Study 6.1

# RECREATION USE AND VISITOR SURVEY STUDY

October 2016

## 1.0 Project Nexus

South Sutter Water District's (SSWD) continued operation and maintenance (O&M) of the Camp Far West Hydroelectric Project (Project) may have an adverse effect on recreational resources.

## 2.0 Study Goal and Objectives

The primary goal of this Recreation Use and Visitor Surveys Study (Study) is to define the preferences, attitudes, and characteristics of the Project's primary recreation user groups. Information from a survey of users will provide an understanding of the preferences of various Project recreation user groups. The survey will also describe user preferences for various types of recreation opportunities, the level of acceptability of experiential impacts, and support for existing and alternative management options. Specific Study goals and objectives are to:

- Describe the preferences, attitudes, and characteristics of the Project's recreation users. Specific objectives include:
  - Describing recreation visitors and their trip characteristics, including seasonality and type of user;
  - Describing recreation visitors' activities at Project recreation areas;
  - Identifying recreation issues such as safety, conflicts, or crowding;
  - Describing user preferences and expectations for the recreation settings and facilities, and their tolerances for various conditions, particularly water surface elevation (WSE);
  - Describing recreation visitors' socio-demographic characteristics and potential barriers to participation in recreation activities; and
  - Describing users' attitudes toward management actions that might be used to improve experiences or address problems

- Collect information about current project recreational activities and future demand for activities that occur within the Study Area. Specific objectives include:
  - Identify the amount, activity type, and spatial and temporal distribution of existing and desired recreation use within the Project;
  - Identify project-related recreation opportunities in the Project Vicinity that may have substantial unmet demand. Identify potential constraints or barriers to recreation use, in particular those potentially related to existing project operations or management;

- Roughly estimate future demand within the Project through the estimated term of the new license (30 to 50 years); and
- Assess the regional uniqueness and relative significance of the Project's primary recreation opportunities.

- Collect information about current project boat ramp functional use levels and the impact to the availability of access to recreational opportunities on the reservoir. Specific objectives include:
  - Identify the functional end of the developed and undeveloped low-water boat ramps; and
  - Identify any public access impacts related to reservoir-based recreational activities, primarily boating and angling.

The Study does not include the development of potential requirements in the new license.

# 3.0 Existing Information and Need for Additional Information

Existing, relevant and reasonably available information regarding recreational resources in the Project Vicinity[1] is provided in Section 3.2.6 of SSWD's Pre-Application Document (PAD). Section 3.2.6.2 of the PAD includes a description, in detail, of the existing Project recreation facilities and opportunities at Camp Far West Reservoir, including an evaluation of the condition of existing facilities. Table 3.0-1 provides a summary of these facilities.

**Table 3.0-1. Recreation facilities at the Camp Far West Hydroelectric Project's North Shore Recreation Area (NSRA) and South Shore Recreation Area (SSRA).**

| Facility | Amenity | NSRA | SSRA |
|---|---|---|---|
| Family Campgrounds | No. Sites (standard) | 70 | 67 |
| | Sites (RV with hookups) | 10 | none |
| | Parking Spurs | 1 spur per site | 1 spur per site |
| | Overflow Parking Spaces | None | 18 single |
| | Restrooms | 2 flush | 1 flush, 2 vault |
| Group Campgrounds | Sites | 2, 25-person group sites, 1, 50-person horse camp site | 1, 50-person group site |
| | Parking Spaces | none[1] | 10 |
| | Restrooms | 4 portable chemical toilets | none[2] |
| Day Use Areas | Picnic Sites | 20 | 33 |
| | Swim Beaches | 1 | 1 |
| | Parking Spaces | none[3] | 44 |
| | Restrooms | 1 flush | none[4] |
| Boat Ramps | Number | 1, 4-lane concrete ramp | 1, 2-lane concrete ramp |
| | Parking Spaces | 82 single, 73 vehicle with trailer | 52 vehicle with trailer |
| | Restrooms | 1 flush | 1 flush |

[1] In this Study, "Project Vicinity" refers to the area surrounding the Project on the order of USGS 1:24,000 topographic quadrangle.

**Table 3.0-1. (continued)**

| Facility | Amenity | NSRA | SSRA |
|---|---|---|---|
| Dispersed Use Areas[5] | Sites | 2 | 2 |
| | Restrooms | 6 portable chemical toilets | 6 portable chemical toilets |
| Other Facilities | Store | 1 | 1 |
| | RV Dump Stations | 1 | 1 |
| | Concessionaire Trailers | 2 | 1 |

[1] Parking is available in open areas adjacent to the group sites, but is not designated or defined.
[2] The group campsites use the adjoining family campground restroom building.
[3] The day use area (picnic area and swim beach) uses the adjoining boat ramp parking area for parking.
[4] The picnic area uses the adjoining boat ramp restroom building.
[5] The dispersed use areas provide day use and overnight opportunities with minimal facilities (roads, portable chemical toilets and trash cans).

Section 3.2.6.3 of SSWD's PAD provides a summary of the recreation opportunities and facilities available in the Bear River downstream of the Project. Of significance, Section 3.2.6.4 of the PAD summarizes the Project recreation use with an estimate of Project recreation use from 1991 through 2010.

Additional information, which will be provided by this Study, is needed to inform the requirements of the new license as they pertain to recreation. The Study will develop information to address the gaps in the existing information on recreation user opportunities at the Project, including but not limited to the angling and boating experiences, adequacy of facilities, effects of project operations on existing recreation experience, and to understand recreational use impacts. This information will inform the development of a Recreation Facilities Plan for the Project. Additional information collected within this Study will be used to close the gaps in the existing information on what recreation users think about recreation opportunities, current use levels, and projected use for the term of the next license period on the Project. In addition, refining the existing data collection efforts of SSWD's concessionaire will provide daily site occupancy data at each of the Project campgrounds to accurately assess if any Project campgrounds are approaching or exceeding physical capacity during the recreation season. Project operations result in varying water surface elevations (WSE) that impact the availability or functionality of the two developed boat ramps for reservoir recreation users. Information collected in this Study will identify and address the specific functional levels of the developed boat ramps.

# 4.0 Study Methods and Analysis

## 4.1 Study Area

For the purpose of this Study, the Study Area includes the Camp Far West Reservoir and, particularly, the NSRA and SSRA as shown in Figure 4.1-1.

If SSWD proposes an addition to the Project, the Study Area will be expanded, if necessary, to include areas potentially affected by the addition.

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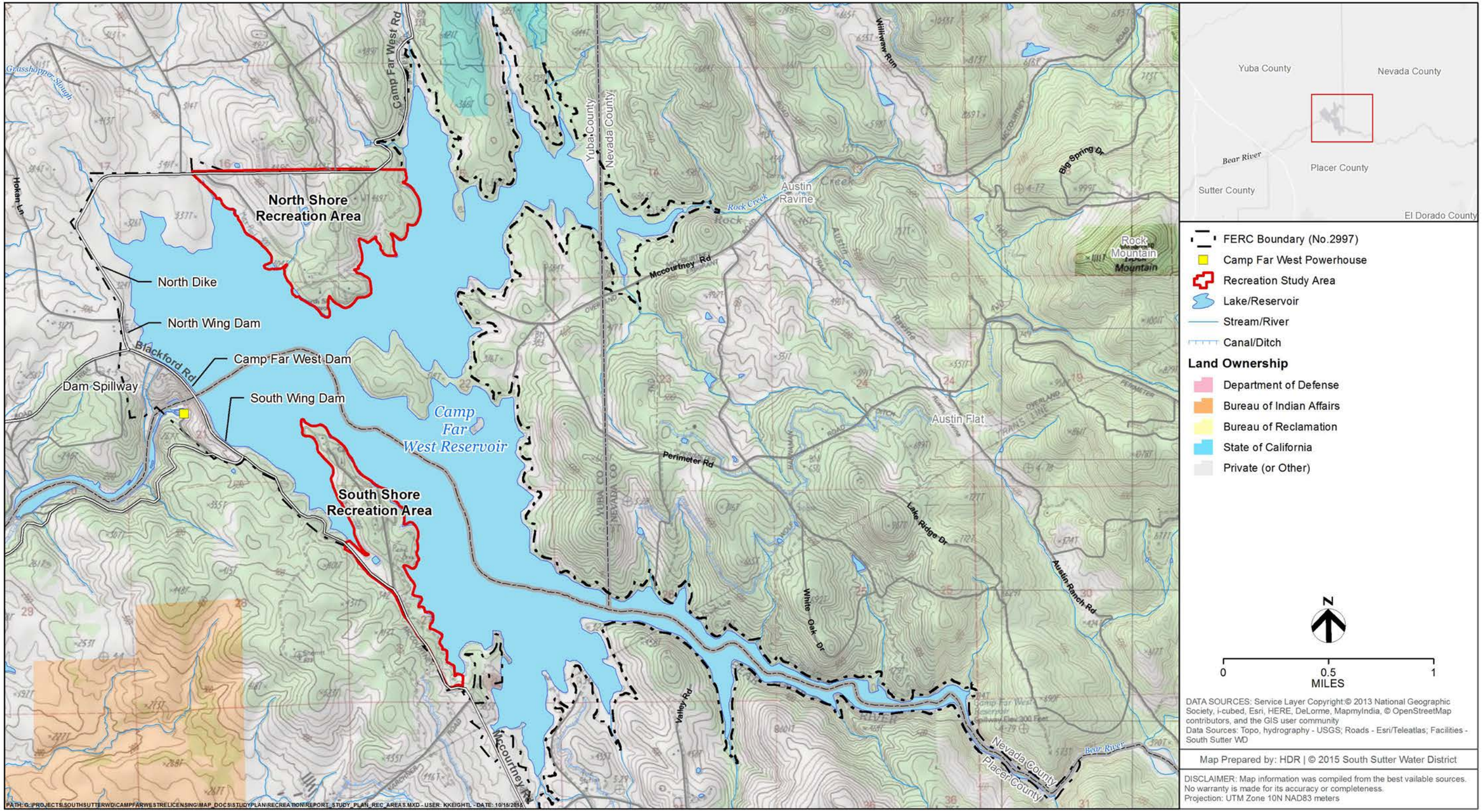


**Figure 4.1-1. Study Area for Recreation Use and Visitor Survey.**

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## 4.2 General Concepts

The following general concepts and practices apply to all SSWD relicensing studies:

- Personal safety is the most important consideration of each fieldwork team.
- If required for the performance of the study, SSWD will make a good faith effort to obtain permission to access private property well in advance of initiating the study. SSWD will only enter private property if such permission has been provided by the landowner.
- SSWD will acquire all necessary agency permits and approvals prior to beginning fieldwork for a study that requires them.
- Field crews may make variances to the study plan in the field to accommodate actual field conditions and unforeseen problems. When a variance is made, the field crew will follow to the extent applicable the protocols in and intent of the study plan.
- SSWD's performance of the study does not presume that SSWD is responsible in whole or in part for measures that may arise from the study.
- If Global Positioning System (GPS) data are required by a study plan, they will be collected using either a Map Grade Trimble GPS (i.e., sub-meter data collection accuracy under ideal conditions), a Recreation Grade Garmin GPS unit (i.e., 3-meter data collection accuracy under ideal conditions), or similar units. GPS data will be post-processed and exported from the GPS unit into Geographic Information System (GIS) compatible file format in an appropriate coordinate system using desktop software. The resulting GIS file will then be reviewed by both field staff and SSWD's consultant's relicensing GIS analyst. Metadata will be developed for deliverable GIS data sets. Upon request, GIS maps will be provided to NMFS, USFWS, Cal Fish and Wildlife or SWRCB in a form, such as ESRI Shapefiles, GeoDatabases, or Coverage with appropriate metadata. Metadata will be Federal Geographic Data Committee compliant.
- SSWD's field crews conducting relicensing studies will record incidental records of aquatic, botanical and wildlife species observed during the performance of a study. All incidental observations will be reported in the DLA and FLA. The purpose of this effort is not to conduct a focused study (i.e., no effort in addition to the specific field tasks identified for the specific study plan) or to make all field crews experts in identifying all species, but only to opportunistically gather data during the performance of a relicensing study. Species included for incidental observation will include, but are not limited to: bald eagle (*Haliaeetus leucocephalus*); golden eagle (*Aquila chrysaetos*); osprey (*Pandion haliaetus*); any bats or positive sign of bats; Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*O. mykiss*), including redds and carcasses; northern western pond turtle (*Actinemys marmorata*); foothill yellow-legged frog (*Rana boylii*); American bullfrog (*Lithobates catesbeianus*), and aquatic invasive species.
- Field crews will be trained on, provided with, and use materials (e.g., Quat disinfectant) for decontaminating their boots, waders, and other equipment between water-based study

sites. Major concerns are amphibian chytrid fungus, and invasive invertebrates (e.g., zebra mussel, *Dreissena polymorpha*).

- If in the performance of a study, SSWD observes an ESA-listed or special-status species, within 30 days of the observation SSWD will submit to Cal Fish and Wildlife's California Natural Diversity Database a record, on the appropriate form, of the observation.
- If a study plan requires collection and reporting of time series data, the data will be provided at a minimum in HEC-DSS format. A viewer for these files (HEC-DSSVue) can be obtained from the United States Army Corps of Engineers at the following website as of March 2008: http://www.hec.usace.army.mil/software/hec-dss/hecdssvue-dssvue.htm in both Microsoft Excel® and *.DSS formats.
- If a field crew encounters human remains during field work, all work within a 100-foot radius of the discovery will stop immediately. The field crew will not disturb the remains in any way, secure the area to the best of its ability, mark the location with flagging tape in such a way as to not draw attention to the remains, and record the location using a GPS unit or plot the location by hand on a map if no GPS unit is available. As soon as possible thereafter, the field crew will contact SSWD and the relicensing Cultural Resources Lead to report the discovery. SSWD will report the finding and initiate the appropriate steps required under State of California and federal law to address the discovery. Any human remains encountered will be treated with respect, and the field crew members will keep the location confidential and will not disclose the location of the discovery to the public or to any other study crews. The field crew will keep a log of all calls/contacts it makes regarding the discovery and that details the event. Work will not proceed in the secured area of the discovery until provided clearance by SSWD.

## 4.3 Study Methods

The Study methods consist of five steps. These include: 1) identifying recreation uses and visitor attitudes, beliefs, and preferences at Camp Far West Reservoir recreation areas; 2) estimating current recreation use and occupancy at the Project; 3) identify future use and demand opportunities; 4) evaluating the functional periods of the Project-developed boat ramps; and 5) perform data analysis.

### 4.3.1 Step 1 – Identify Recreation Uses and Visitor Attitudes, Beliefs, and Preferences at Project Recreation Resource Areas

SSWD will conduct observation and visitor surveys and utilize concessionaire entrance gate records to gather information to address the Study goals and objectives at each of the Project recreation area Study sites. Table 4.3-1 summarizes the Study sites and the various Study methods that will be utilized or administered at each Study site.

**Table 4.3.1-1. Study sites for visitor observation surveys.**

| Recreation Area | Facility Type | Study Sites | Study Sub-Sites | Observation Survey | Visitor Survey | Concessionaire Records |
|---|---|---|---|---|---|---|
| NSRA | Campgrounds | Family Campground | Campsites | -- | X | X |
| | | RV Campground | Campsites | -- | X | X |
| | | Group Campground | Campsites | -- | X | X |
| | | Horse Camp | Campsites | -- | X | X |
| | Day Use Areas | Picnic Area | Picnic sites | X | X | -- |
| | | | Parking area | X | -- | -- |
| | | Swim Beach | Shoreline | X | X | -- |
| | | Dispersed Use Areas | Shoreline | X | X | -- |
| | | Boat Launch | Parking area | X | X | -- |
| SSRA | Campgrounds | Family Campground | Campsites | -- | X | X |
| | | Group Campground | Campsites | -- | X | X |
| | Day Use Areas | Picnic Area | Picnic sites | X | X | -- |
| | | | Parking areas | X | -- | -- |
| | | Swim Beach | Shoreline | X | X | -- |
| | | Dispersed Use Areas | Shoreline | X | X | -- |
| | | Boat Launch | Parking area | X | X | -- |

#### 4.3.1.1 Concessionaire Records

SSWD will utilize visitor use data collected by the concessionaire at the entrance gate of each developed recreation area to estimate the Project recreational use. The concessionaire will record for each recreation area on a daily basis the following visitor use parameters:

- Total visitor use (number of people entering the recreation area)
- Type of use (day use versus overnight use)
- Total number of campsites occupied for each campground type (e.g., family campground, RV campground, group campgrounds and horse campground)

#### 4.3.1.2 Observation Survey

SSWD surveyors will conduct observation surveys to gather on-site data related to the recreational uses by Project visitors at the Study sites identified in Table 4.3.1-1. The purpose of the observation surveys is to identify shoreline recreational uses occurring at the day use facilities and dispersed use areas of the recreation area that provide access to the shoreline. In addition, the observations surveys will be used to record the utilization of: 1) day use facility parking areas at the boat launches and picnic areas; 2) picnic sites; and 3) dispersed campsites at the dispersed use areas. SSWD will utilize the concessionaire records for campground utilization and, thus, not conduct observation surveys at the campground facilities.

The SSWD surveyor will count and record the time, date, location, number of vehicles, vehicles with trailers and the type of trailer, vehicles with racks for boats, trailers, boats, people, day groups, overnight groups**,** and the types of recreation activities. The surveyor will also record the percent occupancy by location. Observations will be made, and recorded by site and area to

include parking outside provided parking areas. These data will be used to identify the types of recreation activities visitors participate in at the Project. In addition, these data will also be used to calculate aspects of the Project recreation use estimate. Once the counts are completed, the surveyor will also administer an on-site recreation visitor questionnaire survey to randomly selected recreation visitors.

#### 4.3.1.3 Visitor Survey

SSWD surveyors will conduct visitor surveys to gather on-site visitor use and preference data at all the facilities within the NSRA and the SSRA each (Table 4.3.1-1). The visitor survey will collect visitor perceptions, attitudes, and satisfaction levels on current resource conditions (i.e. users' feelings towards current water or use levels), visitors' zip codes, user characteristics, recreational activities, recreation facility development, management concerns, and overall recreational experiences. Non-response bias will also collected during visitor survey collection, whereby SSWD's surveyor will collect the following information from visitors who refuse to complete the survey – reason, observed activity, gender and age (if possible). For all survey efforts, the number of refusals will be recorded. SSWD will administer surveys either as an on-site survey or a mail-back windshield survey depending upon the type of Study site as described below.

##### 4.3.1.3.1 Types of Visitor Surveys

**On-Site Visitor Survey**

SSWD will administer an on-site visitor survey at all sites where recreation visitors are readily visible and willing to participate at Project recreation areas (e.g., campgrounds, picnic areas, boat launches and trailheads). Only members of a group who are 18 years or older will be asked to complete a survey. SSWD's recreation researchers will train surveyors on random selection techniques for choosing groups at a site and participants within groups, introduction strategies, recording, and tracking refusals. A target number of users to be surveyed during each period will be established based on target survey completions for the entire recreation season for each recreation area (refer to Section 4.3.1.3).

**Mail-Back Windshield Visitor Survey**

SSWD will administer a mail-back windshield visitor survey at recreation Study sites where recreation visitors are not present, but their vehicles are. In these cases, a mail-back version of the visitor survey will be left on vehicle windshields with self-addressed envelopes and postage for convenient response and return. A survey packet of information will be left on the windshield and will include the survey, a self-addressed stamped envelope, and a cover letter which explains the purpose of the survey. SSWD will number each survey in order to track both on-site response and windshield response rates. SSWD anticipates utilizing mail-back surveys at boat launches and dispersed use areas.

##### 4.3.1.3.2 Visitor Survey Development

The visitor survey will address the Study objectives identified in Section 4.0. Survey topics will address items such as visitors' perceptions of the following:

- existing and desired recreation facilities
- reservoir water levels on experience
- satisfaction with shoreline access and opportunities
- comparison of project recreation areas to other regional recreation areas that provide similar recreation opportunities
- personal safety
- crowding
- conflict
- actual and desired activities
- constraints or barriers to participation that are potentially within SSWD's or agencies control (e.g. lawlessness, campfire use, parking access and fees)
- ways to enhance their recreation experience

The draft of the survey instrument is provided in Attachment 6.1A at the end of the Study plan. Prior to survey implementation, the survey instrument will be pre-tested in the field with recreation users. The intent of the pre-test is to receive feedback on readability, length, and general understanding of survey content. If necessary, minor changes to the survey instrument may be made to make the survey easier to complete and/or understand.

4.3.1.3.3 Field Reconnaissance, Logistics and Preparation

This task will involve logistical preparation for existing use data collection, including: developing draft data forms and associated databases; developing field work logistics and protocols; field crew training; selection of sampling dates; pre-testing field logistics and protocols, and revising schedules, logistics, or protocols based on preliminary findings.

### 4.3.1.4 Sampling Approach and Data Collection

4.3.1.4.1 Target Number of Visitor Surveys

SSWD will focus on a survey population based on the overall Project recreation use estimate for 2010, which was 139,110 visitor days (DWR 2011). Since the NSRA and SSRA provide the same opportunities, SSWD considers both areas to be the same survey population, and not distinct survey populations. Thus, the total target survey sample size for the Project will be at least 383 surveys, which was calculated using a 95 percent confidence interval with a sampling error no more than plus or minus 5 percent (Salant and Dillman 1994). Since it is not apparent how varied the Project sample population is, SSWD may chose to use a more conservative sampling approach that utilizes a "50/50 split," which means the sample population is relatively varied. A result of this "50/50 split" approach means SSWD will have a higher survey sample size than if it was apparent that the sample population was less varied (i.e. an "80/20" split

whereby most people have a certain characteristic and a few do not). Thus, since the "split" is not known ahead of time, the best approach is to be conservative and use the "50/50 split" (Salant and Dillman 1994).

To proportionately distribute the total number of target surveys for each recreation area, SSWD compared the number of sites and the open seasons of each recreation area. Overall, the NSRA accounts for approximately 60 percent of the total recreation sites at Camp Far West Reservoir. However, since the NSRA is open year-round and the SSRA is only open seasonally or roughly half of the year, SSWD has further weighted the distribution of surveys towards the NSRA (i.e., 80% of the total). Table 4.3.1-2 displays the target number of surveys for each recreation area.

**Table 4.3.1-2. Target number of visitor surveys for each recreation area.**

| Recreation Area | Target Surveys | |
|---|---|---|
| | Number of Surveys | Percent of Total |
| North Shore Recreation Area | 306 | 80% |
| South Shore Recreation Area | 77 | 20% |
| **Total** | **383** | **100%** |

SSWD will make a good faith effort to secure the target number of surveys identified by site or groupings of sites. However, even after following survey protocol, there may be sites where the target cannot be met. SSWD will continuously monitor the survey returns, and if survey targets are not being met at Study sites, SSWD will re-evaluate the sampling frequency to determine if additional efforts should be made at these Study sites; and if the distribution of the surveys should be altered, particularly if the SSRA open season is significantly different than 6 months. Also, for all Study sites, SSWD will continue the survey effort throughout the established survey season, even if the target survey numbers have been met, and will make every effort to achieve the survey target goals.

#### 4.3.1.4.2 Sampling Frequency

The sampling frequency will be divided into two categories – peak and off-peak seasons. The peak season for all recreation use and activities on the Project is from May through September. The off-peak season is from January through April, and from October through December.

The sampling frequency for the peak season will be:

- One randomly selected weekday day per month
- One randomly selected weekend day (Saturday or Sunday) per month
- One pre-selected holiday day (Saturday, Sunday or the holiday day) for each of the three-day holiday weekends, including Memorial Day, Independence Day and Labor Day holiday weekends (3 holiday weekend survey days total)

The sampling frequency for the off-peak season will be:

- One randomly selected weekday day per month
- One randomly selected weekend day (Saturday or Sunday) per month

SSWD will conduct one day of preliminary testing to clarify any problems/confusion with the survey instrument and/or process. Holiday survey days will not be done during the off-peak season.

#### 4.3.1.4.3 Random Sampling and Stratification

SSWD will conduct a roving use survey using a stratified two-stage (geographic and temporal) probability sampling approach (Malvestuto, 1996; Pollock et al. 1994). During the survey, SSWD's surveyor will conduct an observation survey (see Section 4.3.1) and a visitor survey (see Section 4.3.1) at all the recreation area facilities identified in Table 4.3-1. The survey sample will be stratified by recreation area, type of day (weekdays, non-holiday weekends, and holiday weekends), and time of day.

#### 4.3.1.4.4 Timing of Sampling

SSWD's surveyors will vary the times each survey site is visited to ensure a range of visitation times and potential user groups over the course of the survey period. To ensure SSWD's surveyors visit the facilities and study sites at different times, the surveyors will visit each facility following the same circuit or route, but will start at a the next facility on the circuit for each successive survey day.

### 4.3.2 Step 2 – Estimate Current Recreation Use and Occupancy at Project Recreation Areas

SSWD will accomplish this element in two parts. First, for each recreation site, SSWD will calculate the average existing use levels for several recreation parameters (e.g., people, vehicles, overnight groups and facility occupancy) by day type (e.g., weekend, weekday and holiday), and by time of day (e.g., morning and afternoon) during the survey recreation season. In addition, for each Project recreation site or group of sites, SSWD will calculate the frequency distribution of observed recreation activities during the surveyed recreation season.

Second, SSWD will estimate the existing annual day and overnight visits to the Project recreation areas in Recreation Days[2] (RDs) by utilizing SSWD's concessionaire records and, if necessary, the observation survey data. SSWD's concessionaire records will consist of the number of campsites reserved/occupied at each of the developed campgrounds.

[2] A Recreation Day, as defined by FERC, equals a visit to an area for recreation purposes for any portion of a 24-hour period.

### 4.3.3 Step 3 – Identify Future Use and Demand Opportunities

SSWD will identify the future use and demand opportunities from three perspectives: 1) assessing the existing unmet demand; 2) assessing future recreation demand; and 3) assessing the regional uniqueness and significance of the Project recreationally. Each of these perspectives is described in detail below.

#### 4.3.3.1 Existing Unmet Demand Assessment

Existing recreation use does not always represent the total existing recreation demand because there may be constraints that limit participation. While there are many potential constraints on recreation use (e.g., lack of free time, cost, geographic distance, lack of skills or equipment), a subset of participation constraints may be closely associated with site-specific management (e.g., limited access to lands or water, use limits or full occupancies at facilities, project operations that eliminate or diminish the quality of experiences and opportunities, or the lack of information about available recreation opportunities). To assess the general level of unmet demand for the Project recreation resources, SSWD will perform the three tasks described below.

##### 4.3.3.1.1 Task 1 – Assess Statewide and Regional Unmet Recreation Demand Information

SSWD will review and summarize relevant information from the 2012 California Public Attitudes Outdoor Recreation Survey (CDPR 2014). If available, SSWD will review other sources of Project Area[3] and Project region demand. The focus of this assessment will be to identify possible recreation activities with substantial unmet demand with a qualitative discussion of participation constraints and whether these constraints are likely affected by Project O&M.

##### 4.3.3.1.2 Task 2 – Collect Unmet Project Area Recreation Demand Information

SSWD will collect additional unmet recreation demand information from Project visitors in SSWD's visitor surveys. The visitor surveys will ask visitors if there are any reservoir-based recreation activities they are interested in participating in at the Project, but cannot because of some form of barrier or other existing condition.

##### 4.3.3.1.3 Task 3 – Identify Potential Activities with High Unmet Demand within the Project Area

SSWD will identify potential activities with high unmet demand in the Project Area based on the review of unmet demand information derived from the California Department of Parks and Recreation (CDPR), the Project visitor survey, Project monitoring data, and any other regional unmet demand sources (if any). Analysis will also attempt to identify likely barriers or constraints on participation, and whether those are related to Project operations or recreation management decisions.

[3] In this Study, "Project Area" refers to the area within and immediately adjacent to the existing FERC Project Boundary, and the Bear River downstream of the Project.

#### 4.3.3.2 Future Recreation Demand Assessment

This element of the Study will provide information regarding the projected future recreation use at the Project over the estimated period of the new License (50 years). Obviously, projecting the future is a speculative activity, especially over a 50-year period. These projections, though, can be useful for general planning purposes to identify potential management issues that may occur in the future. This approach will include four tasks.

##### 4.3.3.2.1 Task 1 – Review Existing Recreation Use Trends

Since past use often helps predict future use, SSWD will review trends of recent Project recreation use. Likely sources of Project use will be Davis-Grunsky Act annual monitoring reports, concessionaire records and observation data.

##### 4.3.3.2.2 Task 2 – Review Existing Population and Recreation Activity Participation Projections

SSWD will summarize existing information on future projections from the California Department of Finance on projected population growth rates of the counties where the majority of the Project visitors originate from. SSWD will also research projections for recreation activities from the United States Department of Agriculture Forest Service (Bowker et al. 2012) and other appropriate sources on future projections.

##### 4.3.3.2.3 Task 3 – Review Reasonably Foreseeable Events that May Influence Future Use

Reasonably foreseeable events in the watersheds may reasonably be expected to influence recreation use in the watershed over the license period. If an event is determined to be reasonably foreseeable, SSWD will make a qualitative assessment of its potential affect on future recreation use (if feasible).

##### 4.3.3.2.4 Task 4 – Estimate Future Recreation Use over the License Period

Based on historical trends, future growth projections, and likely foreseeable actions in the watershed, SSWD will use professional judgment to estimate Project recreation use and facility utilization over the expected term of the new license (30 to 50 years). These estimates must be considered very speculative and will only provide a general indication of how recreation use is expected to change over the license period. For the Project recreation use estimate projection, SSWD will rely on the population growth rates where the majority of Project visitors reside to project use. For the facility utilization projections (campgrounds, picnic areas and boat launch parking areas), SSWD will rely on the activity participation indices developed by the Forest Service (Bowker et al. 2012) for developed camping, picnicking and motorized boating.

#### 4.3.3.3 Regional Uniqueness and Significance Assessment

This component of the Study will assess the regional uniqueness of the Project's primary recreation opportunities in three tasks.

##### 4.3.3.3.1 Task 1 – Review Results of Visitor Questionnaires

SSWD will review the results of the visitor survey questionnaire that address regional uniqueness and significance. In addition, SSWD will identify the primary activities and opportunities of visitors surveyed, which SSWD anticipates will be boating, water sports (i.e, water skiing, wakeboarding, etc.), camping, fishing, picnicking, and swimming.

##### 4.3.3.3.2 Task 2 – Identify Regional Recreational Opportunities

SSWD will identify the geographic draw of the Project's top primary recreation opportunities identified in Task 1 above. SSWD will assess the geographic extent of visitors' origins and location of the alternative recreation resource areas where visitors participate in their primary recreation activities. SSWD will identify regional alternatives for comparable facilities or areas from sources such as guidebooks, on-line web resources, state and national parks, the United States Department of the Interior, Bureau of Land Management (BLM), United States Department of Agriculture, Forest Service (Forest Service), and county tourism sources.

##### 4.3.3.3.3 Task 3 – Assess the Uniqueness and Significance of the Project-Related Recreation Opportunities

SSWD will analyze the visitor responses to a typical survey question that asks visitors to rate the relative uniqueness of the project reservoir they visited. The question has pre-set responses using a 5-point scale with a rating of 1 meaning the reservoir provided an "extremely common" opportunity and a rating of 5 meaning the reservoir provided an "extremely unique" opportunity. Based on the average responses, SSWD will categorize the relative uniqueness of the Project using the following categories.

- Rating of 1.0 = extremely common
- Rating of 1.1 to 2.0 = common
- Rating of 2.1 to 3.0 = somewhat common
- Rating of 3.1 to 4.0 = somewhat unique
- Rating of 4.1 to 4.9 = unique
- Rating of 5.0 = extremely unique

In addition, text will describe what is unique and special about the most popular recreation opportunities based on the comments provided by the visitors on the visitor survey.

### 4.3.4 Step 4 – Evaluation of the Functional Periods of the Project Developed and Undeveloped Boat Ramps

SSWD will identify the functional periods of the Project's two developed boat ramps at the North Shore and South Shore Recreation Area boat launch facilities. First, SSWD will identify the constructed top and lower end of the two boat ramps to determine the functional WSE range of each boat ramp. A boat ramp is considered functional from the constructed top of the boat ramp down to 3 feet above the lower end of the constructed ramp per the California State Parks Division of Boating and Waterways (DBOW) design guidelines (DBOW 1991). If undeveloped or informal ramps or areas are utilized below the developed boat ramps for launching boats at either recreation area, then SSWD will make the same functional period evaluation for the informal ramp areas. Second, SSWD will compare the daily median reservoir WSE for the period of record (1968 – 2014) by water year type against the functional WSE range of each developed and undeveloped ramp to identify the periods of the recreation season (year-round) that the boat ramps are functional. The output of this evaluation will be tables and/or figures that identify the functional periods for each of the two boat ramps by water year type.

### 4.3.5 Step 5 – Data Analysis

#### 4.3.5.1 Visitor Surveys

Survey responses should provide a rich source of information about visitor use patterns, characteristics, preferences, and perceptions. The raw data will be entered into a statistical database program (SPSS) that will allow visitor survey responses to be analyzed, taking an "opportunity perspective" by grouping users who are doing similar activities in each project recreation area. Information will be presented in tabular or graph format that indicates the number and percent frequency of visitor survey responses and further summarized in narrative form. Observation use data will address the types and frequency of use occurring within each project recreation resource area.

The Study objectives and issues will be addressed through analysis of the responses to questionnaires and observation data. Survey responses will be coded, edited and entered for analysis through a separate effort. Descriptive statistics will be employed to explain visitor responses to each of the survey questions. For each Study Area, survey analyses will depend on the nature of the recreation users, but will likely focus on the following perspectives:

- Day users
- Overnight users
- Developed facility users
- Dispersed use area users
- Anglers
- Boaters

# 5.0 Schedule

SSWD anticipates the schedule to complete the Study as follows:

Planning .....December 2016– January 2017
Collect Data .....January 2017 – December 2017
QA/QC Review.....January 2018
Data Analysis.....February 2017 – April 2018

The Study information will be included in SSWD's DLA and FLA. If SSWD completes the Study before preparation of the DLA, SSWD will post the report on SSWD's Relicensing Website and issue an e-mail to Relicensing Participants advising them that the report is available.

# 6.0 Consistency of Methodology with Generally Accepted Scientific Practices

SSWD's methodology for planning, implementing, and analyzing visitor surveys is consistent with professional practice (Salant and Dillman 1994; Watson et al., 2000). In addition, SSWD will be implementing professional accepted survey practices for contacting visitors and choosing sample sizes (Dillman 2000). Assessing existing recreation use through a combination of observation and questionnaire surveys is a common practice for large geographic areas that contain multiple accesses to desired recreation use areas (Malvestuto 1996, Pollock et al. 1994, and USDA Forest Service 1995). In addition, assessing future recreation demand through an evaluation of existing use, demographic data and participation trends and projections in the region is common practice (Kelly and Warnick 1999). Furthermore, these methodologies were utilized as part of the relicensing process for other recent California relicensings including the Upper American River Project (FERC Project No. 2101), South Feather Power Project (No. 2088), DeSabla-Centerville Project (No. 803), Upper Drum-Spaulding Project (No. 2310),Yuba-Bear Hydroelectric Project (No. 2266), Merced River Hydroelectric Project (No. 2179); and Yuba River Development Project (No. 2246).

# 7.0 Level of Effort and Cost

SSWD estimates the cost to complete this Study in 2016 dollars is between $95,000 and $125,000.

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