99	5614.28	5615.92	5617.01	5615.97
5606.07	5594.36	5582.48	5564.07					
25	5549.8	5564.63	5588.52	5600.21	5614.27	5615.83	5617.02	5616.01
5605.61	5593.87	5581.99	5563.44					
26	5549.7	5565.10	5588.54	5601.35	5614.48	5615.47	5616.99	5615.95
5605.26	5593.36	5581.49	5562.80					
27	5549.7	5565.45	5588.59	5603.15	5614.68	5615.71	5617.21	5615.89
5604.85	5592.95	5580.78	5562.19					
28	5549.6	5565.75	5588.65	5604.87	5614.86	5615.62	5617.33	5615.83

5604.43	5592.46	5579.89	5561.61					
29	5549.5		5588.70	5607.51	5615.00	5615.60	5617.39	5615.76
5603.96	5591.99		5578.44	5561.38				
30	5549.6		5588.80	5611.01	5615.14	5615.44	5617.13	5615.68
5603.57	5591.50		5576.96	5562.75				
31	5549.8		5589.05		5615.46		5617.04	5615.56
5591.07	5564.01							

TABLE E7.5-14
The number of days during different types of water years at three elevation ranges.

	No. of Days Within Reservoir Elevation Range		
	below 5,600 feet (boat ramp is out of the water)	***5,600-5,612.99 feet (boat ramp is in the water but visual quality is not satisfactory)***	***5,613 to 5,617.39 feet (boat ramp is in the water and visual quality is satisfactory)***
Dry Year (1988)	282	22	61
Normal Year (1975)	288	8	69
Wet Year (1995)	229	8	128

In a normal type of water year, the maximum reservoir elevation is achieved from June 22 through July 23. In wet and dry years the maximum reservoir elevation is achieved from July 24 through August 11 and May 29 through June 31, respectively. The typical lowest reservoir levels were between 5,523 and 5,546 feet in elevation and occurred in April in normal years and in January and February during wet and dry years, respectively. The operation of the Project begins to draw the reservoir down just prior to Labor Day; the total drop in reservoir elevation is between 71 and 94 feet. As the reservoir lowers, it reaches an elevation of 5,600 feet around September 6 in normal water years, September 12 and October 13 in dry and wet types of water years, respectively.

The physical operating constraints of the Project include meeting an instream minimum flow requirement below Philadelphia diversion of three cfs, from November 1 to April 30 and six cfs from May 1 to October 31; there is no instream minimum flow requirement below Strawberry Dam. Water is passed through the Strawberry Dam via a low-level outlet that has a maximum capacity of 350 cfs. Another factor affecting the reservoir level is the Licensee's contract with Tuolumne Utilities District (TUD) that gives TUD the right to store water in Pinecrest Lake dependent on each year's water production. In summary, under the terms of this contract, TUD may request the Licensee to release water from Pinecrest Lake into the SFSR for diversion by TUD at Lyons Reservoir and points downstream. The terms of this contractual arrangement are explained in section E3.3.9.

7.5.3.4 Analysis and Discussion

The reservoir provides boating opportunities, however because the reservoir is small, there is a 20 mph speed limit, and PWC use and waterskiing are not allowed. A boat launch constructed and maintained by the STF provides public access for launching boats. There is also a designated swimming area where boating and fishing are prohibited to provide a safe swimming area for the public. Both of these facilities as well as the fishing pier located at the shoreline near the east end of Pinecrest Road are located on the southwest end of the reservoir where the land has a very gentle slope. Consequently, as the reservoir is lowered, these facilities are out of the water. It should be noted that beach area increases as the reservoir is lowered from its maximum elevation. Consequently, there is a positive effect on recreational activities if the reservoir is not filled to capacity, however as the reservoir is lowered, there is a point after which the beaches become muddy and unattractive. This usually begins to occur one to two weeks after Labor Day,

however by this time, there are few visitors to Pinecrest. The reservoir level rises quickly in the spring and these facilities are serviceable at the beginning of the recreation season, usually one to two weeks before Memorial Day weekend in all types of water years.
Pinecrest Lake appears to be operated at levels that allow use of the boat ramp and provide an acceptable level of visual quality during the summer recreation season. Based on observation data, and responses to interviews and mail-in questionnaires, the majority of the use occurs between Memorial Day and Labor Day. The reasons for this appear to be related to vacation schedules and weather and the respondents did not indicate reservoir level to be a significant factor influencing the timing of their visits. Consequently, most of the use takes place during the approximately 98 days between Memorial Day and Labor Day. During that time in a normal year, there are approximately 77 days during the summer months when the paved portion of the boat ramp extends into the water; this amounts to 79 percent of the summer recreation season. In wet and dry years there are 136 and 83 days, respectively, when the end of the boat ramp extends into the water during the year; this amounts to 100 percent of the summer recreation season in wet years and 85 percent in dry years. Even as the reservoir lowers and the end of the boat rampis exposed, launching is still possible, but it is less convenient for visitors to use. Consequently, these figures do not correlate to lost days of launching opportunities during the summer months, but this data does serve as an indicator of trend and presents the effects of the Project in terms of an important physical recreation feature, the end of the boat ramp.

When evaluating the effect of reservoir level on visual quality, the responses to the mail-in questionnaire showed that most visitors were pleased with the view of the reservoir between Memorial Day and Labor Day. This includes respondents who categorized the visual quality under the two choices in the questionnaire that represented the best descriptions of visual quality; respondents were given the choice of six descriptions to describe their perception of visual quality. Correlating this rating to reservoir elevation data, a pleasing level of visual quality of the reservoir in a normal type of water year (above 5,613 ft.) is achieved for 70 percent of the days during the summer recreation season. In wet and dry years, a pleasing level of visual quality of the reservoir is achieved 139 percent (this reflects that the reservoir level is also high before Memorial Day and/or after Labor Day) and 62 percent of the days during the summer recreation season, respectively. The months of December and January received the lowest rankings of visual quality. The period of Labor Day to October 1 appeared to be the point in time when most visitors identified that the reservoir level was beginning to interfere with their visual enjoyment of the reservoir.

The most evident impact to recreation caused by Project operations of Pinecrest Lake in the non-winter months is the reservoir level. The change in reservoir level is necessary to provide water to the downstream generation facilities, comply with the minimum instream flow requirements in the license and to provide consumptive water for TUD. The Licensee recognizes the importance of the recreational value of Pinecrest Lake and has operated the Project in the past in order to keep the reservoir as full as possible, consistent with Project operations, during the recreation season. Considering the operational constraints mentioned above, the Licensee's past operation

of the Project has been successful in that there have been minimal impacts to recreation that directly relate to the reservoir surface during the recreation season from Memorial Day to Labor Day; visitors are generally pleased with the visual quality of the setting and recreation improvements that depend on reservoir level are functional during the summer recreation season. The operation of the Project is also consistent with the STF LRMP standard and guideline to maintain the level of the reservoir as high as possible through July and August to optimize public use. Additionally, the Licensee's operation of the reservoir has been fairly consistent even between different types of water years, and visitors seem to have a realistic expectation that the reservoir will be full enough to enjoy their activities.

7.5.3.5 Conclusions

R-11: Does the Project affect current levels of recreational use and, if so, which uses and how? R-13: What effect does the Project have on existing Pinecrest Lake levels? Should a rule curve be established for operation of the Pinecrest Lake? R-17: How will the pool level of Pinecrest Lake (Strawberry Reservoir) be affected during the recreation season and at other times of the year? Can the draw down to levels that affect recreation be held off until later in the recreation season?

The Project has direct impacts on recreation use in terms of the quantity and quality of available beach, the utility of the boat ramp, and visual quality, all at Pinecrest Lake. Operation of the Project begins to draw the reservoir down just prior to Labor Day. The total drop in reservoir elevation is between 71 and 94 feet and the minimum reservoir elevation usually occurs in April in normal water years and in January and February in wet and dry types of water years, respectively. As the reservoir lowers, it reaches an elevation of 5,600 feet around September 6, September 12, and October 13 in normal, dry, and wet types of water years respectively. This elevation is the approximate end of the paved portion of the boat ramp, and correlates to the point in time when visitors perceive the beaches to be muddy and unattractive. In general, the reservoir elevation begins to rise one to two feet per day in May and an elevation of 5,600 feet is achieved as early as April 23 in dry water years and as late as May 21 in normal water years. Project impacts to recreational use of the beach, boat ramp and visual quality can be considered minor because these impacts mainly occur outside of the main season of recreational use, summer. Also, the Licensee's interview and questionnaire responses indicate that the level of recreation use appears to be driven by seasonal patterns rather than by factors controlled by the Project. The Project impacts to recreation are more pronounced during the shoulder season as the reservoir lowers, and this would be the time when recreation use levels may be affected. Swimming and boating opportunities may be lost and visual quality may be less than satisfactory to visitors. Holding the reservoir higher during the fall would be a way to reduce this impact. However, the Licensee fully recognizes the recreational value of the reservoir and already operates the Project to begin drawdown as late as operationally feasible considering the capacity of the low-level outlet, minimum instream flow requirements of the license and consumptive water contractual obligations to TUD, to insure that these impacts are minimized. This has

resulted in fairly consistent and predictable reservoir levels that enable substantial recreation use of the reservoir and create a visually pleasing setting for visitors throughout the summer recreation season between Memorial Day and Labor Day. Because of this consistency, it does not appear necessary or appropriate to delay the draw down to a later time in the season. Additionally, although it does not appear essential to establish a rule curve for operating the reservoir, a draw down curve might help inform interested parties of the Licensees operational plans.

7.5.4 Stanislaus Forebay Recreation Study (8.3.15)

Issue Questions Addressed – R-2, R-3, R-5, R-6, R-15, and R-21. *R-2: Does the Project cause recreational impacts/benefits outside of the Project boundaries and if so, what are they? R-3: Does the Project induce recreational uses and, if so, what kinds, how much and where are they? R-5: Does the Project include any recreational facilities? Are there opportunities for additional recreation? What are the projected demands? How would additional facilities be prioritized? R-6: Does the Project have direct impacts on recreation and, if so, what? R-15: How accessible are the Project facilities to persons with disabilities? R-21: What is the social and resource carrying capacity related to the Projects recreation area? What would the carrying capacity be for various combinations of use?* (This issue question was eliminated from the Stanislaus Forebay Recreation Study by SPLAT subsequent to Study Plan approval.)

7.5.4.1 Study Objectives and Study Area

SPLAT recommended that issue questions related to Stanislaus Forebay be addressed by determining the current use levels and evaluating options to reduce vandalism at the site.

7.5.4.2 Study Methods

Existing Facilities and Opportunities

The Licensee identified recreational opportunities at Stanislaus Forebay by visiting the reservoir and observing and interviewing current users. Since there are no developed recreation facilities at Stanislaus Forebay, the Licensee did not conduct evaluations for accessibility at this location.

Current Recreational Use

The Licensee estimated recreational use using five methods: 1) the Licensee's direct observations of recreation activity and resource impacts; 2) the Licensee's face-to-face interviews of recreationists and staff of the STF. Each of these is discussed below.

The study plan called for interviews on holidays, other key weekends and isolated weekdays. At Stanislaus Forebay, the Licensee completed observations in addition to surveys along the forebay shoreline and canal between the forebay and the tunnel portal. Surveys dates and times were randomly selected from Memorial Day through Labor Day. During the summer of 2000, the Licensee completed observations and interviews on two weekdays (Tuesday, September 5, 2000

and Monday, September 25, 2000), three weekends (June 16-18, 2000, June 23-25, 2000 September 22-24, 2000) and three holiday weekends (Memorial Day Weekend, May 26 through 28; July Fourth Weekend, June 30 through July 4; and Labor Day Weekend, September 1 through September 4). A single "observation" was considered to be one observer visiting any of the sites at Stanislaus Forebay listed above and counting the number of recreationists observed at this location and noting the activity of each recreationist. Once all the recreationists were counted a location, the observation was considered complete. Most observations took between 5 and 20 minutes. A copy of the observation survey form is included in the Appendix.
During the course of performing direct recreation observations, the Licensee conducted face-to-face interviews with 31 randomly selected recreationists and completed a questionnaire for each interview. The questionnaire included 32 questions, which were reviewed by STF and approved by SPLAT prior to the study, including questions that provided an opportunity for the respondent to offer general comments. A copy of the questionnaire form is included in the Appendix.

The study plan also called for the Licensee to complete a visual assessment of any resource damage caused by recreational use. The Licensee conducted a site visit on September 1, 2000 to Stanislaus Forebay. The Licensee inspected the area around the entire forebay and along the canal up to the tunnel portal for signs of erosion, vandalism, litter and damage to vegetation.

Future Demand and Needs

The methods used by the Licensee to assess future demand and needs included the recreation user interviews and reviews of existing Forest Service, county and state plans and the publication Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends (Cordell 1999).

Additional Facilities

The methods used to assess the need for additional facilities included gathering and analyzing the responses to the recreation user interviews that indicated what recreational facilities the respondents would like to see at Stanislaus Forebay. The Licensee's site inspections were also included in the analysis. Consultation with the STF staff and a review of their LRMP were used to evaluate the appropriateness and prioritization of additional facilities at Stanislaus Forebay.

7.5.4.3 Study Results

Existing Facilities and Opportunities

The recreational opportunities and facilities at Stanislaus Forebay are described in detail in sections 7.4.4.

Stanislaus Forebay is a very small reservoir with no developed recreation facilities. Boating and swimming are not allowed on the reservoir; however, fishing access is abundant along the entire shoreline and the canal leading to the reservoir. The area is remote and access is by way of rough roads that are best suited for vehicles with high clearance. The Licensee inspected the site on September 1, 2000 and noted vandalism to the portable toilet provided by the Licensee, and Project signs and facilities, which appeared to be targets for recreational shooting. There was also trash noted near the canal and in the dispersed overnight camping sites and there was evidence of improper disposal of human waste. Off-highway vehicles have caused some erosion and damage to vegetation; this was noted between the reservoir and the access road (4N05) on the south side of the reservoir where there are dispersed campsites.

Current Recreational Use

The Licensee performed a total of 118 observations of recreational use Stanislaus Forebay over the course of 22 days. The use at this reservoir is very low and visitors were observed most frequently on weekends and holidays rather than on weekdays. Since boating and swimming are not allowed, visitors mostly enjoy fishing at this forebay. Based on the observation data, 32 percent of the visitors were observed fishing and 30 percent were observed tent camping.

The Licensee conducted face-to-face interviews with 31 recreation users over the course of 22 days. In general, the age of the median respondent was between 31 and 40 years of age with a median party size between one and three persons. Fishing was the primary activity identified by 52 percent of the respondents and 84 percent of those interviewed were only visiting the area for the day. Seven visitors were interviewed about their fishing success. Of these, three persons had caught fish during their visit; in total, they caught six brown trout and one fish of an unknown species. The fish ranged from 12-18” in length with three of them being 12” in length.

As part of the recreation questionnaire, visitors were asked to provide their place of residence. The cities listed by the visitors were grouped by regional area and this data is presented in Table E7.5-15 below. A more detailed summary of the recreation user interviews is provided in the Appendix.

TABLE E7.5-15
Percentage of visitors by regional origin based on 31 interviews by the Licensee at Stanislaus Forebay in 2000.

Regional Origin of Visitors	
California-Bay Area	26%
California-Central Valley	13%
California-Southern	6%
California-Northern	3%
California-Central Foothill/Mountain	42%
Unknown and out-of-state	10%

The main season of use is the spring and summer months from about April 1 to November 1. Based on the Licensee's observation data, the use at Stanislaus Forebay can be calculated as a composite of use during different times of the season. The estimated annual use at Stanislaus Forebay is calculated below in Table E7.5-16.

TABLE E7.5-16
Licensee's estimate of the annual number of visits at Stanislaus Forebay based on observation data in 2000.

Time Period (April 1-Nov.1)	*No. of days*	*Estimated No. of Visitors per day*	*Estimated No. of Visits*
No. of holiday weekend days (Fri-Mon)	12	9.4	113
No. of weekend days (Fri-Sun)	77	3.7	285
No. of weekdays (Mon-Thurs)	110	1	110
Estimated Annual No. of Visits			508

Future Demand and Needs

The study results pertaining to Future Demand and Needs have been discussed in section 7.5.2.3.

Planned Facilities

The Licensee reviewed the STF LRMP for management direction pertaining to facility development, consulted STF staff to determine any future plans that the Forest Service has for these areas, and reviewed the STF Capital Investment Program, which identifies planned and funded facility development through 2004. The STF states that they do not have any plans to develop recreation facilities at Stanislaus Forebay and the STF LRMP does not identify any needed facilities at this area.

Additional Facilities

The desire for additional facilities was evaluated through responses to the Licensee's face-to-face interviews when visitors were asked what would have made their visit more enjoyable. Sixteen affirmative responses were recorded from the 31 persons interviewed. Of these, 50 percent stated that they would like to see a restroom at the forebay.

The STF LRMP classifies this area as roaded natural which is characterized by a predominantly natural appearing environment with moderate evidence of the sights and sounds of man. Resource modification and utilization practices are evident but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities.

7.5.4.4 Analysis and Discussion

Existing Facilities and Opportunities

Stanislaus Forebay has no developed recreation facilities and it mainly provides for day use fishing opportunities for a relatively small number of users as compared to another Project reservoir, Pinecrest Lake. The entire shoreline and canal leading to the forebay are easily accessible for fishing access. There are dispersed sites that accommodate the small amount of overnight use. From the data on regional origin of the users interviewed, and the high percentage of day use (84%) it appears that this reservoir receives use from local residents who like to fish. Fishing success appears to be good however this assessment is only based on interviews with seven anglers. Vandalism is a problem in this area as evidenced by recurring damage to the portable toilet (removed in 2001) as well as to the signs and Project facilities near the forebay. Sanitation and litter are two other problems associated with the recreation use at Stanislaus Forebay.

Current Recreation Use

Current recreation use at Stanislaus Forebay is low and consists mainly of nearby residents that enjoy fishing. It receives some overnight use but it is mainly a day use destination. Reasons for the low use may include the long drive over rough roads and the safety restrictions that prohibit swimming and boating on this small forebay.

Future Demand and Needs

The analysis and discussion pertaining to Future Demand and Needs have been discussed in section 7.5.2.4.

Additional Facilities

At Stanislaus Forebay the interview responses indicate a need for a restroom at the reservoir. Possible options could include a portable toilet of higher quality than has been provided in the past or a concrete vault toilet.

7.5.4.5 Conclusions

R-2: Does the Project cause recreational impacts/benefits outside of the Project boundaries and if so, what are they?
Stanislaus Forebay also provides a waterside setting for recreational activities, primarily fishing, camping, hiking, OHV use, and day use. Impacts that occur at this Project feature include poor sanitation, trash and some minor instances of erosion from OHV use.

R-3: Does the Project induce recreational uses and, if so, what kinds, how much and where are they?

Fishing, camping, hiking, OHV use and day use are the primary recreational uses associated with this Project feature, and these activities occur within and adjacent to the Project boundary. Most of the use occurs during the summer months with additional use during the year depending on snow levels. There are an estimated 508 annual visits associated with the various recreation activities, many of which come from nearby communities such as Sonora. Regionally, this feature of the Project mainly provides for fishing opportunities in the reservoir and in the adjacent canal leading to the reservoir; boating and swimming are not allowed on the reservoir for public safety reasons. Camping occurs mainly along the south shore of the reservoir.

R-5: Does the Project include any recreational facilities? Are there opportunities for additional recreation? What are the projected demands? How would additional facilities be prioritized?
R-18: Can mitigation for public use around Pinecrest Lake be included specifically, can restroom facilities along the lake loop trail and a means to collect and remove trash from around the lake be provided?

There are no Project recreation facilities at Stanislaus Forebay. One improvement that could be considered is to provide a functional restroom. This addition at the forebay would be consistent with meeting the needs identified by the users and would be consistent with the ROS classification. If a toilet is provided at Stanislaus Forebay, the recurrent problem of vandalism should be considered in deciding the type of toilet and where it should be located. Additionally, a regular patrol of the area for litter would improve the visitor's experience and could be considered. As mentioned above in the discussion for Relief Reservoir, the demand for dispersed recreation opportunities may increase over the term of the license. If this occurs, use levels may increase at Stanislaus Forebay. However this projected increase will likely be small considering the existing annual use is only 508 visits.

R-6: Does the Project have direct impacts on recreation and, if so, what?

Project entrainment of fish at Sand Bar Diversion Dam into Stanislaus Power Tunnel helps to sustain recreational fishing use at Stanislaus Forebay.

R-15: How accessible are the Project facilities to persons with disabilities?

There are no developed Project recreation facilities at Stanislaus Forebay.

7.5.5 Relief Reservoir Recreation (Study Plan 8.3.13)

Issue Questions Addressed – ***R-2, R-3, R-5, R-6, R-11, R-15 and R-21.*** *R-2: Does the Project cause recreational impacts/benefits outside of the Project boundaries and if so, what are they? R-3: Does the Project induce recreational uses and, if so, what kinds, how much and where are they? R-5: Does the Project include any recreational facilities? Are there opportunities for additional recreation? What are the projected demands? How would additional facilities be prioritized? R-6: Does the Project have direct impacts on recreation and, if so, what? R-11: Does the Project affect current levels of recreational use, and if so, which uses, and how? R-15: How accessible are the Project facilities to persons with disabilities? R-21: What is the social and resource carrying capacity related to the Projects recreation area? What would the carrying capacity be for various combinations of use?* (This issue question was eliminated from the Relief Reservoir Recreation Study by SPLAT subsequent to Study Plan approval.)

7.5.5.1 Study Objectives and Study Area

The objectives of this study were to: 1) estimate use levels, 2) identify any resource damage at the site, 3) recommend the appropriate mitigation for any damage and 4) determine appropriate access (e.g., 4WD closure areas). The study area included the immediate area surrounding Relief Reservoir, the area near the caretaker's cabin and the trails in the immediate area of the reservoir.

7.5.5.2 Study Methods

Existing Facilities and Opportunities

The Licensee identified recreational opportunities and facilities at Relief Reservoir, by visiting the reservoir and interviewing the STF and Kennedy Meadows Pack Station staffs. Since there are no developed recreation facilities at Relief Reservoir, the Licensee did not conduct evaluations for accessibility at these locations.

Current Recreational Use

The Licensee estimated recreational use using two methods: 1) the Licensee's face-to-face interviews of staff of the STF and the Kennedy Meadow Pack Station and 2) review of STF wilderness permit data. Each of these is discussed below.

The study plan called for Licensee to interview the local pack station staff and to review the STF wilderness data to develop use estimates at Relief Reservoir. The Licensee conducted interviews with Matt Bloom and Willie Ritts of the Kennedy Meadow Pack Station on September 6 and October 12, 2000. The Licensee obtained use data as well as trend and anecdotal information

related to the use they have observed at Relief Reservoir over many years of their operation of the pack station. The Licensee also contacted STF staff Bob Wetzel and obtained wilderness permit data for the Huckleberry Trailhead, which is the trailhead at Kennedy Meadow for the trail that leads to Relief Reservoir.

The study plan also called for the Licensee to complete a visual assessment of any resource damage caused by recreational use. The Licensee conducted a site visit on September 6, 2000 to Relief Reservoir. The Licensee inspected the areas with known recreation use on the north, south and east areas of the reservoir between the main trail and the reservoir shoreline and the area around the caretaker's cabin for signs of erosion, damage to vegetation and improperly located campsites (i.e., too close to the shoreline, streams or trail). The Licensee visited and mapped the general locations of the sites that appeared to receive recurrent use.

Future Demand and Needs

The methods used by the Licensee to assess future demand and needs included the recreation user interviews and reviews of existing Forest Service, county and state plans and the publication Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends (Cordell 1999).

Additional Facilities

The methods used to assess the need for additional facilities included the Licensee's site inspections. Consultation with the STF staff and a review of their LRMP were used to evaluate the appropriateness of additional facilities at Relief Reservoir.

7.5.5.3 Study Results

Existing Facilities and Opportunities

The recreational opportunities and facilities at Relief Reservoir are described in detail in section 7.4.1.

In general, Relief Reservoir provides opportunities for fishing, camping, hiking and day use; there are no developed recreation facilities at this location. This reservoir has quiet and undeveloped qualities because it has limited access and it is mostly surrounded by wilderness. The surrounding Emigrant Wilderness contains over 112,000 acres. It is characterized by bare glaciated granite, sub-alpine vegetation types, numerous glacial lakes, high quality scenery and excellent wilderness recreation opportunities. Recreation use, which includes backpacking, horse packing, hunting, fishing, cross-country skiing and rock climbing increased rapidly throughout the seventies and early eighties then dramatically declined in the mid 1980's, Use has shown a steady increase since 1989 and now averages around 75,000 RVD's of overnight use and an estimated 20,000 RVD's of day use per year (USDA 2002c).

From the trail leading to Relief reservoir, there are many user defined trails leading to the shoreline that visitors can use to access the reservoir. The Licensee observed three areas that have fire rings where visitors can camp. These areas are near the east end of the dam, Grouse Creek and west of Summit Creek. The fire rings were clean, there was no evidence of erosion and the campsites were located at an appropriate distance from the shoreline, creeks and trail. The fire rings appear to have been created by visitors. The only resource damage observed was carving in the bark of a few aspen trees. Since there is no forage near the reservoir, the area does not receive much use from visitors using pack stock. No resource damage was noted near the caretaker's cabin.

Current Recreation Use

The Licensee reviewed data from the STF and the pack station at Kennedy Meadow to develop use estimates at Relief Reservoir. The STF provided all of the wilderness permit data it had available which was for the years 1999 and 2000. In 2002, the STF provided additional use data for 2001. This data includes visitor destinations and was used to provide an estimate of the overnight use at Relief Reservoir. There are a total of sixteen trailheads into the Emigrant Wilderness. Approximately 30 percent of the wilderness permits are associated with visitors who use the Crabtree Trailhead which is east of Pinecrest Lake. The Kennedy Meadow Trailhead, near Relief Reservoir, is slightly less popular and receives approximately 26 percent of all trailhead use associated with the Emigrant Wilderness. The STF staff state that although visitors are not required to have a wilderness permit to camp at Relief Reservoir, most people obtain a permit for camping at the reservoir. The wilderness use data provided by the STF is provided below in Table E7.5-17. The data for other destinations in the Emigrant Wilderness is provided for context.

TABLE E7.5-17
Wilderness permit data provided by the STF for Relief Reservoir and the Emigrant Wilderness

	Number of Visitors[1]			
	1999	***2000***	***2001***	***Avg 1999 to 2001***
Relief Reservoir	959	720	256	645
Other destinations within the Emigrant Wilderness	17,885	16,275	8,114	14,091

[1]Data from STF wilderness permit data base, 'Summary Travel Zone Use Emigrant Wilderness'. Queries dated 10/6/2000 and 9/9/2002.

The day use at Relief Reservoir consists of those visitors on half-day rides from the Kennedy Meadow Pack Station that terminate at the reservoir as well as those visitors that hike in as part of a day trip to the reservoir. The use information provided by the pack station for 1998 to 2000 indicates that there are approximately 314 visitors a year that visit the reservoir using their services. There is additional day use from the nearby STF campgrounds, recreation residences and other visitors passing through the area, however permits are not required for day use and there were no sources of information to estimate the use attributed to this source of day use. During the summer of 2000, the STF attempted to gather this information with a laser counter

located near the trailhead. The Licensee reviewed this information, however the data was not used in developing the use estimates in the study mainly because the data from the counter included pack stock as well as hikers.

Averaging the use data for 1999, 2000 and 2001 for the overnight use documented by wilderness permits (645 visitors) and the day use attributed to the pack station (314 visitors), the estimated annual use at Relief Reservoir is approximately 959 visitors. This may be a conservative estimate since there were no reliable sources of information to estimate day users from the campgrounds, recreation residences or other locations.

Relief Reservoir has important recreational value particularly in the late spring and early summer. Visitors looking for opportunities at this time of year are often challenged by the presence of snow on many trails in the Sierra. The trail from Kennedy Meadows is easily accessible from Highway 108 and it is usually one of the first to open. Even if visitors intend to travel to a destination beyond Relief Reservoir, they may find that the trail is not passable and they may stay at Relief Reservoir as an alternative. Consequently late winters can cause high periods of both day and overnight use in the late spring and early summer months at Relief Reservoir; Memorial Day is a particularly time of high visitor use at Relief Reservoir.

Future Demand and Needs

The study results pertaining to Future Demand and Needs have been discussed in section 7.5.2.3.

Planned Facilities

The Licensee reviewed the STF LRMP for management direction pertaining to facility development, consulted STF staff to determine any future plans that the Forest Service has for these areas, and reviewed the STF Capital Investment Program, which identifies planned and funded facility development through 2004. The STF states that they do not have any plans to develop recreation facilities at Relief Reservoir and the STF LRMP does not identify any needed facilities at this area. However, the STF staff also stated that as dispersed use increases in the future, there may be concern in the future for damage to natural resources caused by recreation use associated with Relief Reservoir. The STF would like to see the user created trails between the Huckleberry Trail and the shoreline evaluated in terms of need and impacts and monitored during the term of the Project license.

Additional Facilities

Relief Reservoir has an ROS designation of 'Primitive' in the STF LRMP management direction, which is characterized by an essentially unmodified natural environment essentially free from evidence of management restrictions and controls. Mechanized use is not permitted except with Forest Service approval. Consultation with the STF did not indicate any need for additional

facilities at Relief Reservoir. Additionally, the Kennedy Meadow Pack Station staff stated that based on their interactions with their customers, visitors have not expressed a desire for additional facilities at Relief Reservoir.

7.5.5.4 Analysis and Discussion

Existing Facilities and Opportunities

The Project reservoir provides fishing opportunities and an aesthetically pleasing setting for visitors passing through the area. Most of the use occurs in the summer months and consists mainly of day users with a small amount of overnight use. There are no developed recreation facilities at Relief Reservoir; however, there are access trails and dispersed campsites along the shoreline which accommodate existing use. The existing recreation use that is occurring at the reservoir is not causing resource damage. However, the STF is concerned over the number of user created trails that lead to the shoreline. Their stated preference is to have a low density of trails in the area to minimize soil compaction, vegetation damage and evidence of human activities. The STF believes it is necessary to inventory the trails in order to assess the need to possibly close and restore some of the user created trails. Relief Reservoir is located very close to the boundary of the Emigrant Wilderness and it has a 'Primitive' ROS classification. Consequently, non-motorized access to Relief Reservoir is consistent with the STF land management direction.

Current Recreation Use

Current recreation use at Relief Reservoir is low and the existing visitors enjoy the self-supporting type of recreation experience where there are few encounters with other people in a natural setting. Based on the data reviewed by the Licensee, Relief Reservoir is not a popular overnight destination but does receive some day use. Possible reasons for low overnight use may be that the reservoir is located only about three miles from the trailhead and most wilderness users can travel further than this before stopping to camp for the night. Another reason may be that there is no forage available, which would limit use by those traveling with pack stock.

Future Demand and Needs

The analysis and discussion pertaining to Future Demand and Needs have been discussed in section 7.5.2.4.

Additional Facilities

No additional facilities were identified as needed at Relief Reservoir. Additionally, this reservoir is located adjacent to the wilderness and has a 'Primitive' ROS classification and developed facilities would not be consistent with this designation.

7.5.5.5 Conclusions

R-2: Does the Project cause recreational impacts/benefits outside of the Project boundaries and if so, what are they?

Relief Reservoir is an attractive feature for people to enjoy as an overnight or day use destination or as they are passing by on the Huckleberry Trail. Approximately half of the shoreline has multiple points of shoreline access for visitors. It is uncertain if the density of user-created trails to the shoreline is consistent with the STF ROS classification. The STF stated that its preference is to map each trail, assess the overall density of trails at the reservoir and, if necessary, close and restore some of the trails. Overnight camping at the reservoir is compliant with STF regulations for campsite locations and is not causing damage to natural resources. Visitors are not leaving their trash in the area around the reservoir.

R-3: Does the Project induce recreational uses and, if so, what kinds, how much and where are they?

Fishing, camping, hiking and day use are the primary recreational use associated with this Project feature. Most of the use occurs during the summer months. There are an estimated 959 annual visits associated with the various recreation activities. Most of the use occurs on the east side of the reservoir where the trail and dispersed overnight sites are located.

R-5: Does the Project include any recreational facilities? Are there opportunities for additional recreation? What are the projected demands? How would additional facilities be prioritized?

There are no Project recreation facilities at Relief Reservoir. Developed facilities are not necessary to accommodate the existing dispersed uses that occur at the reservoir. Additionally, constructing developed facilities would not be consistent with the ROS classification of 'Primitive'. There are indications in the publications reviewed by the Licensee that demand for dispersed recreation will increase. Relief Reservoir may be one of the areas that experiences a growth in use level over the term of the license. However, since at the present time the estimated number of visits at Relief Reservoir is less than 1,000 per year, projected growth in use is expected to be small. In addition, the STF's projection that the future demand for dispersed recreation on the Forest will be met, and the proximity of Relief Reservoir to other lakes, makes it likely that any visitors that may be displaced at Relief Reservoir in the future could be accommodated at nearby lakes in the adjacent wilderness. Since additional facilities are not necessary at Relief Reservoir, there is no need to discuss prioritization of additional facilities. However, if use increases at Relief Reservoir, this may cause more trash to be left behind by visitors. Additionally, increased use may cause more user-created trails to be developed to access the shoreline. Consideration might be given to providing an occasional patrol to remove trash and monitor the area for future resource damage related to recreation use at the reservoir.

R-6: Does the Project have direct impacts on recreation and, if so, what?

No direct impacts of the Project on recreation were identified at Relief Reservoir. The reservoir is drawn down gradually, and the low reservoir period occurs during winter when recreational access is precluded by snow.

R-11: Does the Project affect current levels of recreational use, and if so, which uses, and how?

The level of recreation use at Relief reservoir is only minimally affected by the Project. The recreational use consists primarily of day users to the reservoir who enjoy the view and fishing opportunities. However, most visitors are just passing by the reservoir on their way to wilderness destinations.

R-15: How accessible are the Project facilities to persons with disabilities?

There are no developed Project recreation facilities at Relief Reservoir.

7.5.6 Regional Recreation (Study 8.3.12)

Issue Questions Addressed – R-8. *R-8: Does recreation at the Project affect Project or local economics, and if so, how? What is the potential benefit to local community if boating (lake or river) at the Project increases? Are there opportunities to increase socio-economic benefits?*

7.5.6.1 Study Objectives and Study Area

SPLAT recommended that the Licensee assess the Project recreational opportunities (existing and projected) in the context of regional opportunities. The study area included the Highway 108 corridor, including Lake Don Pedro, New Melones, and Tulloch reservoirs and the lower Stanislaus River to the Sierra Crest.

7.5.6.2 Study Methods

The Licensee's methods conformed to methods recommended by SPLAT. These were to: 1) identify recreation opportunities/facilities within the study area, 2) identify recreational needs based on STF, County, and state plans (such as LRMP and SCORP), 3) identify origin of recreationists based on user surveys at the Project facilities and, 4) determine existing regional demand.

7.5.6.3 Study Results

The recreation opportunities and facilities within the study area have been identified and are discussed in section 7.3.2. Commercial businesses are also present at Pinecrest. These include a restaurant, grocery store, resort and marina. These businesses, with the exception of the marina, serve the visitors to Pinecrest during the summer months and remain open in the winter when their clientele shifts to the winter use visitors that mainly participate in winter sports at nearby Dodge Ridge.

The identification of the recreational needs was completed as part of the individual reservoir study plans and this is discussed in detail in section 7.5.2.3 under *Future Demands and Needs*. In summary, the results of the literature review identified increasing demand for most recreational activities. This is due in large part to growing population trends, however both population trends as well as the popularity of specific recreation activities affect projected demand. The Pacific region of the country will see the greatest number of activities for which primary-purpose trips will grow faster than the population. Activities with growth rates less than the population growth rate include fishing, hunting, sailing and horseback riding. The data indicate stronger growth in land-based activities such as hiking, backpacking, primitive camping, off-road driving and walking rather than water-based activities or those activities that occur on snow or ice. One exception to this may be whitewater boating. In California, Susan Norman, Regional River Recreation Specialist in Region 5 of the Forest Service reports that boating use on traditionally popular rivers is stable and, in some cases, private boating use on these rivers is actually decreasing (USDA 2001a). However, freestyle paddling is increasing in popularity and boaters are seeking more extreme experiences and accessing river segments that would not have been considered desirable for most boaters 10 years ago. This type of boating opportunity exists on some of the Project reaches and a full discussion of whitewater boating is included in section 7.5.5.

On a local level, trail systems are identified by the STF, Tuolumne County and the State as areas of emphasis for their recreation programs. The STF LRMP projects that Forest-wide there will be an unmet demand for developed recreation by the year 2040, however the demand for dispersed recreation should be met by the projected supply.

The origin of users that visit the Project reservoirs are provided in Table E7.5-18 below.

TABLE E7.5-18
Percentage of visitors by regional origin based on the interviews conducted at the Project reservoirs in 2000.

Regional Origin of Visitors	**Pinecrest Lake**	**Stanislaus Forebay**
California-Bay Area	35%	26%
California-Central Valley	34%	13%
California-Southern	4%	6%
California-Northern	2%	3%
California-Central Foothill/Mountain Communities	22%	42%
Unknown and Out-of-State	2%	10%

7.5.6.4 Analysis and Discussion

The analysis and discussion of the literature review is presented in detail in section 7.5.2.4 under *Future Demand and Needs*. In summary, the review reveals that demand for the present recreation opportunities at the Project will continue to exist and grow over the term of the next license. The spectrum of recreation activities that occur in the general vicinity of the Project align well with the types of recreation activities that are forecast in the future, however the supply of opportunities may fall short of demand. In particular, the settings provided by the Project could provide for additional hiking, whitewater boating and educational or interpretive opportunities.

Regionally, the data show that Stanislaus Forebay is used largely by local residents that come to the reservoir for the day. Pinecrest Lake does not receive as much use from nearby communities. A considerable number of the visitors to Pinecrest come from the Bay Area and the Central Valley.

7.5.6.5 Conclusions

Most of the issue questions to be addressed in the Regional Recreation Study have been addressed in the study plans conducted at the individual Project reservoirs and in the Whitewater Boating Study. The reader is referred to section 7.5.2.5 and 7.5.5.5 for these conclusions.

The Project, and particularly Pinecrest Lake, attracts people for recreational purposes. Day use and overnight facilities that provide settings for visitors to compliment their visit to Pinecrest are present adjacent to the Project boundary. Project benefits to the local economy are mainly associated with the Licensee's reservoir at Pinecrest because of its high recreation use levels. These benefits exist in the form of revenue to local business owners and the federal government (i.e., fees for overnight use at STF campgrounds, notices of violation), and tax revenue to the state and Tuolumne County. Opportunities to increase socio-economic benefits in relation to recreation appear limited. The existing businesses appear to serve the full range of services that visitors need during their time at Pinecrest. Currently there is little whitewater boating use in the vicinity of the Project in the form of small creek boating opportunities; users would likely be kayakers and not rafters. Opportunities for commercial boating is not expected since the Project reaches are not highly suitable for rafting. The main source of recreation-related economic benefit to the community is anticipated to continue to be associated with Pinecrest Lake.

7.5.7 Flatwater Recreation Management (Study 8.3.6)

Issue Questions Addressed – ***R-12.*** *R-12: How is flatwater recreation on Project reservoirs managed and enforced? How should it be regulated?*

7.5.7.1 Study Objectives and Study Area

SPLAT identified one study to address this issue question, the Flatwater Management Study. The study objectives are discussed in section 7.5.2.1.

7.5.7.2 Study Methods

The methods used for the Flatwater Management Study included: 1) a literature search, 2) user interviews and 3) special interest group surveys. A review of the landownership pattern was also conducted.

7.5.7.3 Study Results

The Project reservoirs are located almost entirely on public land managed by the STF. The Tuolumne County Sheriff is responsible for establishing and enforcing regulations on the reservoirs. The Sheriff stages a boat at the Pinecrest marina and occasionally patrols Pinecrest Lake; since boating is not allowed at Stanislaus Forebay and the reservoir is not patrolled. Similarly, Relief Reservoir is also not patrolled. The STF provided verbal accounts of visitors occasionally boating with small inflatable fishing boats on Relief Reservoir. The STF staff believes that visitors drive with 4WD vehicles to the west side of the reservoir by way of the Eagle Meadow Road and then hike to the reservoir with their small boat and motor. During the course of completing the relicensing studies, the Licensee's field staff never observed any boating use on Relief Reservoir. The local pack station operator was interviewed in 2000 and he stated that he had not observed boating activity on Relief Reservoir.

The county has established a 20 mph speed limit on Pinecrest and there is a state imposed restriction of 5 mph speed along shorelines and near swimmers. There is a buoy line maintained by the Licensee that marks the swimming area at Pinecrest Lake. Swimming is allowed outside of the area marked by buoys and user conflicts between swimming and boating were noted by the Licensee in responses to interviews and questionnaires.

7.5.7.4 Analysis and Discussion

The only Project reservoir where there is significant boating use is Pinecrest Lake. Boating use is appropriately regulated by the county sheriff department, which has the legal authority to enforce the state boating laws. This is also appropriate considering that the Project reservoirs are almost entirely located on public land. Although the Licensee operates the Project and maintains safety buoys, it is the state and local boating regulations that govern boating activities and the Licensee does not have the authority to regulate this matter.

7.5.7.5 Conclusions

Tuolumne County has adopted boating regulations that it is responsible for enforcing, at Pinecrest Lake. User conflicts are present largely because of the high number of shoreline users. Consideration could be given to establishing zones along the shoreline for specific types of use (i.e., swimming or boating only) to reduce user conflicts. However, since this reservoir is located entirely on public land, it is appropriate for the local county to continue to manage and regulate boating use at the reservoir. Since boating is prohibited at Stanislaus Forebay and there are only anecdotal accounts from the STF staff of occasional boating use occurring at Relief Reservoir, there is no indication that changes are needed in the current management of these reservoirs relative to flatwater use.

7.5.8 Availability of Boating Flow Information (Study 8.3.1) and Whitewater Boating (Study 8.3.17)

This section includes information developed and analyzed for studies listed below. The discussion of these two studies is combined because of data gathered in the Whitewater Boating Study was used to complete the Availability of Boating Flow Information Study.

Issue Questions Addressed – ***R-4 and R-7.*** *R-4: Does the Project affect recreational whitewater boating/kayaking including access, and if so, how? Does the Project create opportunities for recreational boating/kayaking and, if so, what and where are they? R-7: Does the hydro Project provide information about whitewater boating flows, and if so, how? (e.g. is flow information available on a real-time basis?)*

7.5.8.1 Study Objectives and Study Area

SPLAT recommended and the Licensee completed studies entitled *Availability of Boating Flow Information* and *Whitewater Boating* to address these questions. These studies were designed to address issues related to relicensing the Spring Gap-Stanislaus Beardsley/Donnells and Tulloch projects. The study objectives of the flow information study were to determine: 1) the sources of information currently available; 2) how it is obtained by users; 3) is the information adequate to meet existing and projected boating needs; and 4) opportunities to improve the adequacy of the information. The objectives of the whitewater boating study were to: 1) identify river reaches with whitewater opportunities in the Projects' vicinity; 2) determine how the Projects affect those opportunities (flow and access); and 3) identify a range of options with discussion (including feasibility) for additional studies (i.e. controlled flow studies).

The study area was defined as the entire MFSR, SFSR and the reach downstream of Goodwin dam for the purpose of identifying regional whitewater boating opportunities.

7.5.8.2 Study Methods

The Licensees methods conformed to the methods recommended by SPLAT, which were to conduct interviews with whitewater boaters and summarize existing information relative to whitewater boating on the MFSR and SFSR. The summary of existing information included identifying and assessing the access points and gathering and displaying the historical flow information. This information was then used as the basis to determine if additional studies such as controlled flow studies were needed and, if so, where these studies were needed.

The Licensee completed telephone interviews with whitewater boaters and other persons with local knowledge. The interview form and the initial list of contacts were developed in consultation with Forest Service and American Whitewater (AW) staff. The Licensee obtained additional names of people to contact in the course of conducting the interviews. The Licensee attempted to contact all 73 persons on the list by phone or e-mail to arrange interviews and succeeded in contacting 26 persons for interviews. Information was gathered regarding locations of runs, frequency of use, estimates of boatable flows, access, flow information, safety and other attributes of whitewater boating runs on the MFSR between Relief Reservoir and Stanislaus Powerhouse and on the SFSR between Strawberry and Parrots Ferry. A summary of the interview responses is included in the Appendix.

The Licensee also developed historical flow information for the Project reaches that were identified as runs in the whitewater boating guidebook (Holbeck and Stanley 1998) and by the boaters that were interviewed. The range of boatable flows used for each reach was determined from interview responses and recommended flows in the guidebook. The Licensee determined the number of boatable days under regulated and unregulated hydrological conditions using gauge data from 1974 to1999 and presented the data for dry, normal, and wet types of hydrologic years for each whitewater run on the MFSR and SFSR.

The Licensee presented the results of the interviews, the summarized run information (access, gradient etc.), and the analysis of boatable days under regulated and unregulated conditions to SPLAT. Information was presented for the following reaches: Relief, Donnells, Beardsley, and Strawberry. This information is presented in Section E7.3 in Table E7.3.1 and in Tables E7.5-19 through E7.5-21 in the following section which reports the study results. After reviewing the existing information described above, SPLAT determined that further studies were needed for the Donnells and Sand Bar reaches to determine the range of suitable flows for whitewater boating. SPLAT recommended and the Licensees agreed to perform a whitewater boating flow study on the MFSR below Donnells Reservoir and below Sand Bar Diversion. The Licensees developed study plans and boater questionnaires for completing these studies in consultation with the stakeholders including AW staff, FS and SWRCB.

The methods used for the Availability of Flow Information Study included polling users as part of the interviews conducted by the Licensees on how they currently get information, identifying where information is currently available, reviewing exemplary sources of flow information, and receiving input from boating organizations and agencies.

.3 Study Results

Whitewater Boating Opportunities-Flows

The results of the Whitewater Boating Study are summarized in Tables E7.5-19 through E7.5-21 below.

TABLE 7.5-19
Boatable and Optimum Flows (from Guidebooks and Interviews) and Number of Boatable Days Under Unimpaired and Regulated Conditions

River Reach	*Name of Run*	*Range of Boatable Flows*		*Optimum Flows*		*Number of Boatable Days/Year based on the Range of Boatable Flows (April through September)*								
		Guidebook[1] (cfs)	*Interviews[2] (cfs)*	*Guidebook[1] (cfs)*	*Interviews[2] (cfs)*	*Assumed Range of flows (cfs)*	*Dry Year (1988)*		*Normal Year (1975)*		*Wet Year (1995)*		*Average*	
							Unimpaired	*Reg*	*Unimpaired*	*Reg*	*Unimpaired*	*Reg*	*Unimpaired*	*Reg*
Relief	Dardanelles	300-600	250-1,500	500	300-1,000	250-1,500	15	8	69	62	102	92	62	54
	Donnells	400-800	300-2,500	700	300-1400	300-2,500	39	34	77	76	118[3]	118[3]	82	85
Donnells[4,5]	None (Donnells to Hells Half Acre)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Beardsley Afterbay and Spring Gap[4]	None (Beardsley Afterbay to Sand Bar)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sand Bar	Sand Bar Flat	800-1,500	400-1,500	1,200	400-1,500	400-1,500	70	0	72	23	46	51	58	29
	Mount Knight	1,200-3,000	300-3,000	2,000	400-3,000	400-1,500	70	0	72	23	46	51	58	29
Pinecrest and Philadelphia	Strawberry	400-1,200	200-1,500	700	500-900	200-1,500	24	11	64	58	110	100	62	48
Lyons[5]	Italian Bar	400-1,200	200-1,500	700	400-1,500	200-1,500	27	0	72	42	124	95	68	39

[1]Holbeck and Stanley, 1998
[2]Interviews were conducted with 25 persons that had boated these runs to gather site specific information about these runs.
[3]1980 (no gage data after 1994)
[4]no documented use from the interviews
[5] Non-project reach

TABLE 7.5-20
Whitewater Access Information

River Reach	*Name of Run*	*Access*			
		Distance (between put-in and takeout)	Travel Time (between put-in and takeout)	Put-in	Take-out
Relief	Dardanelles	9 miles	0.5 hr.	Easy-adjacent to road/ campground, parking available, bathroom in campground, paved access road from Hwy 108	Easy-adjacent to road, steep slope up from river but short distance (<50 ft.), good parking, no bathroom, paved access road. Alternative take-out at Wagner Rec. Res. tract-easy, adjacent to road, no bathroom
	Donnells	27 miles	1.5 hr.	Easy-adjacent to road, steep slope down to river but short distance (<50 ft.), good parking, no bathroom, paved access road from Hwy 108	Difficult-2 mile paddle across lake, .5 mi. hike to parking area, haul boats up to dam and over fences, no bathroom, about 15 miles/paved, 15 miles/upaved (level 2 & 3), high clearance vehicles recommended
Donnells[3]	None[1] (Donnells to Hells Half Acre)	11 miles	1.5 hr.	Difficult-1/2 mi. hike down to river, no bathroom, unpaved access roads, high clearance vehicles recommended	Easy-adjacent to road, no bathroom, upaved access roads, high clearance vehicles recommended
Beardsley Afterbay[3]	None[1] (Beardsley Afterbay to Sand Bar)	28 miles	1.5 hr.	Moderate difficulty- parking and bathroom available at China Flat Day Use Area, .5 mile walk on gated road beyond parking area. easy access to channel at afterbay dam, paved access from Hwy 108 except for last 0.25 mile.	Easy-adjacent to road/campground, bathroom in campground, good parking, about 7 miles unpaved roads
Sand Bar	Sand Bar Flat[2]	12 miles (+2 mile hike out)	1 hr. (+hiking time)	Moderately difficult-paddle across reservoir and carry 1-200 yds. to put-in below dam, good parking, campground nearby with bathroom, unpaved roads from Hwy 108	Difficult-2 mile hike out with poison oak, informal trail, no bathroom, all unpaved roads between put-in and take-out
	Mount Knight[2]	14 miles (+2 mile hike in)	1 hr. (+hiking time)	Difficult-2 mile hike in with poison oak, informal trail, no bathroom, unpaved access roads from Hwy 108	Difficult-Dirt surfaced parking for about 20 cars in a graded area between switchyard and river. Possible to back vehicles down dirt road (~250') to take boats out. Take-out is immediately after tailrace. Steep rip-rapped slopes downstream of take-out. High clearance vehicles recommended. No bathrooms.
Pinecrest and Philadelphia	Strawberry	10 miles	0.5 hr.	Easy-adjacent to road, parking may be limited with other users along the river, no public bathroom but commercial businesses nearby, paved access (Hwy 108)	Easy-from Hwy 108: 3 miles Fraser Flat Rd (paved road), and 6 miles on 4N90 (native surface, requires high clearance vehicle) take-out is about 50 feet from river and it is easy to get to the shoreline. Abundant flat area for parking. No bathrooms.
Lyons[3]	Italian Bar	10 miles	30 min.	Moderate difficulty-adjacent to road, ~75' to put-in, level ground but near mining claim, limited parking/have to unload then park up the road on public land (2 wide areas along the road 4-6 vehicles), no bathroom, 3.7 mi. unpaved & 2.6 mi paved access road from Columbia. Dredges present in the river channel associated with private land.	Difficult-5 mile paddle on New Melones, road to the take out is gated at Parrots Ferry Rd./ ¼-1/2 mi. walk up to Parrots Ferry Rd. from the lake. Asphalt is deteriorating below high water mark and road between high water mark and Parrots Ferry Rd. isn't maintained. 2 areas suitable for parking on gated access rd.--approx. 15-20 spaces, dirt surface. Wide turnout on Parrots Ferry Rd.—approx. 4-6 spaces, dirt surface, no bathroom.

[1]Not identified by Holbeck and Stanley as a whitewater boating run. No documented use from the interviews, presumed put-in and take-out
[2]These runs can be combined and a different shuttle would be used (Hwys 108 and 49). This would be approx. 60 miles and would take about 2 hours.
[3]Non-project reach

TABLE 7.5-21
User Satisfaction Rating from Interviews[1]

River Reach	*Name of Run*	*User Satisfaction Rating from Interviews[1] (Number of Responses Ranked 1-10, 10=best)*											
		10	*9*	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*	*Avg.*	*Mean*
Relief	Dardanelles		1	8	3							7.8	8
	Donnells		1	3	4	2	1					7.1	7
Donnells[3]	None[2] (Donnells to Beardsley)	No users identified in the process of interviewing white water boaters in 2000											
Beardsley Afterbay	None[2] (Beardsley Afterbay to Sand Bar)	No users identified in the process of interviewing white water boaters in 2000											
Sand Bar	Sand Bar Flat	1	1	1								9	9
	Mount Knight	1	2	3	2							8.3	8
Pinecrest and Philadelphia	Strawberry					1		1			1	3.7	4
Lyons[3]	Italian Bar	2	1	3		3						7.8	8

[1]Boaters contacted were asked for contact information of other boaters with experience on these runs. Extensive efforts were made to interview all of these contacts—25 contacts of boaters with experience on these runs were successfully interviewed.
[2]Not identified by Holbeck and Stanley as a whitewater boating run.
[3]Non-project reach

The existing information was reviewed for the Relief, Sand Bar and Strawberry reaches. A whitewater sub-group of SPLAT made the following recommendations to SPLAT:

> **Relief Reach-**1) no need to improve the put-in, 2) improvement at the take-out is needed at Donnells Reservoir (this is being addressed in Beardsley-Donnells License Application), 3) no controlled boating releases from Relief Dam are necessary, and 4) make flow information more readily available to assist users in determining when flows are adequate for boating.
>
> **Sand Bar Dam Reach-** 1) no need to improve the put-ins or the take-out, 2) consider possible boating flow releases in the third year of a non-spill period, 3) make flow information more readily available to assist users in determining when flows are adequate for boating, 4) evaluate the whitewater boating opportunities in New Melones Reservoir below Stanislaus Powerhouse and 5) a single flow study is necessary in this reach.
>
> **Strawberry Reach-**1) no need to improve the put-ins or the take-out, 2) make flow information more readily available to assist users in determining when flows are adequate for boating and 3) no controlled boating releases from Strawberry Dam (Pinecrest) are necessary.

The evaluation of the number and timing of days available for whitewater boating resulted in the above recommendations to SPLAT. The Sand Bar Reach was the only reach identified to have impacts on whitewater boating that need to be addressed in the License application. Based on the questionnaires completed by the participants in the whitewater boating study in 2002, and the information in Holbeck and Stanley whitewater guidebook, the range of boatable flows was determined to be between 600 and 1,500 cfs. Within this range of flows in an average type of water year, there is an average of 46 days per year available for whitewater boating underunimpaired conditions and 22 days per year available for whitewater boating under regulated conditions. Since the Sand Bar Project went into operation in 1986, an average water year would be represented by 1999. In that year, the number of boatable days under the synthesized unimpaired and regulated flow conditions were 39 and 23 days, respectively; this indicates a difference of 41 percent with operation of the Project. Under unimpaired conditions, flows in the boatable range end in dry years around mid April-May, in average years around mid-June to mid-July and in wet years around the end of July through August. The reduction in the number of days of boatable flows und the regulated conditions occur during the ascending leg of the unimpaired hydrograph (normally April/May) when water temperatures are colder and there is little boater demand. During the descending leg of the hydrograph later in the year (normally June), the Project does not reduce the number of days of boatable flows compared to the unimpaired hydrograph, but it does shift the period of these flows approximately one week earlier than in unimpaired conditions. The period of boatable flows on the declining leg of the unimpaired hydrograph is short, typically three to four weeks long. The Project has little affect on the shape of the descending limb of the hydrograph. If Beardsley Dam (upstream in the Beardsley-Donnells Project) spills, it provides three to four weeks of flows in the boatable range.

Historically, there were no years when Beardsley Dam just barely spilled and did not provide such flows.
The single flow study plan for the Sand Bar Reach was developed by the Licensee in cooperation with stakeholders. AW staff and the FS recommended a target flow of 700 cfs for the boating study below Sand Bar Diversion. Some members of the study team were able to evaluate the reach by helicopter on June 10, 2002 during the flow study conducted on the Donnells Reach for the Beardsley-Donnells relicensing study.

The flow study for the Sand Bar Reach was conducted on June 21, 2002 by two teams of three boaters. The participants in the study described themselves expert and advanced boaters and all participants used kayaks for their descent. The Licensee also had a boater accompany the team to videotape portions of the study on the Mount Knight segment of the run. One team started their run below Sand Bar Diversion at 8am and the second team started the run at Mount Knight at 10am. Mount Knight is approximately six miles downstream of Sand Bar Diversion. The boaters completed the run at Clark Flat, which is at the inlet of the SR to New Melones Reservoir, at 5pm. The target flow of 700 cfs was not attained because of a gate malfunction at Sand Bar Diversion. The actual flow during the study was 590 cfs as measured at Sand Bar Diversion with an estimated 30 cfs accretion occurring through the end of the run. At the end of their run, the study team was given refreshments and each team member independently filled outa questionnaire to provide information about the run. The Licensee reviewed the questionnaires for legibility and completeness and, where needed, boaters were asked to clarify their questionnaire responses before leaving for the day. After the team finished completing the questionnaires, the study team held a group discussion about the run.

The summarized results of the questionnaire responses are provided in the Appendix at the end of this Report on Recreational Resources. The most notable responses for the Sand Bar run were:

- the difficulty of the run was rated as a Class V
- the run is most suitable for kayaks
- the put-in and take-out were rated between acceptable to neutral
- when rating the characteristics of the run, the highest scores were given to the availability of challenging technical boating, powerful hydraulics and overall whitewater challenge
- when rating the characteristics of the run, the lowest scores were given to safety
- the range of minimum boatable flows for kayaks was 500-800 cfs
- the range of optimum boatable flows for kayaks was 600-1,200 cfs
- boaters expressed a high degree of confidence in their estimates of minimum, optimum and maximum flows
- the run would be most attractive to expert and elite boaters who might boat the reach 1-10 times/year
- the run would possibly be suitable for commercial whitewater boating
- boaters noted that the water was very turbid during the flow study

The most notable responses for the Mt. Knight run were:

- the difficulty of the run was rated as a Class IV to V
- the run is suitable for kayaks and rafts
- the put-in was rated between neutral an unacceptable
- the take-out was rated between acceptable and neutral
- when rating the characteristics of the run, the highest scores were given to safety and aesthetics
- when rating the characteristics of the run, the lowest scores were given to the shuttle and the ease of the put-in
- the range of minimum boatable flows for kayaks was 350-600 cfs
- the range of optimum boatable flows for kayaks was 1,000 cfs
- boaters expressed a high degree of confidence in their estimates of minimum, optimum and maximum flows
- the run would be most attractive to advanced, expert and elite boaters who might boat the reach 1-10 times/year
- the run would possibly be suitable for commercial whitewater boating
- boaters noted that the water was very turbid during the flow study

Subsequent to completing the whitewater boating and whitewater flow studies, the Licensee received a letter from the SWRCB with comments on the Draft License Application. The SWRCB raised the question of whether there are opportunities to develop an engineered whitewater boating area on the Stanislaus River below Stanislaus Powerhouse. The Licensee conducted an evaluation of this area as suggested by the SWRCB. Dave Steindorf, a professional whitewater boating instructor, visited the site on October 30, 2002 to provide an initial assessment of the potential for whitewater boating. The flow in the Stanislaus River during the assessment was estimated at 700 cfs based on flow information provided by the Licensee. At the this flow, the quality of the experience was excellent . Mr. Steindorf documented portions of the river on videotape and kayaked portions of the run as well. At least four 'play areas' were found in the two-mile section of the river between the Stanislaus Powerhouse and the Camp Nine Bridge during the assessment.

Travel time from Angels Camp, the nearest sizable community, is about 45 minutes by way of the Camp Nine Road. There are two powerhouses upstream from this area that control the flow; the Licensee's Stanislaus Powerhouse and the Collierville Powerhouse which is part of NCPA's project on the North Fork of the Stanislaus River.

During the assessment it was also noted that there are segments of the Stanislaus Afterbay Dam that are failing that create potential hazards in the river for boaters in the form of protruding timber and metal objects.

Whitewater Boating Opportunities-Access

The put-ins for boating the Sand Bar reach are Sand Bar Diversion and at the end of the Mount Knight trail. There is easy vehicular access to Sand Bar Diversion however it is a lengthy drive between Sand Bar and the take out. The Mount Knight put-in requires a lengthy drive over rough dirt roads to within about two miles of the river. At that point boaters must hike down a steep narrow trail to access the river; there is a lot of poison oak along the trail. Although this location can be used as a take-out for boaters who begin at Sand Bar Diversion, it would be most likely that boaters would continue pass Mount Knight and take-out at Clark Flat.

The take-out is at Clark Flat which is where the SR enters New Melones Reservoir. This location is accessed by the Parrots Ferry and Camp Nine roads. Both of these roads are paved however the Camp Nine Road is a rough one-lane road with turnouts that winds nine miles into the canyon. It takes approximately 30 minutes to drive the Camp Nine Road between Parrots Ferry Road and the take-out. The road is close to the river at Clark Flat and there is a short walk for boaters to take out their boats.

Whitewater Boating Flow Information

Results from the interview questions showed that all but one person interviewed obtains flow information from the Internet. The most common Internet sites used for flow information are http://www.dreamflows.com/ and http://www.cdec.water.ca.gov/. Dreamflows is a fully automated system that polls the Internet for stream and reservoir data and stores it in a database. It also estimates flows at some sites based on flows at other known sites. CDEC (California Data Exchange Center) operates as an extensive hydrologic data network that collects information from various state and federal agencies across California and provides real-time data for river stages, precipitation amount, snow water content, temperature, and water quality which is displayed on their internet site. In addition to the Internet many boaters rely on friends with local knowledge and use their own intuitive judgment based on season and climate.

When asked how existing information could be improved, 50 percent of the boaters interviewed in 2000 commented that real-time data and access to reliable forecasts of releases would help them plan their trips.

.4 Analysis and Discussion

There are three reaches that provide whitewater boating opportunities at this Project: Relief, Sand Bar and Strawberry reaches. Except for the Sand Bar Reach, the existing information was sufficient to assess the boating opportunities in these reaches relative to the operation of the Project. Additional studies revealed that opportunities are affected in the Sand Bar Reach. Although the boating study was not conducted at the target flow of 700 cfs, the boating team stated a high degree of confidence in recommending minimum and optimum flow ranges. The range of optimum boatable flow appears to be between 600 and 1,500 cfs. It is possible for rafts to boat the reach but it is more suited for kayaks. The run provides opportunities for boaters with high-end boating skills. Regionally, many opportunities exist on rivers and streams for boaters with this skill level. The study team speculated that boaters with the necessary skill level would use this reach one to ten times per year. This suggests that there may be some future use on this reach as boating increases in popularity.

Based on analysis of the hydrologic record, it appears the number of days available for whitewater boating has been decreased overall with most of the reduction occurring in April and May. The end of the boating season has also been shifted approximately one week earlier than under unimpaired conditions. Overall, the number of days of boatable flow in all types of water years has decreased in wet and average years; boating opportunities are more heavily impacted during dry years.

As the boating team pointed out, there is no real-time flow information and people may not be willing to plan a boating trip to the Sand Bar Reach because of the uncertainty of the flows. Consequently, boating opportunities may be lost simply because boaters cannot determine if the flows are adequate and if they will be sustained. This is also true for the Relief and the Strawberry reaches.

The Licensee's assessment of the Stanislaus River below the Stanislaus Powerhouse is that there is a good opportunity for whitewater use for this stretch of river as it currently exists. The flow in this run depends on the flow from the Collierville Powerhouse, which is part of NCPA's project on the North Fork Stanislaus River, in addition to the flow from the Stanislaus Powerhouse. Flows from the Collierville and Stanislaus powerhouses can provide 1,500 cfs and 800 cfs, respectively, to the run in addition to the undiverted flows in the North and Middle Forks of the Stanislaus River. Given the remoteness of the location, it would be important for boaters to have good flow information available to them in order to use this stretch of river. Consideration may be given to identifying and removing potential hazards in the river at the Stanislaus Afterbay Dam.

.5 Conclusions

Issue Questions Addressed – R-4 and R-7. *R-4: Does the Project affect recreational whitewater boating/kayaking and if so, how? Does the Project create opportunities for recreational boating/*

kayaking and, if so, what and where are they? R-7: Does the hydro Project provide information about whitewater boating flows and, if so, how? (e.g. is flow information available on a real-time basis?)

The Project reaches provide suitable whitewater boating runs mostly for expert and elite boaters. Put-ins and take-outs are acceptable. Operation of the Project affects the whitewater boating opportunities primarily in the Sand Bar Dam Reach (Sand Bar and Mt. Knight runs) by reducing the number of days available for boating, particularly in dry years, and slightly shifting period of time when these opportunities exist to earlier in the year. For the other Project-affected reaches, below Relief and Strawberry dams and Philadelphia Diversion, spill flows, which occur almost every year, provide ample whitewater boating opportunities. Consideration may be given to resource measures that would provide boating flows in the boatable range for the Sand Bar Dam Reach during extended periods of non-spill years to address impacts of the Project during multiple dry years. However, this type of resource measure should also consider regional power needs and economic impacts of forgone generation to provide such flows.

Future use levels may increase if the popularity of whitewater boating continues to rise. With little current boating use in the Project reaches, there appears to be enough opportunities to meet future demand for boaters with high-end boating skills. Sand Bar Reach may be an exception, considering the decrease in boating opportunities during multiple years of non-spill.

The Licensee does not currently provide flow information for the Project reaches. Improving flow information would allow boaters to take better advantage of the opportunities that currently exist on all Project reaches.

Flows in Stanislaus River below the Stanislaus Powerhouse are affected by NCPA's hydropower project on the North Fork Stanislaus River as well as the Licensee's Spring Gap-Stanislaus Project. There is an area suitable for whitewater boating, including play areas, in this segment of the Stanislaus River. This area provides quality boating opportunities under the existing flow conditions. There may be potential boating hazards associated with the Stanislaus Afterbay Dam.

7.5.9 Issue Questions Addressed Using Existing Information

Issue Questions Addressed – R-9, R-10, R-16 and R-20. *R-9: Does the Project advertise/ communicate recreation access points to the public, and is this advertisement/communication adequate or should it be improved? R-10: Does the Project advertise/communicate safety issues to the public, and is this advertisement/communication adequate or should it be improved? R-16: What does the Licensee do to provide public notice of public recreation opportunities? R-20: Does the Project affect sport trout fishing between Spring Gap and Sand Bar Diversion?*

During the development of the study plans, SPLAT concluded that studies were not needed to address these issue questions because they could be answered with existing information.

7.5.9.1 Analysis and Discussion

The recreation access points for the Project reservoirs are abundant since the reservoirs are surrounded by public land managed by the STF. Stanislaus Forebay has non-federal land along the north shore of the reservoir owned by the Licensee but this is also open to public access. With the exception of the Camp Nine Road, the Project is located entirely within the boundary of the STF and the system of roads managed by the STF provides access to the Project. The Project reservoirs are a small but important portion of the many recreational resources available on the STF. Although the Licensee does not provide any written publications to advertise or communicate recreational access points to the public, this information is made known to the public through the STF by means of their recreation map and published recreation information known as Recreation Opportunity Guides. This information is locally available at the Sonora, MiWok, and Pinecrest offices of the STF. Additionally, visitors often stop at these offices to seek assistance and advice on their destinations and this information may also be provided verbally to visitors from the STF information specialists. At Pinecrest, information is also available from the kiosk and is posted on information boards in the campgrounds and day use areas.

There are directional signs located on State Highway 108 that assist visitors in locating Pinecrest. There are no signs on the access roads that direct visitors to Stanislaus Forebay or Relief Reservoir however these features appear on the STF recreation map. The Licensee posts recreation information for recreation sites that they are responsible for managing on their website; it does not include recreation information related to this Project.

The Licensee does not provide any written publications regarding public safety at the Project reservoirs. Safety messages are communicated to the public by message boards in conspicuous locations near the reservoir, posted warning signs, and fences around sensitive Project facilities. The licensee also installs buoys and barriers on the reservoir surface around the dams, intakes and spillways. The Licensee is not aware of any safety issues on the Project that are not addressed by these measures. A frequent source of public safety on reservoirs is boating and swimmer safety. At Stanislaus Forebay, boating and swimming are not allowed. Boat speed is restricted to 20 mph on Pinecrest Lake and there are designated areas for swimming that are delineated with buoys. At Relief Reservoir, boating use is non-existent except for the occasional user that brings a small inflatable boat to the reservoir by foot and use levels are very low.

One issue question raised by SPLAT relates to the effects of the Project on sport fishing between Spring Gap and Sand Bar Diversion. The Project effects on fish in this reach are discussed in the aquatics section (see section E3.4.3). From a recreation perspective, the Project provides an access point to the Spring Gap Reach, a wild trout section of stream. Recreationists can hike along the Spring Gap Powerhouse Road to gain access to the MFSR. Although this access route

exists because of the Project, it appears that fisherman mainly use the access points to the MFSR at China Flat and a Sand Bar Diversion Dam. These points of access are easier in that fishermen are able to park adjacent to the river and begin their journeys at the same general elevation of the river. From these access points, fishermen can hike along a trail that parallels the MFSR for approximately five miles whereas the hike along the Spring Gap Powerhouse Road requires a one mile hike and a change in elevation of about 600 feet.

7.5.9.2 Conclusions

Pinecrest has many developed recreation facilities and a corresponding high numbers of visitors. It appears that visitors do not have any trouble finding their way to Pinecrest, and there are various sources that provide information to visitors. It appears that there is sufficient direction to, and information about, the opportunities at Pinecrest Lake. However, providing information about other destinations and opportunities available in the vicinity is presently limited, and may be valuable to help reduce crowding at Pinecrest Lake. This would assist visitors that could not find overnight accommodations at Pinecrest Lake and would provide all visitors with information that would increase their awareness of opportunities that are available to them.

The Licensee communicates safety issues to the public by signage and by installing barriers such as buoys and fences. The level and type of use at Relief Reservoir and Stanislaus Forebay does not require improvement to the existing means the Licensee uses to communicate safety issues to the public. At Pinecrest, speed restrictions on boating and designated swimming beaches are safety measures that are in place, and these are made clear to the public on sign boards. Fences and barriers prevent the public from jeopardizing their safety near Project features. Additional safety measures that could be considered at Pinecrest may include warning signs about jumping from rocks and staying off of the log boom near the marina.

Although the Project provides another means for fisherman to access the MFSR by way of the Spring Gap Powerhouse Road, it appears that the gated road has had little affect on the sport fishing opportunities between Spring Gap and Sand Bar Diversion Dam because there is better and easier access at the trail below Beardsley Afterbay.

7.6 Project Impacts on Recreational Resources

For the purpose of this section, the Licensee has identified four types of Project Impacts:

1. Initial Project Construction Impact: A one-time impact resulting from initial construction of the Project.

2. Incremental Impact: An anticipated incremental impact caused by a proposed new (not in the existing FERC license) Project facility or a proposed substantial change in Project operation.

3. Cumulative Impact: A cumulative impact of the Project in combination with other existing or proposed activities affecting the watershed.

4. Continuing Impact: An anticipated continuing impact that may result from continued operation of the Project. This type of impact does not occur all at once, but over time.

Each of these impact types is discussed below.

7.6.1 Initial Project Construction Impact

These are one-time impacts resulting from initial construction of the Project. These impacts may be adverse or favorable. FERC uses current conditions as its baseline for environmental analysis. Some participants in the relicensing proceeding have expressed an interest in pre-project conditions. This application provides some information regarding historical conditions, including pre-project conditions. However, consistent with FERC's regulations, the application does not address in detail impacts resulting from initial Project construction.

7.6.2 Anticipated Incremental Impact

These are anticipated impacts caused by a proposed new (not in the existing FERC license) Project facility or a proposed substantial change in Project operation. The Licensee is not proposing any substantial modification of existing Project facilities or construction of new Project facilities other than those that may be required by the new license, such as recreation facilities or flow facility modifications needed to meet minimum streamflows. Likewise, other than the proposed modifications to minimum streamflows, the Licensee is not proposing any substantial changes in Project operations.

7.6.3 Cumulative Impact

These are impacts of the Project in combination with other existing or proposed activities affecting the watershed. Other existing or proposed activities in the watershed that may, in combination with the Project create cumulative impacts include logging, mining, recreation, residential and commercial development, and road construction.

Under FERC regulations, FERC is required to address cumulative impacts when it prepares its environmental analysis pursuant to NEPA. However, the Licensee is not required under FERC's regulations to address cumulative impacts in its application. The Licensee offered to SPLAT to generally address cumulative impacts in its license application if the agencies and SPLAT provided specific direction as to the approach for such analysis. No such direction was provided, and cumulative impacts are not addressed in detail in this license application.

7.6.4 Anticipated Continuing Impact

These are anticipated continuing impacts that may result from continued operation of the Project. As discussed earlier, pursuant to FERC regulations and in collaboration with SPLAT, the Licensee has reviewed existing information and conducted resource studies to identify impacts on recreational resources resulting from existing and continued Project operation. These reviews and studies (Section 7.5) have also provided information on the anticipated continuing impacts on recreational resources resulting from the Project. The results and conclusions are summarized below.

The Licensee's proposed resource measures, Section 7.8, were designed to attempt to mitigate impacts that may result from continued operation of the Project and attempt to reduce the gap where the existing condition does not match the desired condition.

7.6.4.1 Public Access

With adequate existing access and no additional recreation facilities anticipated in the future, the current routes of access will be adequate to meet future recreational access needs. In general, it is the roads and trails within the STF system, and not the Project roads, which provide access to the Project. The Licensee shares in the maintenance of some of the roads and, with the exception of a short segment of 4N05, they are all maintained to a standard that allows adequate access for the public.

Opening the Project roads that are presently closed to public vehicular access would not provide additional access routes for the public to recreational opportunities. Although this action might result in easier access for the public, the decision to restrict public vehicular access on these roads was based on public safety, and this circumstance has not changed since it was originally determined to restrict access. Public safety considerations include both the presence of Project facilities as well as the design of the roads that are narrow and steep with few turnouts; these roads are not designed to accommodate recreational use. Additional access will not be needed in the future since all of the Licensee-proposed recreation facility improvements are located at existing recreation sites. Pedestrian access to Relief Reservoir is appropriate and adequate.

7.6.4.2 Recreational Impacts/Benefits Outside of the Project Boundary

Camping, hiking and day use are the primary recreational uses associated with the Project that occur adjacent to the Project boundary. The main Project feature where these activities occur is at Pinecrest Lake. The benefits include a pleasant waterside setting for visitors to enjoy recreational activities and access for visitors to the public land adjacent to the Project. Recreational impacts at Pinecrest Lake include overnight visitor use near the reservoir, and erosion, trash and sanitation problems along the Pinecrest Lake Loop trail.

Stanislaus Forebay also provides a waterside setting for recreational activities, primarily fishing, camping, hiking, OHV use, and day use. Impacts that occur at this Project feature include poor sanitation, trash and some minor instances of erosion from OHV use.

Relief Reservoir is an attractive feature for people to enjoy as an overnight or day use destination or as they are passing by on the Huckleberry Trail. Approximately half of the shoreline has multiple points of shoreline access for visitors. It is uncertain if the density of user-created trails to the shoreline is consistent with the STF ROS classification. The STF stated that its preference is to map each trail, assess the overall density of trails at the reservoir and, if necessary, close and restore some of the trails. Overnight camping at the reservoir is compliant with STF regulations for campsite locations and is not causing damage to natural resources. Visitors are not leaving their trash in the area around the reservoir.

7.6.4.3 Project Induced Recreational Uses

Boating, camping, fishing, hiking, and swimming are the primary recreational uses induced by the Project. Most of the use at Pinecrest Lake occurs during the summer months of June to September. There are an estimated 530,260 annual visits associated with the various recreation activities related to Pinecrest Lake. Recreation activities occur around the entire reservoir, however most of the recreational use occurs at the south end of the reservoir, which is where the campground, day use area and designated swimming area, are located. Pinecrest Lake has a tradition of family use as evidenced by the generations of returning visitors. Although there is year-round access to the reservoir, visitors prefer to visit during the warm summer months between Memorial Day and Labor Day.

Fishing, camping, hiking, OHV use and day use are the primary recreational uses associated with Stanislaus Forebay, and these activities occur within and adjacent to the Project boundary. Most of the use occurs during the summer months with additional use during the year depending on snow levels. There are an estimated 508 annual visits associated with the various recreation activities, many of which come from nearby communities such as Sonora. Regionally, this feature of the Project mainly provides for fishing opportunities in the reservoir and in the adjacent canal leading to the reservoir; boating and swimming are not allowed on the reservoir for public safety reasons. Camping occurs mainly along the south shore of the reservoir.

Fishing, camping, hiking and day use are the primary recreational use associated with Relief Reservoir. Most of the use occurs during the summer months. There are an estimated 959 visits associated with the various recreation activities. Most of the use occurs on the east side of the reservoir where the trail and dispersed overnight sites are located.

7.6.4.4 Direct Impacts of the Project on Recreation

The Project has direct impacts on recreation use in terms of the quantity and quality of available beach, the utility of the boat ramp, and visual quality, all at Pinecrest Lake. Operation of the Project begins to draw the reservoir down just prior to Labor Day; the total drop in reservoir elevation is between 71 and 94 feet, and the minimum reservoir elevation usually occurs in April

in normal water years and in January and February in wet and dry types of water years, respectively. As the reservoir lowers, it reaches an elevation of 5,600 feet around September 6, September 12, and October 13 in normal, dry, and wet types of water years, respectively. This elevation is the approximate end of the paved portion of the boat ramp, and correlates to the point in time when visitors perceive the beaches to be muddy and unattractive. In general, the reservoir elevation begins to rise one to two feet per day in May and an elevation of 5,600 feet is achieved as early as April 23 in dry water years and as late as May 21 in normal water years. Project impacts to recreational use of the beach, boat ramp and visual quality can be considered minor because these impacts mainly occur outside of the main season of recreational use, summer. Also, the Licensee's interview and questionnaire responses indicate that the level of recreation use appears to be driven by seasonal patterns rather than by factors controlled by the Project. The Project impacts to recreation are more pronounced during the shoulder season as the reservoir lowers, and this would be the time when recreation use levels may be affected. Swimming and boating opportunities may be lost and visual quality may be less than satisfactory to visitors. Holding the reservoir higher during the fall would be a way to reduce this impact. However, the Licensee fully recognizes the recreational value of the reservoir and already operates the Project to begin drawdown as late as operationally feasible considering the capacity of the low-level outlet, minimum instream flow requirements of the license and consumptive water contractual obligations to TUD, to insure that these impacts are minimized. This has resulted in fairly consistent and predictable reservoir levels that enable substantial recreation use of the reservoir and create a visually pleasing setting for visitors throughout the summer recreation season between Memorial Day and Labor Day.

Entrainment of fish by the Project at Sand Bar Diversion Dam into Stanislaus Power Tunnel helps to sustain recreational fishing use at Stanislaus Forebay.

No direct impacts of the Project on recreation were identified at Relief Reservoir. The level of recreation use at Relief reservoir is only minimally affected by the Project. The recreational use consists primarily of day users to the reservoir who enjoy the view and fishing opportunities. However, most visitors are just passing by the reservoir on their way to wilderness destinations. The reservoir is drawn down gradually, and the low reservoir period occurs during winter when recreational access is precluded by snow.

The Licensee communicates safety issues to the public by signage and by installing barriers such as buoys and fences. The level and type of use at Relief Reservoir and Stanislaus Forebay does not require improvement to the existing means the Licensee uses to communicate safety issues to the public. At Pinecrest, speed restrictions on boating and designated swimming beaches are safety measures that are in place, and these are made clear to the public on sign boards. Fences and barriers where appropriate help prevent the public from jeopardizing its safety near Project features. Additional safety measures that could be considered at Pinecrest may include warning signs about jumping from rocks and staying off of the log boom near the marina.

Although the Project provides another means for fisherman to access the MFSR by way of the Spring Gap Powerhouse Road, it appears that the gated road has had little affect on the sport fishing opportunities between Spring Gap and Sand Bar Diversion Dam because there is better and easier access at the trail below Beardsley Afterbay.

7.6.4.5 Project Effects on Recreational Whitewater Boating

The Project reaches provide suitable whitewater boating runs mostly for expert and elite boaters. Put-ins and take-outs are acceptable. Operation of the Project affects the whitewater boating opportunities primarily in the Sand Bar Dam Reach (Sand Bar and Mt. Knight runs) by reducing the number of days available for boating, particularly in dry years, and slightly shifting period of time when these opportunities exist to earlier in the year. For the other Project-affected reaches, below Relief and Strawberry dams and Philadelphia Diversion, spill flows, which occur almost every year, provide ample whitewater boating opportunities. Consideration may be given to resource measures that would provide boating flows in the boatable range for the Sand Bar Dam Reach during extended periods of non-spill years to address impacts of the Project during multiple dry years. However, this type of resource measure should also consider regional power needs and economic impacts of forgone generation to provide such flows.

Future use levels may increase if the popularity of whitewater boating continues to rise. With little current boating use in the Project reaches, there appears to be enough opportunities to meet demand over the term of the new license for boaters with high-end boating skills. The Sand Bar Dam Reach may be an exception, considering the decrease in boating opportunities during multiple years of non-spill.

The Licensee does not currently provide flow information to the public for the Project reaches. Improving flow information would allow boaters to take better advantage of the boating opportunities that currently exist on all Project reaches.

7.7 SPLAT's Comparison Between Existing and Desired Conditions, and SPLAT's Recommended Resource Measures

In order to help it assess Project impacts on affected resources and develop recommended resource measures, SPLAT undertook four major tasks. These were: (1) develop a set of desired conditions; (2) for each desired condition, develop a set of indicators to examine when assessing whether desired conditions are met; (3) based on study results and already available information, assess whether existing conditions meet or exceed desired conditions; and (4) where an existing condition does not meet or exceed the desired condition, identify the specific difference, and potential measures to attempt to reduce the gap.

In developing its desired conditions, SPLAT attempted to describe its preferred future condition of affected resources, and did not consider constraints and possible conflicts among SPLAT participants and with other resource uses and objectives. As such, an unstated "standard of

reasonableness" was intended to apply to all of SPLAT's desired conditions. SPLAT's desired conditions are intentionally broad statements of how a resource appears in its desired condition, with some conditions more quantifiable than others. SPLAT's desired conditions are not prescriptive and were not intended to represent a decision document. SPLAT intended that, if achieved, the conditions would be in compliance with all applicable laws and statutes.

SPLAT's desired conditions were developed through a collaborative process. They represent a consensus view and do not necessarily reflect the individual views of SPLAT participants. Even where no gaps occur, SPLAT intended that its desired conditions might be used to develop actions to sustain the desired conditions. SPLAT specifically recognized that factors beyond the Licensee's control might affect attainment of the desired conditions, and that some or all of the desired conditions might not be achievable in context of the relicensing proceeding. SPLAT also specifically recognized that its desired conditions were non-binding on any SPLAT participant and subject to change.

SPLAT completed its development of desired conditions in 2001 and began its development of indicators, its assessment of gaps between existing and desired conditions and its identification of potential measures to close gaps. The gap assessment was performed individually for each resource area, and the results were documented in a matrix format. SPLAT worked on the gap assessment throughout much of 2002, but did not complete it for all resource areas. However, even where SPLAT did not complete its formal gap assessment, many of the underlying issues were discussed by SPLAT during subsequent discussion of potential resource management measures and the specific measures proposed by the Licensee.

For the Spring Gap-Stanislaus Project, SPLAT identified eight desired conditions related to recreational resources. These conditions and SPLAT's gap assessment are shown in Table E7.7-1.

TABLE E7.7-1

TABLE E7.7-1 (continued)

7.8 Resource Measures Proposed by the Licensee

The Licensee proposes to implement the following resource management measures as part of the new Project license. These measures are based on the Project Record, and input and discussions with SPLAT. The detailed descriptions of each measure are written in formal regulatory language ready for inclusion as conditions in the new FERC license. Each detailed description is accompanied by a rationale statement that describes the rationale the Licensee used in developing the proposed resource measure. Each detailed description is also accompanied by a description of the Licensee's perception of SPLAT's position regarding the proposed resource management measure. The Licensee has agreed to continue discussion of some measures with SPLAT after the license application is filed. Such agreement is indicated in the SPLAT position descriptions and in the Joint Statement. The Licensee has not included any standard form license conditions it anticipates FERC will impose.

The recreational resource management measures proposed by the Licensee are as follows:

Resource Measure: Recreation Streamflow Information

The Licensee shall, beginning as soon as reasonably feasible and no later than one year after license issuance, annually make recreation streamflow information available to the public as follows. Unless otherwise noted, the flow information shall be available to the public via toll-free phone and Internet, which may be accomplished through a third party. The flow information protocols may be modified upon mutual agreement of the Licensee, responsive stakeholders and acceptance by the Commission.

1. From May 1 through October 31, the hourly average streamflow for the Middle Fork Stanislaus River at Kennedy Meadows (Dardanelles and Donnells Runs), Middle Fork Stanislaus River immediately below Sand Bar Diversion Dam (Sand Bar and Mt. Knight Runs), mainstem Stanislaus River immediately below Stanislaus Powerhouse, South Fork Stanislaus River immediately below Herring Creek (Strawberry Run), and South Fork Stanislaus River immediately below Philadelphia Diversion Dam (lower Strawberry Run). The flow information may be measured, calculated or a combination of the two. The flow information shall be posted at 9 AM, Noon and 4 PM daily for the current day and the past 7 days. Streamflows shall be rounded up to the nearest 50 cfs, and all plots and tables showing this data shall be labeled "These provisional data have not been reviewed or edited and may be subject to significant change.

1. By April 15, the proposed dates for any Recreation Streamflow Event (if applicable) planned to be provided by the Licensee. The information shall be shown in calendar format, shall specify the proposed flows in cfs, and shall be promptly updated if any changes occur.

2. By April 10, a preliminary forecast of the water year type and the initiation date and duration of anticipated spill at Relief, Beardsley and Pinecrest Dams. The information shall be updated by May 10, and shall be updated weekly thereafter through the duration of the spill period.

3. The Licensee shall install and maintain one simple staff gage/depth indicator at the following locations: Middle Fork Stanislaus River at Kennedy Meadows (Dardanelles and Donnells Runs), Middle Fork Stanislaus River at Sand Bar Diversion Dam (Sand Bar and Mt. Knight Runs), mainstem Stanislaus River at Stanislaus Powerhouse, South Fork Stanislaus River below Herring Creek (Strawberry Run), and South Fork Stanislaus River below Philadelphia Diversion Dam (lower Strawberry Run). The Licensee shall make a good faith attempt to locate the staff gages/depth indicators near whitewater boating put-in locations so they are easily accessible for public reference. The Licensee shall provide a means at each staff gage/depth indicator to reasonably correlate staff gage/depth indicator readings to cfs.

Rationale: Based on study results, SPLAT identified in its gap assessment that while spill flows provide considerable opportunity for whitewater boating, and existing put-ins and take-outs are adequate, the lack of publicly available flow information limits the public's ability to utilize these boating opportunities. The measure proposes providing flow information for each of the five Project-affected stream reaches with whitewater boating runs during the boating season and into the fall. The measure proposes providing the flow information via toll-free phone and Internet, consistent with SPLAT's recommendations, and allows the information to be provided through a third party to give the Licensee the option of utilizing pre-existing flow information systems. The flow information is allowed to be obtained through measurement or calculation to accommodate the flow range of existing gaging facilities and the multiple sources of flows. The flow information is specified to be updated daily at 9 AM, Noon and 4 PM to give river recreationists close to real time updates, and includes both the current day and the preceding seven days so that river recreationists can discern trends. The measure includes early forecasts of spill flows and any planned Recreation Streamflow Event, to maximize recreation opportunity. The measure also includes provisions for providing simple staff gages near each of the primary whitewater boating put-in sites, to assist recreationists in assessing flow magnitude on-site.

SPLAT's Position: Most features of this proposed measure were discussed with SPLAT, and the Licensee believes SPLAT generally concurs with this measure. However, SPLAT participants did not formally review the measure's final language nor were participants asked for a "can you live with it" decision. This measure has not been identified for additional discussion with SPLAT.

<u>Resource Measure: Provide a Recreation Streamflow Event in Sand Bar Dam Reach</u>

The Licensee shall, beginning no later than the first full calendar year after license issuance, make a good faith effort to provide a Recreation Streamflow Event immediately below Sand Bar

Diversion Dam (Sand Bar and Mt. Knight runs) on two consecutive weekend days in the third of three consecutive years that such a flow event has not otherwise occurred. A Recreation Streamflow Event is defined as at least two consecutive days from May 15 to the end of the spill period when flows immediately below Sand Bar Diversion Dam, as measured or calculated, are between 700 cfs and 2,000 cfs from 10 AM to 3 PM. The Recreation Streamflow Event, if provided by the Licensee, shall take place between May 15 and June 15, but no later than the day when mean daily water temperature as measured at Sand Bar Diversion Dam reaches 56°F. The Recreation Streamflow Event, if provided by the Licensee, shall occur simultaneously with any Ecological Pulse Streamflow Event provided by the Licensee. Where facility modification is required for the Licensee to provide a Recreation Streamflow Event, the Licensee shall complete such modifications as soon as reasonably practicable and no later than 3 years after license issuance. Prior to such required facility modifications, the Licensee shall make a good faith effort to provide the specified Recreation Streamflow Event within the capabilities of the existing facilities.

The Licensee shall provide advance public notification of Recreation Streamflow Events provided by the License, including the date and planned flow magnitude, beginning April 15 or as soon as reasonably feasible via the same toll-free phone and Internet system it uses to provide recreation streamflow information to the public. The Licensee's notification for a planned Recreation Streamflow Event shall be as accurate as reasonably feasible, recognizing that streamflows cannot be guaranteed and are subject to change.

All provisions for the Licensee to provide a Recreation Streamflow Event are subject to the safe operability of the Project facilities and equipment necessary to provide such streamflows. The Licensee is relieved from providing the Recreation Streamflow Event described above under the following circumstances: (1) if such events are causing significant ecological damage identified through scientific study, (2) water inflow at Sand Bar Diversion Dam is less than 600 cfs (100 cfs to keep Stanislaus Power Tunnel watered and 500 cfs absolute minimum boating flow), (3) equipment failure or acts of God prevent the Licensee from providing the Recreation Streamflow Event in the specified time period, (4) the California Department of Water Resources' May 1 forecast for total unimpaired inflow into New Melones Reservoir is less than 350,000 acre-feet, or (5) long-term forecasts of electric system reserves or short term electric system conditions cause the value of the water for electric generation to more than triple what it otherwise would have been.

The Licensee shall make a good faith effort to: (1) provide the scheduled Recreation Streamflow Event on the dates it is scheduled to occur, (2) maintain the operability of Project facilities and equipment necessary to provide such event, (3) not schedule discretionary outages of such facilities and equipment in conflict with providing such event, and (4) coordinate with the Licensees of the upstream Beardsley/Donnells and Sand Bar Projects to have sufficient flow into Sand Bar Diversion Dam when the Spring Gap-Stanislaus Licensee has scheduled a Recreation Streamflow Event.

Rationale: Based on study results, SPLAT identified in its gap assessment that spill flows provide adequate whitewater boating recreation opportunity on the Relief, Pinecrest and Philadelphia reaches, particularly given the low demand and relatively high difficulty of runs on these reaches, but that the potential for multiple, consecutive non-spill years on the Sand Bar Dam Reach could result in inadequate opportunity to boat the Sand Bar and Mt. Knight runs. To address this issue, SPLAT proposed that in the third of three consecutive years of no boating opportunity on the Sand Bar Dam Reach, the Licensee make a good faith effort to provide a boating opportunity on two consecutive weekend days. The two-day concept is to give boaters the opportunity to boat the Sand Bar run the first day, camp along the river, then boat the Mt. Knight run the second day. The "good faith" provision and the multiple exceptions are intended to recognize that the Licensee has limited control on flows coming into Sand Bar Diversion Dam, that under certain circumstances the water may have far more value for electric generation than for recreation, and that the boating flows may potentially cause unanticipated resource damage. The timeframe for providing the boating flow is intended to place the flow in the same period as when the unimpaired peak flow would have occurred, as late as possible for the benefit of boaters, but not so late that amphibians have already began breeding and would be at risk of being adversely affected.

The magnitude of the Recreation Streamflow Event streamflow, if provided by the Licensee, is intended to be within the boatable range, but also be consistent with the range of maximum available flow at Sand Bar Diversion Dam during non-spill conditions [(600 cfs from Sand Bar Powerhouse) + (60 cfs from Spring Gap Powerhouse) + (50 to 135 cfs minimum streamflow from Beardsley Reach) – (100 cfs to keep Stanislaus Power Tunnel watered)]. Further study is needed to clarify the minimum acceptable flow for whitewater boating in the Sand Bar and Mt. Knight reaches. The proposed resource measure is based on the assumption that the absolute minimum acceptable boating flow is 500 cfs, and a more desirable minimum boating flow is 700 cfs. These assumed minimum flows are based on a boating flow study performed in June 2002, which was not entirely completed due to the unavailability of initially anticipated spill flows. Additional study to confirm the minimum boating flows is planned when spill flows become available. In particular, the additional study will help determine the minimum flow at which whitewater boaters would not utilize the resource. The minimum flows specified in this proposed resource measure are subject to change, based on the results of the additional study.

SPLAT's Position: This proposed measure was discussed with SPLAT, and the Licensee believes SPLAT generally concurs with this measure. However, SPLAT participants did not formally review the measure's final language nor were participants asked for a "can you live with it" decision. This measure has been identified for additional discussion with SPLAT. This discussion is anticipated to focus on the additional boating flow study and fine tuning of the proposed measure based on the results of the study.

Resource Measure: Dismantle Stanislaus Afterbay Dam

The Licensee shall within one year after license issuance develop a plan for removing the steel and timber superstructure of Stanislaus Afterbay Dam to enhance aesthetics and public safety for river recreationists. The Licensee shall file the plan with the Commission and shall implement measures approved by the Commission, subject to acquisition of all required permits and approvals.

Rationale: SPLAT identified the short reach from Stanislaus Powerhouse to the Stanislaus Afterbay Dam as a potential "play" area for whitewater boaters. A subsequent evaluation of this reach identified that it is already used by whitewater boaters for play purposes, but also identified the partially breached steel and timber Stanislaus Afterbay Dam as a potential safety hazard. Since the Stanislaus Afterbay Dam is already partially breached, the Licensee is proposing to remove its steel and timber superstructure to enhance the aesthetics and safety of this reach. The Licensee's proposal is conditional on: (1) successful acquisition of all required permits and approvals, and (2) the scope of dismantling activities being limited to removal of the steel and timber superstructure.

SPLAT's Position: This measure has not been discussed with SPLAT. However, the Licensee has committed to continue discussion with SPLAT after the license application is filed of the potential of the reach as a whitewater boating play area. This will include discussion of the proposed measure.

Resource Measure: Provide Public Recreation Facilities

Note: This resource measure is proposed contingent on it representing the maximum scope of the Licensee's responsibilities for public recreation related to Pinecrest Lake, Relief Reservoir, and Stanislaus Forebay.

The Licensee shall, within one year after license issuance and in consultation with the Forest Service, develop a detailed plan for implementing the measures described below to meet public recreation needs related to the Project. The Licensee shall provide a draft of the plan to the Forest Service for review, comment and approval. Once approved by the Forest Service, the Licensee shall file the final plan, including evidence of consultation, with the Commission and shall implement those measures approved by the Commission.

1. Pinecrest Reservoir Unit

   The scope of work consists of rehabilitation and improvements (referred to as 'the work') to three existing campgrounds (Pinecrest Campground, Meadowview Campground and Pioneer Campground) and one existing day use area (Pinecrest Day Use Area) as described below:

a. Pinecrest Campground

Site Development Plan**:** Prepare a simple site development plan (not detailed construction drawings) to rehabilitate the campground consistent with applicable Forest Service standards. Maintain the same approximate number of campsites (200) while incorporating accessibility design standards. Submit the plan to the Forest Service for approval within 1 year of the date of license issuance. Include a vegetation management component in the Plan.

Entrance station: Remove and rebuild the entrance station (approximately 300 sq. ft. building) including electricity and phone utilities. Repave (asphalt concrete) the entrance road between Pinecrest Lake Road (a county maintained road) and the individual loop access roads. Install an information/entrance kiosk for visitor information near the entrance.

Loop A: Rehabilitate 59 sites. Remove existing buildings, barriers and campsite components. Install at individual campsites: picnic table, fire ring, site marker, tent pad, paved (asphalt concrete) parking spur with barriers, and wildlife resistant food storage locker. Provide RV hookups (water, sewer, electricity) at some sites (approximately 27; actual number to be determined in the site development plan). The intent is to provide hookups at sites where utility corridors coincide with site locations. Provide approximately 5 ADA sites (actual number to be determined in the site development plan based on site features, slope, proximity to restrooms and other campground facilities or attractions). Provide 1 host site with bulletin/ information board, water, sewer and electricity hookups. Resurface (asphalt concrete) the loop access road and install directional signs and barriers to manage parking and traffic. Install 1 gate at the loop entrance. Install 2 8-unit unisex flush restrooms with showers in the same building. Replace 6 water spigots and 8 trash and recycle bins (including pads). Replace water and sewer lines within the loop.

Loop B: Rehabilitate 33 sites. Remove existing buildings, barriers and campsite components. Install at individual campsites: picnic table, fire ring, site marker, tent pad, paved (asphalt concrete) parking spur with barriers, and wildlife resistant food storage locker. Provide RV hookups (water, sewer, electricity) at some sites (approximately 3; actual number to be determined in the site development plan). The intent is to provide hookups at sites where utility corridors coincide with site locations. Provide approximately 5 ADA sites (actual number to be determined in the site development plan based on site features, slope, proximity to restrooms and other campground facilities or attractions). Provide 1 host site with bulletin/ information board, water, sewer and electricity hookups. Resurface (asphalt concrete) the loop access road and install directional signs and barriers to manage parking and traffic. Install 1 gate at the loop entrance. Install 2 6-unit unisex flush

restrooms with showers in the same building. Replace 3 water spigots and 4 trash and recycle bins (including pads). Replace water and sewer lines within the loop.

Loop C: Rehabilitate 37 sites. Remove existing buildings, barriers and campsite components. Install at individual campsites: picnic table, fire ring, site marker, tent pad, paved (asphalt concrete) parking spur with barriers, and wildlife resistant food storage locker. Provide RV hookups (water, sewer, electricity) at some sites (approximately 12; actual number to be determined in the site development plan). The intent is to provide hookups at sites where utility corridors coincide with site locations. Provide approximately 5 ADA sites (actual number to be determined in the site development plan based on site features, slope, proximity to restrooms and other campground facilities or attractions). Provide 1 host site with bulletin/ information board, water, sewer and electricity hookups. Resurface (asphalt concrete) the loop access road and install directional signs and barriers to manage parking and traffic. Install 1 gate at the loop entrance. Install 2 6-unit unisex flush restrooms with showers in the same building. Replace 4 water spigots and 4 trash and recycle bins (including pads). Replace water and sewer lines within the loop.

Loop D: Rehabilitate 53 sites. Remove existing buildings, barriers and campsite components. Install at individual campsites: picnic table, fire ring, site marker, tent pad, paved (asphalt concrete) parking spur with barriers, and wildlife resistant food storage locker. Provide RV hookups (water, sewer, electricity) at some sites (approximately 8; actual number to be determined in the site development plan). The intent is to provide hookups at sites where utility corridors coincide with site locations. Provide approximately 5 ADA sites (actual number to be determined in the site development plan based on site features, slope, proximity to restrooms and other campground facilities or attractions). Provide 1 host site with bulletin/ information board, water, sewer and electricity hookups. Resurface (asphalt concrete) the loop access road and install directional signs and barriers to manage parking and traffic. Install 1 gate at the loop entrance. Install 2 6-unit and 1 8-unit unisex flush restrooms with showers in the same building. Replace 6 water spigots and 6 trash and recycle bins (including pads). Replace water and sewer lines within the loop.

Loop E: Rehabilitate 11 sites. Remove existing buildings, barriers and campsite components. Install at individual campsites: picnic table, fire ring, site marker, tent pad, paved (asphalt concrete) parking spur with barriers, and wildlife resistant food storage locker. Provide approximately 5 ADA sites (actual number to be determined in the site development plan based on site features, slope, proximity to restrooms and other campground facilities or attractions). Provide 1 host site with bulletin/ information board, water, sewer and electricity hookups. Resurface (asphalt concrete) the loop access road and install directional signs and barriers to

manage parking and traffic. Install 1 gate at the loop entrance. Install 2 8-unit unisex flush restrooms with showers in the same building. Replace 6 water spigots and 8 trash and recycle bins (including pads). Replace water and sewer lines within the loop.

Implementation:

Rehabilitation of this facility shall occur in phases with target dates for completion as follows:

Loop A	Year 3 after the date of license issuance
Loop B	Year 6 after the date of license issuance
Loop C	Year 4 after the date of license issuance
Loop D	Year 5 after the date of license issuance
Loop E	Year 6 after the date of license issuance
Entrance Station	Year 6 after the date of license issuance

Planning: The Licensee shall be responsible for preparing a site development plan for Forest Service approval.

Design and Construction: The Licensee shall be responsible for performing design and construction of the work unless the Licensee and Forest Service agree otherwise.

Annual Maintenance and Operation: The Licensee shall not be responsible for performing annual operation and maintenance of the work, as the Forest Service will accomplish this through user fees or other means.

Replacement: The Licensee shall not be responsible for performing replacement of the work due to *force majeure* or end of service life, other than the specified rehabilitation work.

Ownership: The facilities and improvements constructed under this measure are not included in the Project Boundary and will be owned by the Forest Service.

Funding: The Licensee shall be responsible for funding preparation of the site development plan. The Licensee shall be responsible for funding 50% of the cost of designing and constructing the work with the expectation that the Forest Service will fund the other 50%. If the Forest Service cannot provide its share of the design and construction cost, the Licensee shall fund the full cost of design and construction, but with some combination of delay to the implementation schedule and possible reductions in work scope, such that the net present value of the

Licensee's cost is the same as if the Forest Service funding had been available and sufficient. The Forest Service will fund the annual operation and maintenance of the Pinecrest Campground. The Licensee shall not be responsible for funding replacement of the work, other than the specified rehabilitation, as the facilities and improvements will be owned by the Forest Service and these costs may be covered by the Forest Service through user fees or other means.

b. Meadowview Campground

Site Development Plan**:** Prepare a simple site development plan (not detailed construction drawings) to rehabilitate the campground consistent with applicable Forest Service standards. Maintain the same approximate number of campsites (100) while incorporating accessibility design standards. Submit the plan to the Forest Service for approval within 8 years of the date of license issuance. Include a vegetation management component in the plan.

Loop 1: Rehabilitate 39 sites. Remove existing buildings, barriers and campsite components. Install at individual campsites: picnic table, fire ring, site marker, tent pad, paved (asphalt concrete) parking spur with barriers and wildlife resistant food storage locker. Provide approximately 5 ADA sites (actual number to be determined in the site development plan based on site features, slope, proximity to restrooms and other campground facilities or attractions). Provide 1 host site with bulletin/information board, water, sewer and electric hookups. Resurface (asphalt concrete) the loop access road and install directional signs and barriers to manage parking and traffic. Install 1 gate at the entrance at Dodge Ridge Road. Install 2 6-unit unisex flush restrooms with showers in the same building. Replace 4 water spigots and 4 trash and recycle bins (including pads). Replace water and sewer lines within the loop.

Loop 2: Rehabilitate 22 sites. Remove existing buildings, barriers and campsite components. Install at individual campsites: picnic table, fire ring, site marker, tent pad, paved (asphalt concrete) parking spur with barriers and wildlife resistant food storage locker. Provide approximately 5 ADA sites (actual number to be determined in the site development plan based on site features, slope, proximity to restrooms and other campground facilities or attractions). Provide 1 host site site with bulletin/information board, water, sewer and electric hookups. Resurface (asphalt concrete) the loop access road and install directional signs and barriers to manage parking and traffic. Install 1 gate at the loop entrance. Install 1 6-unit unisex flush restroom with showers in the same building. Replace 3 water spigots and 4 trash and recycle bins (including pads). Replace water and sewer lines within the loop.

Loop 3: Rehabilitate 29 sites. Remove existing buildings, barriers and campsite components. Install at individual campsites: picnic table, fire ring, site marker, tent pad, paved (asphalt concrete) parking spur with barriers and wildlife resistant food storage locker. Provide approximately 5 ADA sites (actual number to be determined in the site development plan based on site features, slope, proximity to restrooms and other campground facilities or attractions). Provide 1 host site with bulletin/information board, water, sewer and electric hookups. Resurface (asphalt concrete) loop access road and install directional signs and barriers to manage parking and traffic. Install 1 gate at the loop entrance. Install 1 6-unit unisex flush restroom with showers in the same building. Replace 3 water spigots and 4 trash and recycle bins (including pads). Replace water and sewer lines within the loop.

Loop 4: Rehabilitate 9 sites. Remove existing buildings, barriers and campsite components. Install at individual campsites: picnic table, fire ring, site marker, tent pad, paved (asphalt concrete) parking spur with barriers, and a wildlife resistant food storage locker. Provide approximately 4 ADA sites (actual number to be determined in the site development plan based on site features, slope, proximity to restrooms and other campground facilities or attractions). Provide 1 host site with bulletin/information board, water, sewer and electric hookups. Resurface (asphalt concrete) the loop access road and install directional signs and barriers to manage parking and traffic. Install 1 gate at the loop entrance. Install 1 8-unit unisex flush restroom with showers in the same building. Replace 1 water spigot and 2 trash and recycle bins (including pads). Replace water and sewer lines within the loop.

Implementation:

Rehabilitation of this facility shall occur in phases with target dates for completion as follows:

Loop 1	Year 10 after the date of license issuance
Loop 2	Year 11 after the date of license issuance
Loop 3	Year 12 after the date of license issuance
Loop 4	Year 12 after the date of license issuance

Planning: The Licensee shall be responsible for preparing a site development plan for Forest Service approval.

Design and Construction: The Licensee shall be responsible for performing design and construction of the work unless the Licensee and Forest Service agree otherwise.

Annual Maintenance and Operation: The Licensee shall not be responsible for performing annual operation and maintenance of the work, as the Forest Service will accomplish this through user fees or other means.

Replacement: The Licensee shall not be responsible for performing replacement of the work due to *force majeure* or end of service life, other than the specified rehabilitation work.

Ownership: The facilities and improvements constructed under this measure are not included in the Project Boundary and will be owned by the Forest Service.

Funding: The Licensee shall be responsible for funding preparation of the site development plan. The Licensee shall be responsible for funding 50% of the cost of designing and constructing the work with the expectation that the Forest Service will fund the other 50%. If the Forest Service cannot provide its share of the design and construction cost, the Licensee shall fund the full cost of design and construction, but with some combination of delay to the implementation schedule and possible reductions in work scope, such that the net present value of the Licensee's cost is the same as if the Forest Service funding had been available and sufficient. The Forest Service will fund the annual operation and maintenance of the Meadowview Campground. The Licensee shall not be responsible for funding replacement of the work, other than the specified rehabilitation, as the facilities and improvements will be owned by the Forest Service and these costs may be covered by the Forest Service through user fees or other means.

c. Pioneer Group Campground

Site Development Plan: Prepare a simple site development plan (not detailed construction drawings) to rehabilitate the campground consistent with applicable Forest Service standards. Maintain the same approximate number of campsites (3) while incorporating accessibility design standards. Submit the plan to the Forest Service for approval within 2 years of the date of license issuance. Include a vegetation management component in the plan.

Group Site 1: Rehabilitate 1 50-person site. Remove 2 existing vault restroom buildings, barriers and campsite components. Install 3 group-size picnic tables, 1 food preparation table, 1 fire ring, site marker, tent pads, barriers, wildlife resistant food storage lockers (3-5 for group use) and 3 cooking grills. Grade and surface the paths to and within the sites for ADA. Install 1 2-unit unisex vault restroom. Replace 2 water spigots. Replace water lines within the site.

Group Site 2: Rehabilitate 1 100-person site. Remove 2 existing vault restroom buildings, barriers and campsite components. Install 6 group-size picnic tables, 1 food preparation table, 2 fire rings, site marker, tent pads, barriers, wildlife resistant food storage lockers (6-10 for group use) and 5 cooking grills. Grade and surface the paths to and within the sites for ADA. Install 1 4-unit unisex vault restroom. Replace 2 water spigots. Replace water lines within the site.

Group Site 3: Rehabilitate 1 50-person site. Remove 2 existing vault restroom buildings, barriers and campsite components. Install 6 group-size picnic tables, 1 food preparation table, 1 fire ring, site marker, tent pads, barriers, wildlife resistant food storage locker (3-5 for group use), 3 cooking grills. Grade and surface the paths to and within the sites for ADA. Install 1 2-unit unisex vault restroom. Replace 2 water spigots. Replace water lines within the site.

Entrance and Parking Lot: Resurface (asphalt concrete) the entrance road and parking area for the group campsites. Replace barriers, install trash and recycle bins (including pads). Replace fixtures in 1 2-unit vault restroom. Install entrance gate, directional signs and entrance/information kiosk.

Path to Pinecrest Lake: Construct a native-surfaced foot trail approximately 0.5 mile connecting Pioneer Campground to Rustic Ave. (paved access road through the subdivision of recreation residences). Include directional signs and waterbars for erosion control.

Implementation:

Rehabilitation of this facility shall occur in phases with target dates for completion as follows:

	Year 3 after the date of license issuance
Group Site 1 (restroom replacement)	
Group Site 1 (remainder of rehabilitation)	Year 8 after the date of license issuance
Group Site 2 (restroom replacement)	Year 3 after the date of license issuance
Group Site 2 (remainder of rehabilitation)	Year 8 after the date of license issuance
Group Site 3 (restroom replacement)	Year 3 after the date of license issuance
Group Site 3 (remainder of rehabilitation)	Year 8 after the date of license issuance
Entrance and Parking Lot	Year 10 after the date of license issuance
Path to Pinecrest Lake	Year 4 after the date of license issuance

Planning: The Licensee shall be responsible for preparing a site development plan for Forest Service approval.

Design and Construction: The Licensee shall be responsible for performing design and construction of the work unless the Licensee and Forest Service agree otherwise.

Annual Maintenance and Operation: The Licensee shall not be responsible for funding annual operation and maintenance of the work, as the Forest Service will accomplish this through user fees or other means.

Replacement: The Licensee shall not be responsible for performing replacement of the work due to *force majeure* or end of service life, other than the specified rehabilitation work.

Ownership: The facilities and improvements constructed under this measure are not included in the Project Boundary and will be owned by the Forest Service.

Funding: The Licensee shall be responsible for funding preparation of the site development plan. The Licensee shall be responsible for funding 50% of the cost of designing and constructing the work with the expectation that the Forest Service will fund the other 50%. If the Forest Service cannot provide its share of the design and construction cost, the Licensee shall fund the full cost of design and construction, but with some combination of delay to the implementation schedule and possible reductions in work scope, such that the net present value of the Licensee's cost is the same as if the Forest Service funding had been available and sufficient. The Forest Service will fund the annual operation and maintenance of the Pioneer Group Campground. The Licensee shall not be responsible for funding replacement of the work, other than the specified rehabilitation, as the facilities and

improvements will be owned by the Forest Service and these costs may be covered by the Forest Service through user fees or other means.

d. Pinecrest Day Use Area

Site Development Plan: Prepare a simple site development plan (not detailed construction drawings) to rehabilitate the day use area between the marina and the end of Pinecrest Road near the fishing pier consistent with applicable Forest Service standards. Retain the existing day use sites and plan for a boat parking area across from the boat ramp, 1 group site, an additional restroom, accessible paths, seating and a fish cleaning station near the fishing pier at the east end of the beach area. Submit the plan to the Forest Service for approval within 1 year of the date of license issuance. Include a vegetation management component in the plan.

Boat Ramp: Resurface (asphalt concrete) the roadway from the top of the existing boat launch (where it connects with the access road) and the turnaround. Remove the existing ramp and replace in-kind (concrete). Remove courtesy dock and replace with accessible courtesy dock. Install directional signs, barriers and an entry/boating restriction sign. Install 1 trash and recycle bin with pad and replace 1 water spigot. Upgrade fish cleaning station to meet ADA (fixtures, clearances, height of facility). Remove the existing restroom and changing room and install 1 8-unit unisex flush restroom with 2 outdoor showerheads. Replace water and sewer lines within the boat ramp area.

Beach 1 (between Marina and Amphitheater): Grade and pave (asphalt concrete) the existing marina parking area (also used for day use parking) near Beach 1. Landscape and install an entry sign and directional signs and barriers to manage traffic and parking at this parking area. Install visitor information kiosk and a bulletin/information board. Remove existing buildings, barriers and day use site components. Install approx. 25 picnic tables (including accessible ones and group use), 2 group-size cooking grills, 10 single-size cooking grills. Install new paths for ADA with seating. Install 1 new 6-unit unisex flush restroom with 2 outdoor showerheads. Replace water and sewer lines within the Beach 1 area.

New Marina Parking Area: Grade and pave (asphalt concrete) a new boat trailer parking area across from the boat ramp. Install entry and directional signs and barriers to manage parking and traffic. Install new concrete paths for ADA. Install 1 trash and recycle bin with pad.

Amphitheater: Complete additional upgrades not currently identified by Stanislaus National Forest for ADA (ramps, paths, seating areas, lighting). Install entry, directional and informational signs. Resurface (asphalt concrete) the parking spaces

adjacent to the county road. Install walkway fences to manage foot traffic. Replace 4 water spigots. Remove 1 restroom and install 1 6-unit unisex flush restroom with 2 outdoor showerheads. Replace 4 water spigots. Install 2 wildlife resistant trash and recycle bins with pads. Replace water and sewer lines within the amphitheater area.

Beach 2 & 3: Remove existing building, barriers and day use site components. Install information/bulletin board. Install approx. 25 picnic tables (including accessible ones and group use), 2 group-size cooking grills, 10 single-size cooking grills. Install new paths for ADA with seating. Expand intersection of Rustic Ave. at Pinecrest Road for an RV turnaround and drop-off location. Resurface (asphalt concrete) the parking spaces adjacent to Pinecrest Road. Replace 4 water spigots. Install 2 trash and recycle bins with pads. Remove 1 restroom and install 1 new 6-unit unisex flush restroom with 2 outdoor showerheads. Replace water and sewer lines within the Beach 2&3 area.

Fishing Pier: Remove existing building, barriers and day use site components. Install information/bulletin board. Install approx. 25 picnic tables (including accessible ones and group use), 10 cooking grills. Install new paths for ADA with seating. Rehabilitate the fishing pier and landscape the small unpaved area in the middle of the pier. Resurface (asphalt concrete) the parking spaces adjacent to Pinecrest Road. Install walkway fences to manage foot traffic. Install a fish cleaning station. Replace 4 water spigots. Install 2 trash and recycle bins with pads. Remove 1 restroom and install 1 new 6-unit unisex flush restroom with 2 outdoor showerheads. Replace water and sewer lines within the Fishing Pier area.

Beach Sand: Provide 1500 cubic yards of sand for the Pinecrest Beach.

Day Use Parking Area: Resurface (asphalt concrete) the existing parking area across Pinecrest Road from Beach 1. Expand the paved parking area to include the current native surfaced area used for boat trailer parking. Install directional signs and barriers to manage parking and traffic.

Pinecrest Loop Trail: Rehabilitate the 4-mile loop foot-trail around Pinecrest Lake. Install waterbars, repair tread, clear vegetation for the trailway, and install directional signs. Close and restore user-created trails. Install 1 new two-unit vault restroom near the intersection of the trail to Cleo's Bath. Install bulletin/ information signs at each end of the trail (near the marina and the fishing pier).

Shadow of the Mi Wok Trail: Improve the existing 0.25-mile interpretive trail near the Summit Ranger Station. Connect the current location of the trail to the former site of the Pinecrest gas station. Install a bulletin board, pave (asphalt concrete) the

parking area and install barriers and directional signs. Rehabilitate the 200-ft. boardwalk to Meadowview Campground. Develop an interpretive brochure (black and white) and provide initial and annual reprinting. Install site markers to identify points of interpretation on the brochure.

Trail of the Survivors: Construct a new 0.25-mile interpretive trail near the existing trail. Install a bulletin board, pave (asphalt concrete) the small parking area and install barriers and directional signs. Develop an interpretive brochure (black and white) and provide initial and annual reprinting. Install site markers to identify points of interpretation on the brochure. Project requires archaeological clearance.

Visitor Education and Information: Develop and implement a visitor education and information plan. Elements of the plan include: (1) developing and printing information for dissemination at points of visitor contact, (2) funding for printed materials, (3) schedule for updating information, and (4) a collection agreement with the Forest Service to provide funding for Forest Service's participation and implementation of portions of the plan.

Funding Contribution for Visitor Contact and Patrols: Contribute to the cost of Forest Service efforts to patrol the Pinecrest area with personnel at Law Enforcement Level 2 or Forest Protection Officer Level. Provide funding necessary to provide 1 person ½ time for 7 days/week for patrolling beach areas and day use area at Pinecrest between Memorial Day and Labor Day. Develop a collection agreement with the Forest Service for the Licensee to provide this level of funding annually.

Boat Patrols on Pinecrest Lake: Coordinate with the Forest Service to approach Tuolumne County to obtain increased boat patrols on Pinecrest Lake.

Traffic Plan: Develop a traffic plan for the day use area including the Pinecrest Road between the Pinecrest Campground entrance and the end of Pinecrest Road near the fishing pier. Include the access road leading to the boat ramp and parking lots. Provide a plan that suggests modifications to the paths of travel that would reduce congestion at Pinecrest Lake. Provide the Traffic Plan to the Forest Service within 6 years of the date of license issuance.

Implementation:

Rehabilitation of this facility shall occur in phases with target dates for completion as follows:

Boat Ramp	Year 3 after the date of license issuance
New Marina Parking Area	Year 15 after the date of license issuance
Beach 1 (between Marina and Amphitheater)-Restrooms	Year 10 after the date of license issuance
Beach 1 (between Marina and Amphitheater)-Remainder	Year 17 after the date of license issuance
Amphitheater	Year 2 after the date of license issuance
Beach 2 & 3-Restroom	Year 10 after the date of license issuance
Beach 2 & 3-Paths/seating/paving	Year 11 after the date of license issuance
Beach 2 & 3-Tables/grills/water/sewer	Year 20 after the date of license issuance
Fishing Pier	Year 25 after the date of license issuance
Beach Sand	Year 2 after the date of license issuance
Day Use Parking Area	Year 12 after the date of license issuance
Pinecrest Loop Trail	Year 5 after the date of license issuance
Shadow of the MiWok Trail	Year 20 after the date of license issuance
Trail of the Survivors	Year 14 after the date of license issuance
Visitor Education and Information	Year 2 after the date of license issuance
Funding Contribution for Visitor Contact and Patrols	Year 1 after the date of license issuance
Boat Patrols on Pinecrest Lake	Year 1 after the date of license issuance
Traffic Plan	Year 6 after the date of license issuance

Planning: The Licensee shall be responsible for preparing a site development plan for Forest Service approval.

Design and Construction: The Licensee shall be responsible for performing design and construction of the work unless the Licensee and Forest Service agree otherwise.

Annual Maintenance and Operation: The Forest Service will be responsible for performing annual maintenance and operation of the Pinecrest Day Use Area.

Replacement: The Licensee shall not be responsible for performing replacement of the work due to *force majeure* or end of service life, other than the specified rehabilitation work.

Ownership: Portions of the beach, boat ramp and Pinecrest Loop Trail are located within the Project Boundary; all other facilities are outside of the Project Boundary. The facilities and improvements constructed under this measure will be owned by the Forest Service.

Funding: The Licensee shall be responsible for funding preparation of the site development plan. The Licensee shall be responsible for funding the cost of designing and constructing the work. The Licensee shall be responsible for funding 50% of the annual cost of maintenance and operation with the expectation that the

Forest Service will fund the other 50% of the cost. The Licensee shall not be responsible for funding replacement of the work, other than the specified rehabilitation, as the facilities and improvements will be owned by the Forest Service and these costs may be covered by the Forest Service through user fees or other means.

2. Stanislaus Forebay Unit

The scope of work consists of installing a restroom, providing trail access to the Stanislaus Forebay and canal and contributing patrol funding to the Forest Service as described below:

Conceptual Plan: Prepare a conceptual development plan for the Stanislaus Forebay. Show locations of a proposed restroom, trails and information boards.

Site Improvements: Install 1 1-unit vault restroom. Install informational/bulletin board, directional signs, and barriers to manage parking. Improve the trail along the canal and shoreline to minimize erosion.

Funding Contribution for Visitor Contact and Patrols: Contribute to the cost of Forest Service efforts to patrol the Stanislaus Forebay area with personnel at Law Enforcement Level 2 or Forest Protection Officer Level. Provide 100% of the funding necessary to provide 1 person for 1 day/week for patrolling areas at Stanislaus Forebay between April 1 and November 1. Develop a collection agreement with the Forest Service for the Licensee to provide this level of funding annually.

Implementation:

Rehabilitation of this facility shall have a target date for completion as follows:

Restroom installation	Year 5 after the date of license issuance
Information signs and trail improvement	Year 5 after the date of license issuance
Funding Contribution for Visitor Contact and Patrols	Year 1 after the date of license issuance

Planning: The Licensee shall be responsible for preparing a site development plan for the work.

Design and Construction: The Licensee shall be responsible for performing design and construction of the work.
Annual Maintenance and Operation: The Licensee shall be responsible for performing annual operation and maintenance of the work at Stanislaus Forebay.

Replacement: The Licensee shall be responsible for performing replacement of the work due to *force majeure* or end of service life, if needed during the license term.

Ownership: The facilities and improvements constructed under this measure will be within the Project Boundary and will be owned by the Licensee.

Funding: The Licensee shall be responsible for funding preparation of the site development plan. The Licensee shall be responsible for funding the cost of designing and constructing the work. The Licensee shall be responsible for funding annual operation and maintenance and replacement of the work at Stanislaus Forebay.

3. Relief Reservoir Unit

The scope of work consists of contributing funding to the Forest Service for maintenance on the Huckleberry Trail Bridges, completing a trail inventory and, if necessary, accomplishing trail maintenance and/or closures and contributing patrol funding to the Forest Service as described below:

Huckleberry Trail Bridges: Contribute funding to the Forest Service to complete deferred maintenance repairs on the two trail bridges between the Kennedy Meadow trailhead and Relief Reservoir. Fund a portion of the deferred maintenance cost proportionate to the level of the Licensee's use of the bridges compared to all use of the bridges. Develop a methodology to determine the proportionate share of Project use on the bridges within 1 year of license issuance.

Trail Assessment, Closure and Rehabilitation: Inventory and map all trails between the Huckleberry Trail and Relief Reservoir. Provide the inventory and maps to the Forest Service for review within 5 years of license issuance. Close and restore the trails the Forest Service determines to be unneeded; rehabilitate or improve, to appropriate standard, the reservoir access trails that the Forest Service identifies it will add to its trail system.

Funding Contribution for Visitor Contact and Patrols: Contribute to the cost of Forest Service efforts to patrol Relief Reservoir with personnel at Law Enforcement Level 2 or Forest Protection Officer Level. Provide 100% of the funding necessary to provide 1 person to visit the area 8 times/season at Relief Reservoir between May 1 and October 1. Duties for the patrol person will include visitor contact, trash removal, monitoring the condition of trails that access the reservoir, determining if new trails are created by users and detecting any other forms of resource damage associated with recreation use at Relief Reservoir. Develop a collection agreement with the Forest Service for the Licensee to provide this level of funding annually.

Implementation:

Target dates for completing the work at the Relief Reservoir Unit:

Huckleberry Bridge (methodology to determine proportionate share)	Year 1 after the date of license issuance
Huckleberry Bridge (provide funding for deferred maintenance)	Year 4 after the date of license issuance
Trail Inventory and Mapping	Year 5 after the date of license issuance
Trail Closure and Rehabilitation	Year 9 after the date of license issuance
Funding Contribution for Visitor Contact and Patrols	Year 1 after the date of license issuance

Planning: The Licensee shall be responsible for preparing the trail inventory and maps. The Forest Service will be responsible for identifying the maintenance needs associated with the two bridges on the Huckleberry Trail. The Licensee shall be responsible for developing a methodology, in consultation with the Forest Service, and implementing the methodology to determine the Licensee's proportionate level of use on the Huckleberry Trail Bridges.

Design and Construction: The Forest Service will be responsible for performing design and construction of the work on the bridges and trails.

Annual Maintenance and Operation: The Forest Service will be responsible for performing annual operation and maintenance on the bridge and trails.

Replacement: The Licensee shall not be responsible for performing replacement of the work due to *force majeure* or end of service life, other than the specified deferred maintenance work.

Ownership: The Huckleberry Trail and the two bridges are not within the Project Boundary and will be owned by the Forest Service. Portions of the trails leading to the Relief Reservoir shoreline are within the Project Boundary. Except for these small segments of the trails at the reservoir shoreline, the facilities and improvements constructed under this measure will not be within the Project Boundary. All facilities and improvements will be owned by the Forest Service.

Funding: The Licensee shall be responsible for funding the trail inventory and mapping. The Licensee shall be responsible for providing funding to complete deferred maintenance on the two bridges proportionate to the level of the Licensee's use. The Licensee shall be responsible for funding the cost of trail closure and rehabilitation on the trails leading from the Huckleberry Trail to Relief Reservoir shoreline. The Licensee shall be responsible for funding annual operation and maintenance for the bridges proportionate to the Licensee's level of use of the bridges. The Licensee shall be responsible for funding all annual operation and maintenance on the trails between the Huckleberry Trail and Relief Reservoir

shoreline. The Licensee shall not be responsible for funding replacement of the work other than as specified, as the facilities and improvements will be owned by the Forest Service.

4. Additional Future Actions

   The implementation plan shall include a schedule for the Licensee and Forest Service to periodically meet during the term of the license to evaluate the adequacy of the implemented measures based on then-current recreation demand. The schedule shall be referenced to the license issuance date.

Rationale: Based on study results, SPLAT evaluated public recreation needs related to the Project and determined in its gap assessment that Project-related public recreation needs would not fully be met over the term of the new license at Stanislaus Forebay, Relief Reservoir and Pinecrest Lake without additional measures. SPLAT identified specific recreation measures to meet these needs and evaluated whether each need was fully Project-induced or partially Project-induced. One of the key findings of this process was the identification by SPLAT that the Pinecrest Lake area has reached or exceeded its carrying capacity, and that future recreation measures for that area should be limited to rehabilitating and enhancing existing uses and facilities rather than increasing such uses or facilities

The Licensee and Forest Service discussed the general concepts of , the Licensee being fully responsible for the cost of measures to meet public recreation needs that are fully Project-induced, and partially responsible for the cost of measures to meet needs that are partially Project-induced. Additionally, the Licensee and Forest Service discussed the concept of the Licensee not being fully responsible for funding measures related to facilities for which the Forest Service charges user fees, but which fees would not be available to the Licensee to help offset its costs as allowed by FERC's regulations.

The Licensee and Forest Service discussed the application of these principals as follows: (1) the Licensee being responsible for the cost of developing simple site development plans (not detailed construction drawings) for all of the proposed measures in order to clarify the scope of each measure, (2) the Licensee being responsible for design and construction costs for facilities that are fully Project-induced and for which the Forest Service does not charge user fees (Relief, Stanislaus Forebay and Pinecrest Day Use areas) and the Licensee and Forest Service equally sharing design and construction costs for facilities which are only partially Project-induced or for which the Forest Service charges user fees which would not be available to the Licensee to help offset its costs (Pinecrest, Meadowview and Pioneer campgrounds), (3) the Licensee paying the cost of annual maintenance and operation for facilities that are fully Project-induced, owned by the License, and for which the Forest Service does not charge user fees (Relief and Stanislaus Forebay areas); the Forest Service paying the cost of annual maintenance and operation for facilities that are owned by the Forest Service and for which the Forest Service charges user fees (Pinecrest, Meadowview, and Pioneer Campgrounds).

The Licensee further applied these principles to the following cost items, which were not specifically discussed with the Forest Service: (1) the Licensee and Forest Service equally sharing annual maintenance and operation costs for facilities that are owned by the Forest Service and for which the Forest Service does not presently charge user fees but has a reasonable option off-set its costs through user fees (Pinecrest Day Use area -- possible cost off-set by charging parking fees), and (2) the Licensee being responsible for future replacement costs during the term of the license for facilities owned by the Licensee (Relief and Stanislaus Forebay areas); the Forest Service being responsible for replacement costs during the term of the license for facilities owned by the Forest Service and for which the Forest Service charges user fees (Pinecrest, Meadowview and Pioneer campgrounds); and the Licensee and Forest Service equally sharing future replacement costs for facilities owned by the Forest Service for which the Forest Service does not charge user fees (Pinecrest Day Use area).

The Licensee and Forest Service discussed the concept of the Licensee contributing to the Forest Service's cost of providing law enforcement at Relief, Stanislaus Forebay and Pinecrest Day Use areas (user fees help cover such costs at Pinecrest, Meadowview and Pioneer campgrounds), and discussed specific cost responsibilities for the Licensee for the two interpretive trails in lieu of the Licensee participating in costs related to other Pinecrest area trails.

With regard to shared funding for design and construction, the Licensee and Forest Service discussed adoption of a principal successfully used elsewhere that if the Forest Service cannot provide its share of the funding, the Licensee would fund the full cost of the design and construction work but with some combination of delay to the implementation schedule and possible reductions in work scope, such the net present value of the Licensee's cost is the same as if the Forest Service funding had been available and sufficient. The Licensee and Forest Service also discussed the concept that the Licensee could off-set any portion of its costs through alternate funding sources other than the Forest Service (e.g. California Department of Boating and Waterways for water access improvements), and that the Forest Service would be willing to provide reasonable assistance to the Licensee in this regard.

The Licensee and Forest Service discussed the concept of the Licensee being responsible for performing the actions listed in the proposed measure, with specified exceptions where the Forest Service desired to perform the actions, and with the general provision that on any item the Licensee and Forest Service could, by mutual agreement, change responsibility for performance of the action. The Licensee and Forest Service also discussed the concept of each entity paying its own internal costs for carrying out its responsibilities under this proposed resource measure.

The Licensee and Forest Service discussed the concept of recreation facilities at Stanislaus Forebay and Relief Reservoir being Project facilities owned and managed by the Licensee, but recreation facilities at Pinecrest Lake presently owned and managed by the Forest Service and not designated as Project facilities continuing to be owned and managed by the Forest Service and not being Project facilities. The Licensee and Forest Service discussed the concept that the

implementation schedule would extend over many years, consistent with the relative condition of the existing facilities and to minimize disruption to recreation users. The Licensee developed the implementation schedule proposed in the measure with input from the Forest Service.

SPLAT's Position: The general concepts of this proposed measure were discussed with SPLAT, and the Licensee believes SPLAT generally concurs with the proposed recreation facilities and funding responsibilities. However, some of the proposed cost responsibilities for maintenance and operation, and for replacement were not discussed with the Forest Service or SPLAT. Additionally, the proposed implementation schedule was not reviewed with the Forest Service or SPLAT. SPLAT participants did not formally review the measure's final language nor were participants asked for a "can you live with it" decision. This measure has been identified for additional discussion with SPLAT.

Resource Measure: Maintain Pinecrest Lake Water Surface Elevation

The Licensee shall, consistent with operational demands, maintain the maximum water surface elevation in Pinecrest Lake during the period from June 1 to September 15, and maintain a minimum pool of about 10 acres with a depth of not less than 10 feet at all other times, except under emergency conditions.

Rationale: This measure is a condition (Article 29) of the current Project license. The existence of this condition was discussed with SPLAT, and SPLAT discussed the desirability of maintaining high water surface elevations in Pinecrest Lake during the primary recreation season (Memorial Day weekend through Labor Day weekend). SPLAT did not specifically discuss the concept of making this existing license condition a proposed measure for the new license, but the Licensee believes doing so is consistent with SPLAT's expressed interest in preserving the existing recreation use of Pinecrest Lake.

SPLAT's Position: This proposed measure was not discussed with SPLAT, but the Licensee believes SPLAT would concur with this measure. This measure has not been identified for additional discussion with SPLAT.

7.9 Resource Measures, Facilities and Studies Recommended by Resource Agencies, Tribes and Others

The Licensee issued its draft license application in July 2002 for review and comment. The draft license applications did not contain specific Licensee-proposed resource management measures. Instead, the Licensee and SPLAT agreed to continue jointly developing such measures.

The Licensee received eight letters within the comment period providing a total of 314 individual comments on the draft license application. Comment letters were received from the STF (183 comments), USFWS (22 comments), NPS (28 comments), SWRCB (23 comments), Tuolumne Utilities District (10 comments), Friends of the River (13 comments), Central Sierra Environmental Resource Center (25 comments), and Trout Unlimited (10 comments). The Licensee also received an additional letter from STF dated November 26, 2002, which is not addressed in this license application because the Licensee has not had time to evaluate the letter.

The Licensee identified each comment in the eight letters with an alphanumeric designation (e.g., NPS-2 indicating that the commenter was the NPS and it was the second specific comment in the NPS letter), and prepared a response to each comment. Copies of the comment letters and the Licensee's response letters are provided in Volume I of this application.

In reviewing the comments on the draft license application, the Licensee attempted to identify those comments that specifically propose resource measures, facilities or studies, and further attempted to evaluate whether to accept or reject each proposal. This evaluation proved to be difficult and somewhat subjective, as many of the comments were more general in nature or pertained to issues still under discussion. Consistent with FERC's regulations, the Licensee has attempted to identify and list below those comments that specifically propose recreation measures, facilities or studies and segregate them into those that the Licensee accepts and those that the Licensee rejects. Comments of a general nature are not listed. Each comment is identified by its source and its alphanumeric designation. Some proposals have been identified for additional discussion with SPLAT. Proposals currently rejected by the Licensee but identified for further discussion with SPLAT are subject to change.

7.9.1 Resource Measures, Facilities, and Studies Recommended by Resource Agencies, Tribes and Others and Accepted by the Licensee

STF-181: *"7.5.9 Issue Questions Addressed Using Existing Information. Page E7-69: In particular, the Licensee can contribute to the Forest Service efforts to provide recreation information (maps, publications, signs, kiosks, interpretive programs*)." (Page 35, Paragraph 6)

Licensee Response: As stated in Section E7.5.9.2, the Licensee acknowledges that providing additional information to the public would be valuable to help reduce crowding at Pinecrest Lake. The Forest Service recommendation for the Licensee to provide recreation information such as maps, publications, signs, kiosks and interpretive programs will be considered as part of the Licensee's recommended resource measures in the FLA and subsequent meetings with the SPLAT Recreation Subgroup.

NPS-1: *"The Recreation Management Plan is mentioned several times in the Draft Application. It is our understanding that some of the recreation related decisions that will ultimately be included in the final Recreation Management Plan have already been discussed in the Recreation Subgroup and with the plenary SPLAT group. It is also our understanding that all SPLAT collaborative decisions will likely not be completed by the deadline for the Final Application,*

and will be included as an amendment to the Final Application at a later date. We feel that the recreation measures that have been finalized should be included in the Final Application, with a description of additional measures under discussion within SPLAT and any outstanding disagreements over appropriate measures for consideration by the Commission, along with a schedule for completing the SPLAT collaborative process and submitting an amendment or final Recreation Management Plan. The description of options for recreation mitigation should include off-site options that have been discussed in the Recreation Task Group and Subgroup for consideration by the Commission." (Page 1, Paragraph 3.)

Licensee's Response: The Licensee will include proposed resource management measures for recreation facility construction, rehabilitation, operation and maintenance in the FLA. The FLA will include a discussion of the recreation resource measures that have been discussed by SPLAT. It is likely there will be additional discussion of these measures after the FLA is filed.

The Licensee is willing to continue discussing this item with NPS after the FLA is filed.

NPS-2: ***"****We note that there is little or no reference to recreational operations and maintenance (O&M) responsibilities or costs to be absorbed by the Applicant. Some of those O&M responsibilities have been discussed within the Recreation Subgroup as appropriate, and should be included in the Final Application. Please include those measures that have not been resolved in the Recreation Management Plan." (Page 2, Paragraph 2.)*

Licensee's Response: The Licensee will include proposed resource management measures for recreation facility construction, rehabilitation, operation and maintenance in the FLA. The proposal will include identification of proposed funding responsibilities as was discussed with SPLAT at its November 13, 2002 meeting.

The Licensee is willing to continue discussing this item with NPS after the FLA is filed.

NPS-8: *"Page E7-22, the fourth paragraph discusses maintenance of Camp Nine Road. It is noted that a decision on maintenance responsibilities needs to be made by several parties. This is a project road and the scope of work, costs, and maintenance responsibilities should be included in the license conditions. We are unclear from this paragraph if the licensee intends to complete that consultation and decision prior to licensing or not." (Page 2, Paragraph 8.)*

Licensee's Response: The issue of road maintenance on the Camp Nine Road is a matter of ongoing Project operations rather than relicensing. As reported in the Licensee's study, the road is passable and safe for public travel and there will be a need to re-pave portions of the road in the near future. Maintenance responsibilities are identified in the existing road maintenance agreement between Licensee and Northern California Power Association (NCPA), and will be acknowledged in the FAL. The Licensee shares the maintenance responsibility with NCPA, and

the Licensee will work within the existing agreement with NCPA to address maintenance needs for the road.

NPS-26: *"In the Conclusions section, there is a discrepancy in the statement that there is "low and almost non-existent use at Stanislaus Forebay and Relief Reservoir". The level of 1700 user days per year in a wilderness area is not considered non-existent use, so we feel that this is an inaccurate and misleading statement. The Recreation Task Group has also discussed periodic management patrols (law enforcement or non-law enforcement, as needed) at both Stanislaus Forebay and Relief Reservoir to address vandalism and sanitation issues. Those recommendations should be noted here or elsewhere in the report." (Page 5, Paragraph 3.)*

Licensee's Response: The subject of the section of the DLA referred to in your comment is Flatwater Recreation Management. The use level of 1,700 in your comment refers to the estimated number of visitors to Relief Reservoir that was stated in the DLA and not to the number of boaters on the reservoir. The Licensee describes boating use at Stanislaus Forebay as low and almost non-existent because the reservoir is posted with signs prohibiting boating use. The Licensee was allowing for a circumstance that there may be an occasional visitor who violates the restriction and uses an inflatable fishing boat on the reservoir. The Licensee describes boating use at Relief Reservoir as low and almost non-existent because the Licensee did not observe boating activity and the STF staff stated that they had occasionally observed some boating activity. Again, the Licensee was allowing for a circumstance that there may be an occasional visitor that uses an inflatable fishing boat on the reservoir.

The title of Section E7.5.7 is **Flatwater Recreation Management** and the text describes the level of recreation use in the context of boating. To clarify this point, the last sentence in section E7.5.7.5 will be changed in the FLA to read, "Since boating is prohibited at Stanislaus Forebay and there are only anecdotal accounts from the STF staff of occasional boating use occurring at Relief Reservoir, there is no indication that changes are needed in the current management of these reservoirs relative to flatwater use.

The recommendations regarding sanitation, law enforcement and management patrols are discussed in Section E7.5.4.5 in the conclusions of the Stanislaus Forebay Recreation Study. Additional text will be added to E7.5.5.5 to discuss similar considerations at Relief Reservoir.

The Licensee is willing to continue discussing this item with NPS after the FLA is filed.

SWRCB-22: *"E7-68 - Based on results of the whitewater boating study provided to the SPLAT, is it clear that this project impacts whitewater boating opportunities. SPLAT may develop some opportunities to provide additional whitewater boating flows and mitigate the loss of opportunities. SWRCB believe a significant opportunity exists below the Stanislaus Powerhouse for mitigation of the loss of boating flows. We will ask the SPLAT to consider the development of engineered whitewater boating opportunities below the Stanislaus Powerhouse. This reach is*

highly impacted by the peaking operation of the North Fork development, and well as the Stanislaus Powerhouse. There is little opportunity for fisheries enhancement because of the extreme flow fluctuations that occur. About 20 man made or augmented natural whitewater runs have been built in the U.S., following a trend begun in Europe (Paddler 2002). These runs have provided large public benefits and boating opportunities and very low cost. The Stanislaus River below the powerhouse may provide a great location for the development of a whitewater park." (Page 6, Paragraph 2)

Licensee's Response: In response to SWRCB's suggestion, the Licensee conducted an evaluation of whitewater boating opportunities in the Stanislaus River below the Stanislaus Powerhouse. Dave Steindorf, a professional whitewater boating instructor, visited the site on October 30, 2002 to provide an initial assessment of the potential for whitewater boating. The flow in the Stanislaus River during the assessment was estimated at 700 cfs based on flow information provided by the Licensee. Mr. Steindorf documented portions of the river on video tape and kayaked portions of the run as well. At least four 'play areas' were found in the two-mile section of the river between the Stanislaus Powerhouse and the Camp Nine bridge during the assessment.

The Licensee's assessment is that this stretch of the river provides a good opportunity for whitewater use as it currently exists. The flow in this run depends on the flow from the Collierville Powerhouse, which is part of NCPA's project on the North Fork Stanislaus River, in addition to the flow from the Stanislaus Powerhouse. Travel time from Angels Camp, the nearest sizable community, is about 45 minutes by way of the Camp Nine Road. Given the remoteness of the location, it would be important for boaters to have good flow information available to the in order to use this stretch of river.

The Licensee will include this new assessment information in the FLA. Additionally, the Licensee plans to propose in the FLA two resource management measures to enhance whitewater boating opportunity in the subject reach. One of these measures involves providing flow information to the public. The other one involves removing the steel and timber superstructure of Stanislaus Afterbay dam to enhance public safety and aesthetics.

The Licensee is willing to continue discussing this item with SWRCB after the FLA is filed.

FOR-11: *"7.5.8.5 - Since the release of this DLA, the whitewater boating reconnaissance of the Sand Bar and Mt. Knight reaches has been completed by a group of expert boaters. All results of this study should be included in the final license application. It is clear that current operation of the Spring Gap project as well as the Stanislaus project may preclude boating opportunities in the above mentioned reaches except during times of spill. Friends of the River supports mitigation measures for whitewater boating opportunities provided they do not adversely impact the aquatic ecosystem, native fish populations, and the recreational fishery. PG&E, in consultation with the SPLAT whitewater boating subgroup, should adopt a plan to mitigate for*

the loss of boating activity in the Sand Bar and Mt. Knight reaches. This may include but is not limited to the following: 1) making flow information readily available to boaters via the internet, and 2) potential boating flow releases in the third year of a non-spill period. Additional measures which PG&E shall consider in the Pinecrest and Philadelphia Reaches, in consultation with the whitewater boating subgroup, should include making flow information readily available to boaters via the internet." (Page 3, Paragraph 6)

Licensee's Response: The Licensee will include in the FLA the results of the June 2002 whitewater boating flow study conducted below Sand Bar Diversion Dam as well as subsequent discussions with the Whitewater Boating Committee and SPLAT. These discussions have focused on the items suggested by FOR, and the Licensee expects that all of them will be included in the Licensee's proposed resource management measures.

CSERC-17: *"CSERC finds that the Spring Gap-Stanislaus Project DLA does not adequately explain the fact that the Licensee has not provided mitigation for the recreational use induced by Strawberry Reservoir during the many decades leading up to this relicensing procedure. Accordingly, our Center requests that the Licensee clarify that a significant portion of financial or management support for recreational use at its facilities over past decades has not been provided to the Stanislaus National Forest (STF), despite the tremendous amount of recreational use and management that has been required to maintain that recreational benefit. This fact is important, because NEPA and CEQA both require that projects and actions be considered in light of past, present, and future connections and impacts. Thus, CSERC believes that any recreational mitigation measures agreed to now, as part of the relicensing process, need to be developed in light of past policies that did not require the Licensee to mitigate for induced recreational use*." (Page 8, Paragraph 3)

Licensee Response: The current FERC license for the Project does not include any specific recreation measures, except that Article 29 does require the Licensee to maintain water surface elevations in Pinecrest Lake from June 1 to September 15, which benefits recreational use. However, over the course of the license term, the Licensee has paid hundreds of thousands of dollars in annual land use fees to the federal government for use of National Forest System lands. These funds are deposited into the federal General Fund. Although these funds are not earmarked specifically to be used in the STF, appropriated funds from this same source were used to build and maintain the various campgrounds, day use area and trails that are used by visitors to the Project. In addition, the Licensee maintains the Project reservoirs, which are used by recreation visitors for boating, fishing and other activities. The Licensee believes it has made a significant contribution to public recreational opportunities on federal land. Additionally, the STF charges user fees for campground use at Pinecrest Lake, which off-set its cost of operating and maintaining these facilities. The Licensee will include proposed resource measures in the FLA to provide improvements to recreation facilities related to the Project. The Licensee anticipates that it will bear a substantial portion of the cost of implementing, operating and maintaining these proposed improvements.

The Licensee is willing to continue discussing this item with CSERC after the FLA is filed.

CSERC-20: *"Next, CSERC supports the general analysis and conclusions related to the Forebay and the need for a restroom facility, more maintenance, and a regular patrol of the area. We agree that use can grow significantly over the coming decades at that area."* (Page 9, Paragraph 3)

Licensee Response: Thank you for your comment.

7.9.2 Resource Measures, Facilities, and Studies Recommended by Resource Agencies, Tribes and Others and Rejected by the Licensee

USFWS-21: (Dispute Item) *"The riparian corridor occurring along with streams and tributaries in the Project area supports a wide array of fish and wildlife that also serve as recreational resources because they are used by anglers and visitors for fishing, hiking, camping, and wildlife viewing. The Applicant should include in the FAL an assessment of the suitability of boating or fishing as a function of discharge, and rationale for any flow releases proposed to support those recreational activities. To formulate resource recommendations, an integrated IFIM study is required to assess recreational uses and their relationship to fish and wildlife habitat availability and suitability."*

Licensee's Response: Boating flow studies and assessments were conducted as part of the recreation studies and will be included in the FLA along with the final results of the instream flow studies. Using the results of both studies, SPLAT participants, including USFWS, will be able to evaluate alternative management options. The FLA will include a proposed resource management measure to provide a recreation pulse flow event in the Sand Bar Dam Reach in the third of three consecutive years when such an event has not otherwise occurred due to spill flows. The proposal will include the Licensee's rationale and will specifically address the potential for impacts to fish and wildlife habitat.

USFWS-22: *"The applicant should include in the FAL a plan to monitor the effects of recreational use on fish and wildlife habitat in the Project area. There are discretionary management decisions that will need to be made initially and may need to be adjusted during the term of license. These decisions should be based on adequate resource data. All recreational activities have potential to conflict with fish and wildlife and this information will assist development of best management practices."*

Licensee's Response: (Dispute Item) The Licensee will consider this recommendation in development of its proposed resource management measures to be included in the FLA.

The Licensee is willing to continue discussing this item with USFWS after the FLA is filed.

NPS-19: *"Page E7-45 response to R-19, you may want to add "…off-site parking, shuttle buses, or trams to the reservoir…", as another option. In this response, we disagree that providing off-site camping options would not serve the needs of the visitors. With appropriate education and information, well-developed off-site facilities would help disperse overnight use away from the already overcrowded campgrounds in the immediate Pinecrest Lake area, and could help disperse some day use to other reservoirs in the area, such as Beardsley reservoir. This section should mention the options discussed in the Recreation Task Group such as Pedro Flat cooperative options with Tri-Dam and other campground options closer to Pinecrest Lake." (Page 4, Paragraph 3.)*

Licensee's Response: (Dispute Item) The Licensee does not believe that it should provide facilities for off-site camping, parking or shuttle busses for Pinecrest Lake. As discussed throughout the DLA, the developed facilities for camping and day use receive high use and many visitors already feel extremely crowded during their visit. At many SPLAT and Recreation Subgroup meetings, it was repeatedly noted by the STF and other stakeholders that it was their belief that visitation to Pinecrest Lake exceeds what the area can safely and environmentally accommodate. The Licensee believes that providing a shuttle bus service for people who cannot find a place to park would only serve to exacerbate the crowding problem at the beach, at the day use area, and on the Pinecrest Loop Trail. This type of development would not serve to improve the visitor experience at Pinecrest Lake and would not be consistent with the STF's stated desire to disperse visitors to other areas of the forest to reduce congestion and environmental impacts.

Additionally, land at Pinecrest Lake has been heavily developed with a variety of facilities including privately owned residences, organization camps, grocery store, restaurant, resorts as well as the campgrounds and day use areas. The *Pinecrest Herring Creek Recreation Composite Study*, completed by the STF and reviewed by the Licensee as part of completing the recreation studies, recognizes the physical limitations of the area to accommodate additional development at Pinecrest. The overcrowding at Pinecrest identified by the visitors as well as the STF, Licensee and other stakeholders combined with the STF's recognition that additional development is not desirable indicates to the Licensee that Pinecrest has been developed to, at least, its potential capacity to accommodate recreation use.

The Licensee believes that the concept of off-site facilities is not consistent with the Licensee's responsibility to develop suitable public recreation facilities upon Project lands and waters as outlined in FERC's regulations for evaluating recreational resources at hydropower projects (18CFR§2.7). Your comment that well developed off-site facilities would help disperse overnight use away from the already overcrowded campgrounds in the immediate Pincrest Lake area and could help disperse some day use to other reservoirs in the area such as Beardsley reservoir, is correct. However, the Licensee believes that a visitor to another area or reservoir that is not part of the Spring Gap-Stanislaus Project is not a recreation visitor to the Project. Consequently, the Licensee believes that the needs, impacts and accommodations associated with

a visitor to an area other than Pinecrest Lake, or another Project Reservoir, is not within the scope of the Licensee's responsibilities, and such off-site recreation developments will not be proposed in the FLA.

CSERC-23: *"Finally, we believe it is not sufficiently clear in the DLA that the Licensee's project at Strawberry Reservoir creates a tremendous inducement of use that causes overflow recreational demand on peak use weekends, and that those project-induced visitors often go to Beardsley or other water destinations to seek water on hot summer days. CSERC and the Forest Service have provided extensive comments suggesting that the Licensee be considered a contributor to the use at Beardsley over coming decades, and that as such, there be some recognition of a need to contribute some portion of mitigation if new campground facilities are developed to meet growing demand."* (Page 9, Paragraph 6)

Licensee Response: (Dispute Item) Recreation surveys performed during the summers of 2000 and 2001 do not support CSERC's contention that the recreation draw of Pinecrest Lake causes overflow recreation demand at Beardsley Reservoir. To the contrary, the recreation surveys indicate little recreation use overflow from Pinecrest Lake to Beardsley Reservoir. This is because visitors to Pinecrest Lake are attracted to the specific developed amenities Pinecrest Lake has to offer, most of which are unavailable at Beardsley Reservoir. This situation is not likely to change in the future, because if crowding at Pinecrest were likely to cause overflow to Beardsley, it would be happening now. FERC's regulations identify a Licensee's responsibility for developing suitable public recreation facilities upon Project lands and waters to meet the recreation opportunity afforded by the Project. FERC's regulations do not make a Licensee responsible for alternative recreation opportunity that may be available in a National Forest, or for providing alternate recreation facilities to accommodate demand in excess of the carrying capacity of recreation opportunity afforded by the Project. The Forest Service has proposed possible development of a new campground near Beardsley Reservoir, specifically to accommodate overflow demand at Beardsley Reservoir. Initially, the Forest Service considered whether the Spring Gap-Stanislaus Project Licensee might have a shared responsibility for this campground, but, the Licensee believes, subsequently concluded it was not appropriate. The Licensee agrees with the conclusions of the recreation surveys and the Forest Service, and does not propose to financially participate in any additional campground facilities that may be developed near Beardsley Reservoir. Such participation would be outside the scope of FERC's regulations.

7.10 Literature Cited

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