

### POTENTIAL RESOURCE ISSUE:

Recreation use and facility condition.

### PROJECT NEXUS:

The licensee has the responsibility to develop and maintain facilities to support recreation use.

### POTENTIAL LICENSE CONDITION:

- Recreation Plan
  - Recreation facility operation, maintenance, rehabilitation, and enhancement
  - Consistency with Universal Design Principles (UDP), including:
    - American with Disabilities Act (ADA) and Architectural Barriers Act (ABA) accessibility guidelines for buildings and facilities
    - Forest Service Outdoor Recreation Accessibility Guidelines (FSORAG);
    - Forest Service Trail Accessibility Guidelines (FSTAG).

### STUDY OBJECTIVES:

- Estimate existing recreation use of Project recreation facilities and dispersed concentrated use areas.
- Develop use estimates to be used as a basis for designing and implementing recreation user surveys.
- Estimate potential future recreation use in the vicinity of the Middle Fork Project based on existing information.
- Characterize condition of existing Project recreation facilities, including operations and maintenance responsibilities and current maintenance agreements.
- Assess consistency of Project recreation facilities with UDP standards and guidelines.
- Estimate existing recreation use at select locations in the Auburn State Recreation Area (ASRA).
- Characterize commercial and private whitewater boating use in the ASRA using existing data sources and user counts to be conducted at Ruck-a-Chucky (also known as Drivers Flat and Greenwood).
- Characterize developed recreation facilities and roads located within the ASRA that support stream-based recreation in the Middle Fork American River and the North fork American River, between the Indian Bar Rafting Access and the Oregon Bar Access.

### EXTENT OF STUDY AREA:

The study area includes the Project recreation facilities and the dispersed concentrated use areas located in the immediate vicinity of the Project (Table REC 1-1). The study area also includes select sites located within the ASRA (Table REC 1-2).

STUDY APPROACH:

Existing Recreation Use at Project Recreation Facilities and Dispersed Concentrated Use Areas in the Vicinity of the Middle Fork Project.

PCWA will collect and compile existing use data available from the United States Department of Agriculture – Forest Service (USDA-FS), campground concessionaires, and other sources. The existing recreation use data will be correlated to factors that may influence use such as weather conditions and fires.

PCWA will utilize the existing data to the extent possible to estimate use in the study area. In addition, PCWA will augment the existing data by conducting vehicle counts. The various existing data sources and PCWA's vehicle count approach are explained in the following.

**Campground Use Data available from Concessionaire Records in the Tahoe National Forest**

The USDA-FS contracts with concessionaires to operate developed campgrounds in the Tahoe National Forest (TNF). In addition to their other operation and maintenance duties, the concessionaires collect information regarding use. This information is regularly reported to the USDA-FS. An initial review of the concessionaire use data indicates that it is a relatively good source of use data for developed campgrounds in the TNF. However, some minor modifications to the use data collection procedures may help improve the usefulness of the data.

PCWA will collect, compile, and evaluate the existing use data and will coordinate with the USDA-FS and its concessionaires, as appropriate, to implement basic modifications to their collection procedures aimed at obtaining reliable information for estimating campground use. These modifications should be made before the start of the 2007 recreation use season so that reliable campground use data can be obtained during 2007 and 2008. PCWA will consult with the USDA-FS regarding any proposed modifications to the use collection procedures.

**“Iron Ranger” Data collected at Campgrounds in the Eldorado National Forest**

The USDA-FS relies on “iron rangers” for collecting fees and use information at developed campgrounds located in the Eldorado National Forest (ENF). An iron ranger is a self-serve fee station. PCWA will initially collect, compile, and review the use data and collection procedures associated with the iron rangers. Based on this review, PCWA will conduct random vehicle counts during the first two weeks of the 2007 season and compare these data with information obtained from the iron rangers to determine the consistency of the information collected and whether an adjustment factor could be applied to the iron ranger data. The purpose of this effort is to determine whether existing occupancy records provided by the iron rangers are a reliable source of recreation use data. If it is determined that iron rangers are not a reliable source of use data, then vehicle counts at the campgrounds will be continued consistent with the vehicle count procedures described below for other facilities.

**National Reservation System Data**

Both forests utilize the National Reservation System (NRS) for reservations at certain campgrounds. In the TNF, campgrounds using the NRS include French Meadows (reservable sites only), Coyote Group, and Gates Group. In the ENF, only Middle Meadow Group campground uses the NRS. An initial review of the NRS data indicates that these data can be used to help develop estimates of recreation use at these campgrounds. PCWA will obtain and

compile the available NRS data for those sites where NRS data are available and will work with the USDA-FS staff and the Recreation TWG to determine the usefulness and completeness of these data for estimating use.

### Vehicle Counts

No reliable existing use data is available for the day use areas or for the dispersed concentrated use areas identified in Table REC 1-1. As such, PCWA will conduct vehicle counts to estimate use at the parking areas associated with each of the developed Project day use facilities and at the dispersed concentrated use areas identified in Table REC 1-1. In addition, PCWA will conduct vehicle counts at the following locations:

- Developed Project campgrounds located in the ENF, if the iron ranger data proves to be unreliable.
- Turn outs and parking areas located immediately adjacent to developed Project recreation facilities.
- Within the boundaries of developed Project campgrounds if the campground is open during a period when a campground host is not present.

Individual parking areas associated with each of these sites will be identified, mapped, and given a unique identification number prior to the initiating the vehicle counts. Individual parking areas may be dropped if the use data indicates there is little or no use at a particular site. Conversely, areas may be added if recreation-related parking is occurring outside of designated parking areas. No parking area will be dropped or added from the study without the consent of the resource agencies.

Vehicle counts and other observations will be recorded on pre-set forms, an example of which is included with this plan as Figure REC 1-1. Any observations regarding the presence of vehicles parked in previously unidentified areas will be noted on the forms.

The proposed vehicle counting approach is summarized in Table REC 1-3, by site and season. Vehicle counts will be conducted at various frequencies, depending upon season, as follows.

- Summer (Memorial Day to Labor Day)
  - 14-week period
  - 2 days each week - one weekday and one weekend day
  - Sampling during the three holiday periods (Memorial Day, July 4th, and Labor Day) will occur on two days over the 3-day holiday periods
  - Sampling schedule cycled to represent 3 periods per day (AM, PM, Evening); AM period includes 8 a.m. to noon, PM period includes noon to 4 p.m., and Evening period includes 4 p.m. to 8 p.m. The counts will be conducted during two consecutive four hour periods on each sampling day for a total of 8 hours per day. Therefore, the sampling periods will consist of an AM/PM block or a PM/Evening block.
  - Randomized selection of starting point and direction of vehicle sampling on each sampling day
- Fall (post-Labor Day through November)
  - 10-week period

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- 2 days each week – one weekday and one weekend day
- Sampling schedule cycled to represent 2 periods per day (AM, PM); AM period includes 8 a.m. to 1 p.m. and PM period includes 1 p.m. to sunset. The vehicle counts will be conducted during one period on each sampling day.
- Randomized selection of starting point and direction of vehicle sampling on each sampling day
- Winter/Spring (December through 3rd week of May)
  - 28-week period
  - 1 day every week for sampling locations near Ralston Afterbay and 1 day every other week for sampling locations near Hell Hole Reservoir, French Meadows Reservoir, and Long Canyon), alternating between weekdays and weekend days
  - Sampling schedule cycled to represent 2 periods per day (AM, PM); AM period includes 8 a.m. to 1 p.m. and PM period includes 1 p.m. to sunset. The vehicle counts will be conducted during one period on each sampling day.
  - Randomized selection of starting point and direction of vehicle sampling on each sampling day

Initially, the vehicle count data will be tabulated by season and used as a basis for designing and implementing the general visitor surveys to be conducted as part of the REC 2 – Recreation Visitor Survey TSP. Ultimately, the vehicle count data will be used together with data from concessionaire records (including iron rangers), the National Reservation System, and relevant data from the general visitor surveys (e.g. average persons per vehicle and average time spent recreating at sites) to estimate recreation use at the Project recreation facilities and at the dispersed concentrated use areas identified in Table REC 1-1, by activity and season.

### Potential Future Recreation Use in the vicinity of the Middle Fork Project

Estimates of existing use at Project recreation facilities, dispersed concentrated use areas, and sites within the ASRA will be used along with information available from existing sources to develop projections of future recreation use over the license period. Pertinent data available from existing information sources includes population projections and recreation activity trends.

### Recreation Facility Assessment at Project Recreation Facilities and Dispersed Concentrated Use Areas

- Develop a Geographic Information System (GIS)-based map showing the location of all of the existing Project recreation facilities and the dispersed concentrated use areas, trails and trailheads identified in Table REC 1 -1, and their associated parking areas.
- Develop footprints showing the approximate boundaries of all of the developed Project recreation facilities, and at the dispersed concentrated use areas where footprints are discernable. These footprints will be developed by either: 1) digitizing existing PCWA or USDA-FS footprint maps; or 2) taking measurements in the field using a portable Global Positioning System (GPS) unit. In either case, the information will be incorporated into the GIS database for future reference.
- Obtain and review USDA-FS recreation facility inventory information. Determine how the existing inventory information should be augmented in consultation with the USDA-FS.

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- Review the Site Action Plans developed by the Eldorado National Forest (ENF) and the Tahoe National Forest (TNF) in 1999. Utilize the Site Action Plans as a starting point for facility assessments. Determine which of the upgrades recommended in the Site Action Plans have been implemented.
- Compile, review and summarize information developed through the FERC inspection process.
- Identify current operation and maintenance activities at Project recreation facilities and responsible parties.
- Develop a Facility Inventory Form based on the USDA-FS current database, in consultation with the USDA-FS and other interested user groups.
- Conduct on-site assessments of each of the developed Project recreation facilities with USDA-FS staff to determine the current condition and expected life of developed recreation facilities. The assessment will include features such as toilets, campsites, parking areas, water systems, boat ramps, signage, and other features located within the footprint of each developed Project recreation facility and within the footprints of dispersed concentrated use areas, where applicable. In addition, it will include an assessment of the roads and trails located within the developed Project recreation facility footprints and any associated drainage features. An assessment of other Project roads located outside of the footprints of the developed Project recreation facilities and dispersed concentrated use areas will be completed as part of the LAND 1 – Transportation System Management Technical Study Plan (TSP). The assessment of the roads and trails located within the developed recreation facilities and dispersed concentrated use areas would be conducted according to the same standards used to assess the Project roads and trails as outlined in the LAND 1 – Transportation System TSP.
- Photograph selective features at Project recreation facilities to illustrate current facility condition.
- Characterize existing interpretive sources including, but not limited to, brochures, maps, and websites describing resources in the vicinity of the MFP. Inventory, photograph, and describe interpretive displays and/or signage at Project facilities.

### UDP Assessment

- Obtain and review current USDA-FS (Region 5) accessibility standards.
- Obtain current protocol for conducting accessibility surveys from the USDA-FS.
- Conduct accessibility survey in coordination with USDA-FS staff to identify features at each Project recreation facility that do not meet current ADA/ABA accessibility standards and other Universal Design Principles.

### Characterize Recreation Use within the ASRA

PCWA will estimate existing recreation use at select locations within the ASRA as described in the following. The ASRA boundaries and existing recreation sites within the ASRA are shown on Map REC 1-1, for reference.

### **Characterize Existing Stream-based Recreation Use at Select Locations in the ASRA**

Existing stream-based recreation use at select locations in the ASRA will be characterized using vehicle count information compiled by ASRA and reported in ASRA's Annual Report to the Bureau of Reclamation (BOR). PCWA will work with ASRA staff and other interested Recreation TWG participants to identify, review, and compile data from ASRA's ongoing vehicle count sampling program. Based on information contained in ASRA's Fiscal Year 2005/2006 Annual Report to the BOR, use data is available for the following sites located along the Middle Fork American River, downstream of Oxbow Powerhouse:

- Indian Bar Rafting Access and General Parking (also a Project recreation facility)
- Cherokee Bar (located at the end of Sliger Mine Road)
- Ruck-A-Chucky (located at the end of Drivers Flat Road, also referred to as Drivers Flat and Greenwood)
- Mammoth Bar/Murderer's Bar
- Confluence Area (the confluence of the North Fork and Middle Forks of the American River.

This information will be augmented with new vehicle count data to be developed by PCWA. PCWA will conduct vehicle counts at the five sites identified above, according to the same methods and frequency used for the Project recreation facilities. Two of these sites, Mammoth Bar and the Confluence Area, cover broad areas that support a variety of recreation uses. PCWA will consult with the ASRA to identify specific locations at these two sites that support stream-based users. The vehicle counts will be conducted at these locations. Cherokee Bar is visible from Drivers Flat Road. As such, vehicle counts at Cherokee Bar will be conducted from Drivers Flat Road.

### **Whitewater Boating Use in the ASRA**

The Middle Fork American River downstream of the Oxbow Powerhouse supports commercial whitewater boating activities, and to a lesser extent private whitewater boating. PCWA will collect, compile and summarize commercial and private whitewater boating use data available for the Middle Fork American River downstream of Oxbow Powerhouse. Whitewater boating data that is available from the ASRA and reported in their annual reports to the BOR includes:

- Commercial whitewater boating use data for the ASRA Middle Fork IV run, which extends from the Indian Bar Rafting Put-in to Ruck-a-Chucky (also known as Drivers Flat or Greenwood Bridge);
- Estimates of private boating use for the ASRA Middle Fork IV run;
- Commercial whitewater boating use data for the ASRA Middle Fork II run, which extends from Ruck-a-Chucky to Mammoth Bar.

The ASRA does not collect or estimate private whitewater boating use for the Middle Fork II run.

- PCWA will augment the existing boating use data by counting boating use as observed at Ruck-a-Chucky (also known as Drivers Flat and Greenwood). Specifically, PCWA will count the number of rafts and other watercraft that either take-out or put-in at Ruck-a-Chucky, the numbers of persons per watercraft, and specify whether these users are private boaters or associated with a commercial outfitter.

- The counts will begin on Memorial Day weekend and will be conducted until PCWA's maintenance outage, which typically occurs in late September or early October.
- The counts will be performed on one weekday and one weekend day, each week, during the entire sampling period.
- The counts will be performed over an eight-hour period, extending from about 10 am to 6 pm.

Information regarding the individual boating runs, put-ins, take-outs, level of difficulty, and boatable flow ranges will be developed in conjunction with the REC 4 – Stream Flow and Opportunities TSP.

### **Characterize Developed Facilities and Roads Located within the ASRA that Support Stream-based Recreation**

PCWA will characterize and map the location of existing developed recreation areas that support stream-based recreation located within the ASRA, along the Middle Fork and North Fork American River between the Indian Bar Rafting Access and the Oregon Bar Access. These sites will include:

- Indian Bar Rafting Put-in (a Project recreation facility, also referred to by ASRA as the Oxbow River Access/Put-in;
- Cache Rock;
- Fords Bar/Otter Creek;
- Canyon Creek;
- Ruck-a-Chucky (also referred to as Drivers Flat and Greenwood)
- Cherokee Bar
- Poverty Bar
- American Canyon
- Mammoth Bar/Murderer's Bar
- Quarry Trailhead
- Confluence Area
- New River Access at Auburn Dam site (to be constructed in 2008)
- New River Access at Oregon Bar (to be constructed in 2008)

PCWA will consult with ASRA and the USDA-FS to obtain, review and interpret existing information regarding recreation facility/site condition within the ASRA. PCWA will also conduct a brief site visit to each recreation site with ASRA staff to verify the characterization.

### **Conduct Detailed Assessment of Roads and Recreation Facilities associated with the Ruck-a-Chucky (Drivers Flat, Greenwood) and Canyon Creek Areas**

- Develop a GIS map showing the location and footprints the Ruck-a-Chucky and Canyon Creek recreation areas, including Driver's Flat Road, and the road segment between Ruck-a-Chucky and Canyon Creek.

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- Identify current operation and maintenance activities associated with these two areas, and responsible parties. Conduct on-site assessments of these areas with ASRA staff to determine the current condition and expected life of these facilities and their amenities using the Facility Inventory Form developed for the Project recreation facilities. The assessment will include features such as toilets, campsites, parking areas, water systems, boat ramps, signage, and other features located within the footprint of each recreation area.
- Assess Drivers Flat Road and the road connecting Drivers Flat and Canyon Creek, and any associated drainage features. The assessment of the roads would be conducted according to the same standards used to assess the Project roads, as outlined in the LAND 1 – Transportation System TSP. In addition, the current condition of Driver's Flat Road will be assessed as it relates to equestrian use. This portion of the road assessment will be developed and completed in consultation with interested equestrian users.
- Photograph selective features to illustrate current facility condition.

### SCHEDULE:

<b>Date</b>	<b>Activity</b>
Memorial Day 2007 through May 2008	Conduct vehicle counts and compile and tabulate existing recreation use data
May 2007 through approx. October 2007	Conduct whitewater boating counts at Ruck-a-Chucky
February 2008	Distribute preliminary vehicle count results to the Recreation TWG to prepare for visitor surveys to be conducted as part of the REC 2 – Recreation Visitor Surveys TSP
May through August 2008	Conduct field surveys, including facility and accessibility (ADA) assessment
October through December 2008	Summarize additional recreation use data developed through the REC 2 – Recreation Visitor Surveys TSP
January through April 2009	Analyze data and prepare draft report
May 2009	Distribute draft report to the Recreation TWG for review and comment
May and June 2009	Recreation TWG review and provide comments on draft report
July and August 2009	Resolve comments and prepare final report
September 2009	Distribute final report to the Recreation TWG and Plenary

### REFERENCES:

None.



**TABLES**

**Table REC 1-1. Recreation Study Sites.**

<b>Project Recreation Facilities</b>
<b>French Meadows Area</b>
Ahart Campground
Coyote Group Campground
Poppy Campground
French Meadows Campground
Gates Group Campground
Lewis Campground
French Meadows Picnic Area
McGuire Picnic Area
French Meadows Boat Ramp
McGuire Boat Ramp
Dolly Creek Water Supply
French Meadows Campground Water Supply
<b>Hell Hole Area</b>
Big Meadows Campground
Hell Hole Campground
Upper Hell Hole Campground
Hell Hole Vista
Hell Hole General Parking Area
Hell Hole Boat Ramp Parking Area
Hell Hole Boat Ramp
Big Meadows Campground Water Supply
<b>Ralston Afterbay Area</b>
Ralston Picnic Area
Ralston Picnic Area Cartop Boat Ramp
Indian Bar Rafting Access and General Parking
<b>Long Canyon Area</b>
Middle Meadows Group Campground
Middle Meadows Group Campground Water Supply
<b>Dispersed Concentrated Use Areas</b>
<b>French Meadows Reservoir Area</b>
Area near French Meadows-Hell Hole Tunnel Gatehouse
Area immediately downstream of French Meadows Dam (both sides of river)
Area located immediately northwest of French Meadows Dam
Area near bridge over the Middle Fork American River, upstream French Meadows Reservoir
<b>Duncan Creek Diversion Dam Area</b>
Area on north side of Duncan Creek Diversion Dam
Area near Duncan Creek Gage and Weir, upstream of Duncan Creek Diversion Dam
Area near new bridge crossing Duncan Canyon on the road to the Grizzly, etc.
<b>Hell Hole Reservoir Area</b>
Area on west side of Hell Hole Reservoir, between dam and Hell Hole Boat Ramp
Grey Horse Area
<b>Long Canyon Area</b>
Area surrounding South Fork Long Canyon Diversion Dam
Areas along South Fork Long Canyon Creek, downstream of South Fork Long Canyon Diversion Dam
<b>Middle Fork Interbay Area</b>
Shoreline area surrounding Middle Fork Interbay
<b>Ralston Afterbay Area</b>
Ralston Afterbay Sediment Disposal Area

**Table REC 1-1. Recreation Study Sites (continued).**

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**Dispersed Concentrated Use Areas (continued)**

**Ralston Afterbay Area (continued)**

Shoreline area surrounding Ralston Afterbay

Area along Middle Fork American River, between Ralston Picnic Area and the new gage

Area at confluence of North Fork of the Middle Fork American River and Middle Fork American River

Indian Bar, Willow Bar, and Junction Bar Areas

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**Table REC 1-2. Recreation Study Sites within the Auburn State Recreation Area.**

<b>Auburn State Recreation Area</b>	<b>Vehicle Counts</b>	<b>Whitewater Boater Counts</b>	<b>Characterization of Recreation Facilities</b>	<b>Detailed Facility and Road Assessment</b>
Indian Bar Rafting Access	X		X	X
Cache Rock			X	
Fords Bar/Otter Bar			X	
Canyon Creek			X	X
Ruck-a-Chucky (also known as Drivers Flat and Greenwood)	X	X	X	X
Cherokee Bar (located at end of Sliger Mine Rd)	X		X	
Poverty Bar			X	
American Canyon			X	
Mammoth Bar/Murderer's Bar	X		X	
Quarry Trailhead			X	
Confluence Area (Middle Fork and North Fork American River Confluence)	X		X	
River Access at Auburn Dam Site (to be constructed in 2008)			X	
River Access at Oregon Bar (to be constructed in 2008)			X	

**Table REC 1-3. Proposed Recreation Use Data Collection Approach.**

Type of Recreation Area	Name	Parking Available at Site	Sampling Procedures				Notes
			Spring (April and May)	Summer (Memorial Day weekend thru Labor Day weekend)	Fall (post Labor Day thru November)	Winter (December thru March)	
<b>French Meadows Reservoir Area</b>							
Campground	Ahart Campground	Y	3		1	3	Typically accessible 5/15 through 11/31, depending on snow. Vehicle count sampling procedures will be implemented in the fall season after services shut down and concessionaires are no longer on-site (typically mid-October).
Campground	Coyote Group Campground <ul style="list-style-type: none"> <li>• Black Bear</li> <li>• Brush Wolf</li> <li>• Little Wolf</li> <li>• Prairie Wolf</li> </ul>	Y	closed		closed	closed	Open Mem Day to Labor Day, gated otherwise.
Campground	Poppy Campground	N					Accessible via Poppy Trail. No Parking at campground. Parking located near McGuire Boat Ramp.
Campground	French Meadows Campground Reservable Sites (1-31)	Y	closed		closed	closed	Reservable sites typically opened Mem Day to Labor Day, gated otherwise.
	French Meadows Campground Non-Reservable Sites (32-75)	Y	3		1		Non-reservable sites typically accessible 5/15 through 11/31, depending on snow. Vehicle Count sampling procedures will be implemented in the fall season after services are shut down and concessionaires are no longer on-site (typically mid-October).

**Table REC 1-3. Proposed Recreation Use Data Collection Approach (continued).**

Type of Recreation Area	Name	Parking Available at Site	Sampling Procedures				Notes
			Spring (April and May)	Summer (Memorial Day weekend thru Labor Day weekend)	Fall (post Labor Day thru November)	Winter (December thru March)	
<b>French Meadows Reservoir Area (continued)</b>							
Campground	Gates Group Campground • Aspen • Lodgepole • Ponderosa	Y	closed		closed	closed	Open Mem Day to Labor Day, gated otherwise.
Campground	Lewis Campground	Y	closed		closed	closed	Open Mem Day to Labor Day, gated otherwise.
Developed Day Use	French Meadows Picnic Area	Y	3	1	1	3	
Developed Day Use	McGuire Picnic Area and Beach	Y	closed	1	closed	closed	Open Mem Day to Labor Day, gated otherwise.
Developed Day Use	French Meadows Boat Ramp	Y	3	1	1	3	
Developed Day Use	McGuire Boat Ramp	Y	3	1	1	3	
Undeveloped DCUA	Area near FM-HH Tunnel Gatehouse	Y	3	1	1	3	The road leading to this area is gated year-round. Parking available near gate.
Undeveloped DCUA	Area immediately downstream of FM Dam	Y	3	1	1	3	The road leading to this area is gated year-round. Parking available near gate.
Undeveloped DCUA	Area located immediately northwest of French Meadows	Y	3	1	1	3	Parking located at turnouts along road.
Undeveloped DCUA	Area near bridge over the Middle Fork American River, upstream of	Y	3	1	1	3	Parking located at turnouts along bridge.

**Table REC 1-3. Proposed Recreation Use Data Collection Approach (continued).**

Type of Recreation Area	Name	Parking Available at Site	Sampling Procedures				Notes
			Spring (April and May)	Summer (Memorial Day weekend thru Labor Day weekend)	Fall (post Labor Day thru November)	Winter (December thru March)	
<b>Duncan Creek Area</b>							
Undeveloped DCUA	Area on north side of Duncan Creek Diversion Dam	Y	3	1	1	3	Parking locations unknown.
Undeveloped DCUA	Area near Duncan Creek Gage and Weir, upstream of Duncan Creek Diversion Dam	Y	3	1	1	3	Parking locations unknown.
Undeveloped DCUA	Area near new bridge crossing Duncan Canyon on the road to the Grizzly, etc.	Y	3	1	1	3	
<b>Hell Hole Reservoir Area</b>							
Developed	Big Meadows Campground	Y	closed		closed	closed	Typically opened 5/15 to 11/1, gated otherwise.
Developed	Hell Hole Campground	Y	3		1	3	Vehicle count sampling procedures will be implemented in the fall season after services shut down and fees are no longer collected (typically by 11/1).
Developed	Upper Hell Hole Campground	N					Accessible by boat or Upper Hell Hole Trail.
Developed Day Use	Hell Hole Vista	Y	3	1	1	3	
Developed Day Use	Hell Hole General Parking Area	Y	3	1	1	3	
Developed Day Use	Hell Hole Boat Ramp Parking Area	Y	3	1	1	3	
Developed Day Use	Hell Hole Boat Ramp	Y	3	1	1	3	

**Table REC 1-3. Proposed Recreation Use Data Collection Approach (continued).**

Type of Recreation Area	Name	Parking Available at Site	Sampling Procedures				Notes
			Spring (April and May)	Summer (Memorial Day weekend thru Labor Day weekend)	Fall (post Labor Day thru November)	Winter (December thru March)	
<b>Hell Hole Reservoir Area (continued)</b>							
Undeveloped DCUA	Area on west side of Hell Hole Reservoir, between dam and Hell Hole Boat Ramp	N					Parking located at Hell Hole General Parking Area.
Undeveloped DCUA	Grey Horse Area	Y					Accessible by boat or Hell Hole OHV trail. No vehicle counts proposed for this area.
<b>Long Canyon Area</b>							
Campground	Middle Meadows Group CG	Y	closed		closed	closed	Typically opened 5/15 to 11/1, gated otherwise.
Undeveloped DCUA	Area surrounding SF Long Canyon Diversion Dam	Y	3	1	1	3	Parking in turnouts along road.
Undeveloped DCUA	Area downstream of South Fork Long Canyon Diversion Dam	Y	3	1	1	3	Parking in turnouts along road.
<b>Middle Fork Interbay Area</b>							
Undeveloped DCUA	Shoreline area along north side of Middle Fork Interbay	?					Area is gated year-round. Parking areas unknown. Vehicles to be counted by PCWA operators.
<b>Ralston Afterbay Area</b>							
Developed Day Use	Ralston Picnic Area	Y	2	1	1	2	Accessible year-round.
Developed Day Use	Ralston Picnic Area Cartop Boat Ramp	Y	2	1	1	2	Accessible year-round.
Developed Day Use	Indian Bar Rafting Access and General Parking	Y	2	1	1	2	Accessible year-round.
Undeveloped DCUA	Ralston Ridge Sediment Disposal Area	Y	2	1	1	2	Accessible year-round.



**Table REC 1-3. Proposed Recreation Use Data Collection Approach (continued).**

Type of Recreation Area	Name	Parking Available at Site	Sampling Procedures				Notes
			Spring (April and May)	Summer (Memorial Day weekend thru Labor Day weekend)	Fall (post Labor Day thru November)	Winter (December thru March)	
<b>Ralston Afterbay Area (continued)</b>							
Undeveloped DCUA	Shoreline area along north side of Ralston Afterbay	N					Accessible year-round. Parking at Ralston Picnic Area and potential turnouts on road.
Undeveloped DCUA	Area along Middle Fork American River, between Ralston Picnic Area and the new gage	N					Accessible year-round. Parking at Ralston Picnic Area.
Undeveloped DCUA	Area at confluence of North Fork Middle Fork American River and Middle Fork American River	N					Accessible year-round. Parking located at Indian Bar Rafting Access and General Parking.
Undeveloped DCUA	Indian Bar, Willow Bar, and Junction Bar Areas	N					Willow Bar and Junction Bar accessible when water is low. Parking located at Indian Bar Rafting Access and General Parking.
<b>Auburn State Recreation Area</b>							
Developed Day Use	Indian Bar Rafting Access and General Parking	Y	2	1	1	2	Accessible year-round.
Developed Day Use/ Campground	Ruck-a-Chucky (also known as Drivers Flat, Greenwood, Greenwood Bridge, and	Y	2	1	1	2	Campground, day use (parking), river access, put-in/take out.
Developed Day Use	Cherokee Bar	Y	2	1	1	2	Used as a lunch stop by boaters, located at the end of Sliger Mine Road (also referred to as Cherokee Bar Road). Counts to be performed by making observations from Drivers Flat Road.
Developed Day Use	Mammoth Bar/Murderer's Bar	Y	2	1	1	2	River access, ww boating take-out, informal day use, parking
Developed Day Use	Confluence Area (Middle Fork and North Fork American River Confluence)	Y	2	1	1	2	Parking, day use, river access, whitewater boating take out





**Table REC 1-3. Proposed Recreation Use Data Collection Approach (continued).**

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**Explanation**

**Vehicle Count Level of Effort**

- 1: Highest Effort** Frequency of 2 days each week (1 weekday and one weekend day).  
**2: Moderate Effort** Frequency of 1 day each week, alternating between weekdays and weekend days  
**3: Lowest Effort** Frequency of 1 day every other week, alternating between weekdays and weekend days
-  No vehicle counts to be conducted. Use estimates will rely on existing data available from concessionaires, iron rangers, or the National Reservation System.
-  No parking available. Site served by other parking areas.
-  Remote location/no vehicle use count proposed.
-  Remote location/vehicle counts to be conducted by PCWA.
- DCUA Dispersed Concentrated Use Area.

USDA-FS recreation information provided by Ed Moore, TNF and Jon Jue, ENF

**FIGURES**

REC 1 – Recreation Use and Facilities Assessment Technical Study Plan

**Figure REC 1-1. Vehicle Count Form**

Recorder: \_\_\_\_\_ Date: \_\_\_\_\_ Weather: \_\_\_\_\_

Upper Route: Duncan Creek, French Meadows Reservoir and Hell Hole Reservoir Areas

				# of Vehicles by Type						# of Trailers and/or Racks by Type					Notes/Comments		
Parking Area (PA) ID	Description	Time	Tim Arrived at Site	Car, SUV, or Truck	Camper or RV	Motorcycle	Agency	PCWA	Outfitter	Car-top Racks	Camper Trailers	Horse Trailers	Boat	Jet Ski	Motorcycle or OHV		
U-1	Area North of Duncan Creek Diversion	AM															I.E. 1. other nearby vehicle 2. Indicate presence of boats, kayaks, motorcycles, etc.
		PM															
		EVE															
U-2	Area near Duncan Creek Gage and Weir	AM															
		PM															
		EVE															
U-3	Area near new bridge crossing Duncan Canyon	AM															
		PM															
		EVE															
U-4a	Large Areas on Road 57 west of FM Res.	AM															
		PM															
		EVE															
U-4b		AM															
		PM															

REC 1 – Recreation Use and Facilities Assessment Technical Study Plan

**Figure REC 1-1. Vehicle Count Form**

Recorder: \_\_\_\_\_ Date: \_\_\_\_\_ Weather: \_\_\_\_\_

Upper Route: Duncan Creek, French Meadows Reservoir and Hell Hole Reservoir Areas

				# of Vehicles by Type						# of Trailers and/or Racks by Type					Notes/Comments		
Parking Area (PA) ID	Description	Time	Tim Arrived at Site	Car, SUV, or Truck	Camper or RV	Motorcycle	Agency	PCWA	Outfitter	Car-top Racks	Camper Trailers	Horse Trailers	Boat	Jet Ski	Motorcycle or OHV		
		EVE															I.E. 1. other nearby vehicle 2. Indicate presence of boats, kayaks, motorcycles, etc.
U-5a	Area Located immediately west of French Meadows Reservoir	AM															
		PM															
		EVE															
U-5b	Turn-outs at French Meadows Reservoir Spillway	AM															
		PM															
		EVE															
U-6	Area immediately downstream of French Meadows Reservoir (Dam)	AM															
		PM															
		EVE															
U-7a	Turn-outs along FR 96 between French Meadows Dam and French Meadows – Hell Hole Tunnel Gatehouse	AM															
		PM															
		EVE															
U-7b	Area near French Meadows Hell	AM															

REC 1 – Recreation Use and Facilities Assessment Technical Study Plan

**Figure REC 1-1. Vehicle Count Form**

Recorder: \_\_\_\_\_ Date: \_\_\_\_\_ Weather: \_\_\_\_\_

Upper Route: Duncan Creek, French Meadows Reservoir and Hell Hole Reservoir Areas

				# of Vehicles by Type						# of Trailers and/or Racks by Type					Notes/Comments		
Parking Area (PA) ID	Description	Time	Tim Arrived at Site	Car, SUV, or Truck	Camper or RV	Motorcycle	Agency	PCWA	Outfitter	Car-top Racks	Camper Trailers	Horse Trailers	Boat	Jet Ski	Motorcycle or OHV		
	Hole Tunnel Gatehouse	PM															I.E. 1. other nearby vehicle 2. Indicate presence of boats, kayaks, motorcycles, etc.
		EVE															
U-8a	French Meadows Picnic Area	AM															
		PM															
		EVE															
U-8b	French Meadows Boat Ramp	AM															
		PM															
		EVE															
U-9	Turn-outs along FR 96 between French Meadows – Hell Hole Tunnel Gatehouse and Middle Fork American River Road Crossing	AM															
		PM															
		EVE															
U-10a	Area near Bridge over Middle Fork American River	AM															
		PM															
		EVE															

REC 1 – Recreation Use and Facilities Assessment Technical Study Plan

**Figure REC 1-1. Vehicle Count Form**

Recorder: \_\_\_\_\_ Date: \_\_\_\_\_ Weather: \_\_\_\_\_

Upper Route: Duncan Creek, French Meadows Reservoir and Hell Hole Reservoir Areas

				# of Vehicles by Type						# of Trailers and/or Racks by Type					Notes/Comments		
Parking Area (PA) ID	Description	Time	Tim Arrived at Site	Car, SUV, or Truck	Camper or RV	Motorcycle	Agency	PCWA	Outfitter	Car-top Racks	Camper Trailers	Horse Trailers	Boat	Jet Ski	Motorcycle or OHV	I.E. 1. other nearby vehicle 2. Indicate presence of boats, kayaks, motorcycles, etc.	
U-10b	Turn-out located across from Lewis Campground	AM															
		PM															
		EVE															
U-11	McGuire Picnic Area and Beach	AM															
		PM															
		EVE															
U-12	McGuire Boat Ramp	AM															
		PM															
		EVE															
U-13	Vista/Trail-head to Poppy Campground	AM															
		PM															
		EVE															
U-14a	Area surrounding South Long Canyon Diversion Dam	AM															
		PM															

REC 1 – Recreation Use and Facilities Assessment Technical Study Plan

**Figure REC 1-1. Vehicle Count Form**

Recorder: \_\_\_\_\_ Date: \_\_\_\_\_ Weather: \_\_\_\_\_

Upper Route: Duncan Creek, French Meadows Reservoir and Hell Hole Reservoir Areas

				# of Vehicles by Type						# of Trailers and/or Racks by Type					Notes/Comments	
Parking Area (PA) ID	Description	Time	Tim Arrived at Site	Car, SUV, or Truck	Camper or RV	Motorcycle	Agency	PCWA	Outfitter	Car-top Racks	Camper Trailers	Horse Trailers	Boat	Jet Ski	Motorcycle or OHV	
		EVE														
U-14b	Turn-out at Intersection of FR 2 and 14 N42 (to North Fork Long Canyon Diversion Dam)	AM														
		PM														
		EVE														
	Middle Meadow's Campground	AM														
		PM														
		EVE														
	Big Meadows' Campground	AM														
		PM														
		EVE														
U-15	Hell Hole Vista	AM														
		PM														
		EVE														
	Hell Hole Campground	AM														



REC 1 – Recreation Use and Facilities Assessment Technical Study Plan

**Figure REC 1-1. Vehicle Count Form**

Recorder: \_\_\_\_\_ Date: \_\_\_\_\_ Weather: \_\_\_\_\_

Upper Route: Duncan Creek, French Meadows Reservoir and Hell Hole Reservoir Areas

				# of Vehicles by Type						# of Trailers and/or Racks by Type					Notes/Comments			
Parking Area (PA) ID	Description	Time	Tim Arrived at Site	Car, SUV, or Truck	Camper or RV	Motorcycle	Agency	PCWA	Outfitter	Car-top Racks	Camper Trailers	Horse Trailers	Boat	Jet Ski	Motorcycle or OHV			
		PM															I.E. 1. other nearby vehicle 2. Indicate presence of boats, kayaks, motorcycles, etc.	
		EVE																
U-16	Hell Hole General Parking Area	AM																
		PM																
		EVE																
U-17a	Hell Hole Boat Ramp Parking Area	AM																
		PM																
		EVE																
U-17b	Turn-out at Hairpin turn leading down to Hell Hole Boat Ramp	AM																
		PM																
		EVE																
U-18	Hell Hole Boat Ramp	AM																
		PM																
		EVE																

REC 1 – Recreation Use and Facilities Assessment Technical Study Plan

**Figure REC 1-1. Vehicle Count Form**

Recorder: \_\_\_\_\_ Date: \_\_\_\_\_ Weather: \_\_\_\_\_

Upper Route: Duncan Creek, French Meadows Reservoir and Hell Hole Reservoir Areas

				# of Vehicles by Type						# of Trailers and/or Racks by Type					Notes/Comments		
Parking Area (PA) ID	Description	Time	Tim Arrived at Site	Car, SUV, or Truck	Camper or RV	Motorcycle	Agency	PCWA	Outfitter	Car-top Racks	Camper Trailers	Horse Trailers	Boat	Jet Ski	Motorcycle or OHV		
		AM															I.E. 1. other nearby vehicle 2. Indicate presence of boats, kayaks, motorcycles, etc.
		PM															
		EVE															
		AM															
		PM															
		EVE															
		AM															
		PM															
		EVE															

Note - Mark location of previously unidentified sites on map.

**MAPS**

### POTENTIAL RESOURCE ISSUE:

Recreation opportunities.

### PROJECT NEXUS:

The licensee has the responsibility to provide recreation opportunities.

### POTENTIAL LICENSE CONDITION:

- Recreation Plan
  - Recreation instream flows
  - Reservoir water surface elevations
  - Flow information dissemination
  - Interpretive materials and measures
  - Access improvements
  - Fish stocking

### STUDY OBJECTIVES:

- Conduct a General Visitor Survey.
  - Collect recreation visitor survey data to describe current recreation activities and characteristics of users at developed Project recreation facilities, at specific dispersed concentration use areas and at five locations within the Auburn State Recreation Area (ASRA).
  - Collect recreation user survey data to evaluate use patterns, visitor preferences and demand for opportunities, and new or improved developed recreation facilities.
- Conduct an angler survey at French Meadows and Hell Hole reservoirs.

### EXTENT OF STUDY AREA:

Recreation visitor surveys will be conducted at the existing developed Project recreation facilities and at select dispersed concentrated use areas identified in Table REC 2-1. In addition, recreation visitor surveys will be conducted at five specific sites located within the boundaries of the ASRA, as shown on Table REC 2-1. The selection of dispersed concentrated use areas to be surveyed will be completed in consultation with the Recreation TWG participants after reviewing the results of vehicle counts and other information collected as part of the REC 1 – Recreation Use and Facilities Technical Study Plan (TSP).

### STUDY APPROACH:

#### General Visitor Survey

Recreation visitor surveys will be conducted at developed Project recreation facilities and at five sites located within the ASRA, as identified in Table REC 2-1. In addition, surveys will also be

## REC 2 – Recreation Visitor Surveys Technical Study Plan

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conducted at select dispersed concentrated use areas to be identified in consultation with the resource agencies pending the results of the vehicle counts to be conducted as part of the REC 1 – Recreation Use and Facilities Assessment TSP. The design for implementing the visitor surveys will be developed after recreation use data have been collected as part of the REC 1 – Recreation Use and Facilities Assessment Technical Study so that the use data can be used to help determine the number of surveys to be completed at specific locations throughout the study area.

A preliminary list of information to be collected and potential issues to be addressed through visitor surveys is shown in Table REC 2-2. This list was developed by PCWA in consultation with the stakeholders and will be used to develop the survey instrument(s) (questionnaires). The survey instrument(s) will be developed and refined in consultation with the resource agency recreation specialists and other stakeholders prior to initiating the visitor surveys in 2008.

The survey instrument(s) will be developed in three steps, as follows:

- Develop a draft General Visitor Survey instrument and survey implementation protocols (e.g. sampling frequency, sampling locations, type of survey) in coordination with a subgroup consisting of resource agency recreation specialists and other interested stakeholders.
- Pretest the draft General Visitor Survey instrument to ensure that question wording is clear and unambiguous and that the survey completion time is reasonable (e.g., does not exceed 10 minutes). The pretest would be completed at select locations in the study area in February or March of 2008, after the survey instrument is developed, and before implementing the General Visitor Survey.
- Discuss the pretest results and finalize the General Visitor Survey instrument and survey implementation protocols in consultation with the Recreation TWG, including resource agencies.

PCWA expects to develop a draft General Visitor Survey instrument by November 2007. Upon completion, the draft survey instrument will be incorporated into this TSP and the language of this TSP will be revised accordingly. The revised TSP and draft General Visitor Survey instrument will be included the Pre-Application Document (PAD), which is due to be submitted to the FERC in December 2007.

The General Visitor Survey will be conducted at the developed Project recreation facilities, select dispersed concentrated use areas and five sites in ASRA using a stratified random sampling approach. This survey would focus on collecting information identified in Table REC 2-2. Specific data to be collected through surveys will be further refined in coordination with the Recreation TWG and subgroup as the survey issues are defined and the survey instrument is developed.

The General Visitor Survey would be conducted during the peak recreation season from Memorial Day through Labor Day. Note that the Oregon Bar access site in ASRA is not due to be completed until some time in 2008. Surveys at this location will begin after the site is completed and operational, which may be after Memorial Day. The survey duration may be extended if specific informational needs for the shoulder seasons warrant. The decision to extend the survey period will be made in consultation with the Recreation TWG.

## REC 2 – Recreation Visitor Surveys Technical Study Plan

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As noted in Table REC 2-2, the General Visitor Survey will collect data to address issues involving specific user groups or activities, including angling, hunting, swimming, wading, hiking, horseback riding, mining, boating, and stream side activities such as picnicking. The Visitor Survey outlined in this TSP focuses on collecting information by intercepting recreation visitors participating in a variety of activities at specific locations identified in Table REC 2-1. Additional information specific to different user groups, such as whitewater boaters, stream anglers, and equestrians will be developed by conducting structured focused group sessions with representatives of these user groups, as part of the REC 4 – Stream Flow and Opportunities TSP.

### Reservoir Angler Survey

A separate angler survey will be conducted at French Meadows and Hell Hole reservoirs. The angler survey instrument will be developed in consultation with the California Department of Fish and Game (CDFG), the USDA-FS, and interested recreation TWG participants, and will focus on documenting angler effort, success, preferences, and satisfaction. As with the General Visitor Survey, this survey would be conducted between Memorial Day and Labor Day. The number of surveys to be completed, and the survey frequency, will be determined based on the results of the use data collected as part of the REC 1 – Recreation Use and Facilities Assessment TSP.

#### SCHEDULE:

Date	Activity
September 2007 through November 2007	Develop/refine draft survey instrument and survey implementation protocols
February or March, 2008	Pre-test survey instrument
May (Memorial Day) through September (Labor Day) 2008	Conduct recreation visitor surveys and angler surveys
October 2008 through February 2009	Analyze data and prepare draft report
March 2009	Distribute draft report to the Recreation TWG
March and April 2009	Recreation TWG review and provide comments on draft report
May and June 2009	Resolve comments and prepare final report
July 2009	Distribute final report to the Recreation TWG and Plenary

#### REFERENCES:

None.

**TABLES**

**Table REC 2-1. Recreation Study Sites.**

<b>Project Recreation Facilities</b>
<b>French Meadows Area</b>
Ahart Campground
Coyote Group Campground
Poppy Campground
French Meadows Campground
Gates Group Campground
Lewis Campground
French Meadows Picnic Area
McGuire Picnic Area
French Meadows Boat Ramp
McGuire Boat Ramp
Dolly Creek Water Supply
French Meadows Campground Water Supply
<b>Hell Hole Area</b>
Big Meadows Campground
Hell Hole Campground
Upper Hell Hole Campground
Hell Hole Vista
Hell Hole General Parking Area
Hell Hole Boat Ramp Parking Area
Hell Hole Boat Ramp
Big Meadows Campground Water Supply
<b>Ralston Afterbay Area</b>
Ralston Picnic Area
Ralston Picnic Area Cartop Boat Ramp
Indian Bar Rafting Access and General Parking
<b>Long Canyon Area</b>
Middle Meadows Group Campground
Middle Meadows Group Campground Water Supply
<b>Dispersed Concentrated Use Areas</b>
<b>French Meadows Reservoir Area</b>
Area near French Meadows-Hell Hole Tunnel Gatehouse
Area immediately downstream of French Meadows Dam (both sides of river)
Area located immediately northwest of French Meadows Dam
Area near bridge over the Middle Fork American River, upstream French Meadows Reservoir
<b>Duncan Creek Diversion Dam Area</b>
Area on north side of Duncan Creek Diversion Dam
Area near Duncan Creek Gage and Weir, upstream of Duncan Creek Diversion Dam
Area near new bridge crossing Duncan Canyon on the road to the Grizzly, etc.
<b>Hell Hole Reservoir Area</b>
Area on west side of Hell Hole Reservoir, between dam and Hell Hole Boat Ramp
Grey Horse Area
<b>Long Canyon Area</b>
Area surrounding South Fork Long Canyon Diversion Dam
Areas along South Fork Long Canyon Creek, downstream of South Fork Long Canyon Diversion Dam
<b>Middle Fork Interbay Area</b>
Shoreline area surrounding Middle Fork Interbay



**Table REC 2-1. Recreation Study Sites (continued).**

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**Dispersed Concentrated Use Areas (continued)**

**Ralston Afterbay Area**

Ralston Afterbay Sediment Disposal Area

Shoreline area surrounding Ralston Afterbay

Area along Middle Fork American River, between Ralston Picnic Area and the new gage

Area at confluence of North Fork of the Middle Fork American River and Middle Fork American River

Indian Bar, Willow Bar, and Junction Bar Areas

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**Auburn State Recreation Area Sites**

Middle Fork American River Downstream of Oxbow Powerhouse

Indian Bar Rafting Access and General Parking (also included under Project Recreation Facilities, above)

Ruck-a-Chucky (also known as Drivers Flat, Greenwood and Greenwood Bridge)

Mammoth Bar/Murderer's Bar

Confluence Area (Middle Fork and North Fork American River Confluence)

Oregon Bar Access

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**Table REC 2-2. Information to be Developed through Recreation User Surveys.**

General User Information

- Characterize recreation users.
  - County of origin (in County versus out of County)
  - Local versus regional spending
  - Number of people in your total group
  - Number in people in your immediate group
  - Number and type of vehicles in group
  - What languages do you speak in your group
  - Ethnicity of group
  - Types of toys
  - Age
  - Income level
  - Gender
  
- Trip Profiles
  - Timing of visit
  - Primary destination
  - Project recreation sites visited
  - Other developed recreation sites visited
  - Dispersed areas visited
  - Trip length
  - Duration of stay by site
  - Pattern of use
  - How many times do you visit this site per year?
  - Why did you choose this location?
  - How has your experience changed over time?
  - What other areas in the Watershed have you used in the past?
  - How did you get information about the area?
  - Was the information sufficient?
  - How do you prefer to get information?
  - How did you get to this area?
  - Was the access adequate?
  - Season of use

**Table REC 2-2. Information to be Developed through Recreation User Surveys (continued).**

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- Characterize use by type of site (developed overnight, group, developed day use, dispersed)
  - Primary activities by type (for example, camping, day use, picnicking, fishing, hunting, hiking, swimming, wading, boating, mining, OHV use)
  - Other activities by type
  - Duration by activity type
  - Characterize use of OHVs in the vicinity of the Project
- Characterize visitor preferences for improvements by visitor type (e.g., overnight, day use, group)
  - Existing Project recreation facilities
  - Dispersed concentrated use areas (e.g. need for sanitation or other improvements related to health and safety )
  - What types of activities would you participate in, if available
  - What other types of recreational opportunities would you like

Potential Issues Related to Reservoir Recreation

- Adequacy and maintenance of recreation support facilities (e.g., boat ramps, parking areas, bathrooms, beaches, picnic areas, campgrounds)
- Adequacy of Safety Signage and other public safety features
- Adequacy and/or need for interpretive information
- Relationship between water surface elevation (WSE), user satisfaction, ability to participate in activities, and timing of visitation.
- Adequacy of shoreline access from developed facilities for specific recreation activities
- Potential user conflicts (i.e. overall crowding or conflicts between competing recreation uses)
- Concentration of debris, stumps, etc.)
- Adequacy of publicly available WSE information
- Satisfaction and preferences
- Sense of safety and security

Potential Issues Related to Stream-based Recreation

- Adequacy of recreation support facilities (e.g., parking areas, bathrooms, picnic areas, campgrounds)
- Adequacy of Safety Signage and other public safety features
- Adequacy and/or need for interpretive Information
- Relationship between flow (timing, duration, magnitude) and user satisfaction and safety
- Adequacy of access
- Potential user conflicts (i.e., overall crowding or conflicts between competing recreation uses)

**Table REC 2-2. Information to be Developed through Recreation User Surveys (continued).**

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Potential Issues Related to Stream-based Recreation (continued)

- Adequacy, functionality, and safety of trail crossings along the Rubicon River and Middle Fork American River over a range of river flows
- Adequacy of publicly available flow and safety information
  - Visitor understanding of what kind of information is available and where it is available
  - How is flow information obtained
- Adequacy of information about access to the river and recreation opportunities (motorized and non-motorized)
- Satisfaction and preferences
- Sense of safety and security

Potential Issues Related to Developed Recreation Facilities

- Adequacy of amenities and access at developed Project recreation facilities (e.g., boat ramps, parking areas, bathrooms, beaches, picnic areas, campgrounds, number of group campgrounds, size and availability of RV parking, proximity to water)
- Adequacy of current maintenance practices
- Potential user conflicts (i.e., overall crowding or conflicts between competing recreation uses)
- Adequacy of Safety Signage and other public safety features
- Adequacy and/or need for interpretive information
- Identify whether people using Project recreation facilities disperse to other undeveloped locations, where those locations are, and why
- Satisfaction and preferences
- Adequacy of potable water availability
- Sense of safety and security

Potential Issues Related to Dispersed Concentrated Use Areas

- Identify potential user conflicts (i.e., conflicts between competing recreation uses)
- Adequacy and/or need for Safety Signage and other public safety features
- Adequacy and/or need for interpretive information
- Characterize need for basic support facilities (e.g., parking, toilets, trash receptacles, patrols)
- Identify whether people using dispersed concentrated use areas visit developed Project recreation facilities
- Characterize displaced use if access is restricted.
- Satisfaction and preferences
- Sense of safety and security

### POTENTIAL RESOURCE ISSUE:

Reservoir-based recreational opportunities.

### PROJECT NEXUS:

The licensee is responsible for providing recreation access to Project reservoirs and to implement public safety measures, as appropriate.

Project operations result in water surface elevation fluctuations that may affect reservoir recreation opportunities and user satisfaction.

### POTENTIAL LICENSE CONDITION:

- Recreation Plan
  - Seasonal reservoir elevation targets
  - Facility modifications
  - Public safety measures

### STUDY OBJECTIVES:

- Characterize existing recreation opportunities at Project reservoirs.
- Characterize the relationship between reservoir water surface elevation (WSE) and current and future Project reservoir-based recreation opportunities (activities and experience).
- Characterize existing and future reservoir WSE-related operational constraints.
- Identify access and safety concerns at Project reservoirs.
- Develop information regarding reservoir-based recreation user conflicts at Project reservoirs.

### EXTENT OF STUDY AREA:

The study area is Hell Hole and French Meadows reservoirs, and Ralston Afterbay as they exist under current operating conditions. The study area will also include the new reservoir inundation area associated with the Hell Hole Reservoir Seasonal Storage Increase. The Hell Hole Reservoir Seasonal Storage Increase would raise the maximum operating WSE at Hell Hole Reservoir by 10 feet.

### STUDY APPROACH:

#### Recreation Opportunities

- Characterize existing reservoir recreation opportunities by location and type of activity. This information will be developed, in part, through the visitor surveys conducted as part of the REC 2 – Recreation Visitor Surveys Technical Study Plan (TSP).

## REC 3 – Reservoir Recreation Opportunities Technical Study Plan

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- Characterize future reservoir-related recreation demand with respect to recreation use and trends information. This information will be developed as part of the REC 1 – Recreation Use and Facilities Technical Study Plan.
- Use information developed through the REC 2 – Recreation Visitor Surveys TSP to characterize reservoir-based recreation opportunities at a variety of reservoir WSE.

### Reservoir Levels

- Summarize daily historical WSE data for Hell Hole and French Meadows reservoirs over the period of record, and averaged by water year type.
- Summarize daily and hourly (if available) WSEs at Ralston Afterbay.
- Summarize existing and future reservoir WSE-related operational constraints or requirements by water year type, if appropriate.
- Identify the design and functional reservoir elevation range for each existing boat ramp.
- Characterize the functionality of recreation support facilities and recreation opportunities over a range of existing reservoir WSE and future WSE associated with potential Project betterments using facility design drawings, information developed in consultation with the United States Department of Agriculture – Forest Service (USDA-FS), through site visits, and the results of surveys conducted as part of the REC 2 – Recreation Visitor Surveys Technical Study.

### Access and Safety Conditions

- Identify and document access points, type of access, and associated Project support facilities including their condition. Documentation of Project facility condition will be completed as part of the REC 1 – Recreation Use and Facilities Technical Study Plan.
- Identify and document existing programs and measures aimed at protecting public health and safety, for example buoy lines, signage, alarms, and Placer County OES procedures.
- Review records and consult with facility managers and resource management staff to identify safety concerns at the Project recreation facilities.
- Review and summarize records maintained by the Federal Energy Regulatory Commission (FERC) regarding the occurrence of accidents at MFP reservoirs.

### User Conflicts

- Identify potential reservoir-based recreational user using the results of the surveys conducted as part of the REC 2 – Recreation Visitor Surveys Technical Study.
- Identify factors that directly or indirectly contribute to reservoir recreational user conflicts using the results of the surveys conducted as part of the REC 2 – Recreation Visitor Surveys Technical Study.

## REC 3 – Reservoir Recreation Opportunities Technical Study Plan

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### SCHEDULE:

<b>Date</b>	<b>Activity</b>
January through November 2008	Collect and summarize existing data and conduct field surveys
November 2008 through February 2009	Characterize resource recreation opportunities
March and April 2009	Analyze data and prepare draft report
May 2009	Distribute draft report to the Recreation TWG
May and June 2009	Recreation TWG review and provide comments on draft report
July and August 2009	Resolve comments and prepare final report
September 2009	Distribute final report to the Recreation TWG and Plenary

### REFERENCES:

None.

### POTENTIAL RESOURCE ISSUE:

Stream-based recreation opportunities.

### PROJECT NEXUS:

Project operations modify the flow regime in bypass and peaking reaches, potentially affecting stream-based recreation opportunities and activities.

### POTENTIAL LICENSE CONDITION:

- Recreation Plan
  - Instream flow releases
  - Facility modifications
  - Dissemination of flow information
  - Public safety measures
  - Public access measures

### STUDY OBJECTIVES:

- Characterize stream-based recreational opportunities.
- Identify a range of flows in the bypass and peaking reaches that provide for stream-based recreation opportunities, such as angling, water-play, mining and whitewater boating.
- Characterize stream crossing conditions at specific crossings in the peaking reach.
- Determine mechanisms for disseminating flow information to the public.
- Identify existing public safety measures and concerns.

### EXTENT OF STUDY AREA:

The study area includes the bypass and peaking reaches associated with the Middle Fork American River Project (MFP or Project) as identified in Table REC 4-1.

### STUDY APPROACH:

This study plan focuses on characterizing stream-based recreation activities and opportunities that occur along the bypass and peaking reaches associated with the MFP. Reservoir-based recreation opportunities and activities are addressed in REC 3 – Reservoir Recreation Opportunities Technical Study Plan (TSP).

### Describe General Stream-based Recreation Opportunities

- Using existing information sources, characterize and describe the stream-based recreational opportunities, activities, experiences, and preferences in the bypass and peaking reaches, including angling, waterplay, equestrian use, mining and whitewater boating. Existing information sources that will be used include, but are not limited to, published guidebooks and maps, brochures available from local guides, outfitters and



clubs, and data and reports available from government agencies such as the USDA-FS and the Auburn State Recreation Area (ASRA).

- Acquire and review data currently being developed by the California State Parks as part of the ASRA Management Plan update. Summarize pertinent information to assist in describing stream-based recreation use and activities along the Middle Fork American River and North Fork American River between Indian Bar Rafting Access and Oregon Bar Access.
- Utilize information developed through the REC 2 – Recreation Visitor Surveys TSP to describe stream-based recreation activities, experience, and the relationship between flow and user satisfaction, where appropriate.
- Based on the existing information review, develop a map or set of maps showing the locations of popular waterplay, swimming, fishing spots and whitewater boating runs. These maps will also show the locations of developed recreation facilities and land jurisdictional boundaries in the vicinity of the Project.
- Develop a map or set of maps showing the primary roads and trails used to access popular water play, swimming, fishing spots, whitewater boating runs and stream crossings located along the Project bypass and peaking reaches. This map will be developed using GIS information obtained from the USDA-FS, ASRA, and other government sources, with specific trails, access roads, and stream crossings highlighted based on information provided by interested stakeholders.

### Summarize Hydrologic Information

- Utilize the available historical flow information to describe flows at specific locations (nodes) in the bypass and peaking reaches under impaired and unimpaired conditions. The data will be presented for five water year types: critically dry, dry, normal, above normal, and wet. The data will be presented graphically and in tabular format and will be reduced to either daily or hourly time steps, depending upon the availability of data. All data will be provided to the Recreation Technical Working Group (TWG).

### Develop Activity Specific Information - Trail Use at Stream Crossings

#### **Describe Western States and Tevis Cup Trail Routes and Crossings**

- Using existing information, describe and map the primary routes used for the Tevis Cup and Western States endurance races, including the timing of these events and coordination efforts with PCWA regarding flows that allow for crossing of the Middle Fork American River by race participants. Highlight the specific locations where these routes cross the Middle Fork American River below Oxbow Powerhouse (currently understood to be at Poverty Bar and Greenwood). Describe and characterize the results of stream crossing flow studies previously conducted by PG&E.
- Describe how PCWA, endurance race, and whitewater boating representatives currently coordinate flow releases with respect to endurance races.

### **Implement Structured Group Interviews**

- Develop additional information regarding wet (i.e., physically wadable) stream crossings associated with the primary trails that intersect the peaking reach, including, for example, those used by equestrians, hikers, mountain bikers, and those used for the Western States and Tevis Cup endurance races. This information would be developed by conducting structured interviews with a Trail User/Stream Crossing Focus Group comprised of representatives of the Western States Trail Foundation, Tevis Cup event organizers, equestrians, other trail users, PCWA, and resource agency representatives. The focus of this group will be to develop additional information about preferred stream crossing conditions, endurance event timing, coordination with PCWA, and safety concerns.
  - In consultation with the Recreation TWG develop a series of interview questions that are specific to the focus group. The series of questions would be used to help guide the focus group session and to address specific information needs identified by the Recreation TWG.
  - Assemble groups of users who are interested in participating in the focus group.
  - Conduct the focus group session. Aerial video and/or aerial photographs and maps will be available for use during the focus group session.
  - Utilize the information developed through focus group session to expand upon the information developed through existing sources.

### **Conduct Stream Crossing Flow Studies**

Assemble a group of stream crossing users (including, for example, waders, hikers, and equestrian riders) to assess stream crossing conditions over a range of flows at specific (preferred) locations in the peaking reach. This assessment would be performed in coordination with the instream flow study to be conducted as part of the AQ 1 – Instream Flow TSP and the whitewater boating flow study(s) described below. The locations to be assessed would be determined in consultation with the Recreation TWG, as would the survey instrument for conducting the assessment.

### **Determine Flow Travel Times**

- Use information developed as part of the AQ 1 – Instream Flow TSP, to identify water travel time between Oxbow Powerhouse and Oregon Bar over a range of flows.

### **Develop Activity Specific Information - Mining**

- Identify and map the locations of mining locations in the bypass and peaking reaches based on consultation with recreation specialists.
- Identify and map the location of existing mining claims within or immediately adjacent to the bypass and peaking reaches using information maintained by the Bureau of Land Management (BLM).

### Develop Activity Specific Information - Angling

#### **Implement Structured Group Interviews**

- Develop additional information regarding the angling opportunities in bypass and peaking reaches by conducting structured interviews with an Angling Focus Group. This group will be comprised of local fishing guides and outfitters, local anglers, business owners, PCWA, resource agency specialists, and other knowledgeable persons. The focus of the interviews will be to develop additional information such as popular fishing spots, fishing access, safety concerns, flow-related issues, and list of comparable regional fishing streams. Potential angling group participants will be identified by the Recreation TWG.
  - In consultation with the Recreation TWG develop a series of interview questions that are specific to the focus group. The series of questions would be used to help guide the focus group session and to address specific information needs identified by the Recreation TWG, including discussions regarding access and support facilities.
  - Assemble groups of users who are interested in participating in the focus group.
  - Conduct the focus group session. Aerial video and/or aerial photographs and maps will be available for use during the focus group session.
  - Utilize the information developed through focus group session to expand upon the information developed through existing sources.

#### **Conduct Angling Flow Studies**

- Assemble a group of anglers to assess fishing conditions (fishability) over a range of flows at specific (preferred) locations in the peaking reach in coordination with the instream flow study to be conducted as part of the AQ 1 – Instream Flow TSP and the whitewater boating flow study(s) described below. The locations to be assessed would be determined in consultation with the Recreation TWG, as would the survey instrument for conducting the assessment.
- Assemble a group of anglers to assess fishing conditions over a range of flows at specific (preferred) locations on the Rubicon River below Ellicotts Bridge. This assessment would be performed in coordination with the instream flow study to be conducted as part of the AQ 1 – Instream Flow TSP. The locations to be assessed would be determined in consultation with the Recreation TWG, as would the survey instrument for conducting the assessment.
- Estimate range of flows that support angling in the peaking reach and Rubicon River below Ellicotts Bridge based on the field assessment.
- Characterize angling fishability in the peaking reach and Rubicon River below Ellicotts Bridge in different water year types under impaired and unimpaired flows.

### Develop Activity Specific Information - Whitewater Boating

#### **Describe Whitewater Boating Opportunities**

- Map the locations of existing whitewater boating runs in each of the bypass and peaking reaches based on published maps and literature, consultation with local and regional whitewater boating groups, and recreation specialists.

- Describe and characterize each whitewater boating run, including: access points (put-in and take-out), shuttle routes, length of run, gradient, portages, level of difficulty, types of water crafts, estimated boatable flow ranges, support facilities, safety concerns, and any known limiting factors. The descriptions will be developed using information contained in published whitewater guides and completing a site reconnaissance. Verify/augment information during focused group interviews.
- Identify a preliminary list of channel and flow-dependent factors that could influence boatable flows for each activity type through review of aerial photograph and the Project video. Verify/augment the list during structured group interviews.
- Develop a list of comparable regional whitewater boating resources. Verify/augment the list during structured group interviews.
- Summarize commercial whitewater boating use in the peaking reach using records maintained by ASRA, augmented by information developed as part of the REC 1 – Recreation Use and Facility Assessment TSP.
- Characterize private boating use in peaking reach based on information developed as part of the REC 1 – Recreation Use and Facility Assessment TSP.

### **Implement Structured Group Interviews**

- Develop additional information regarding whitewater boating along the bypass and peaking reaches by conducting structured interviews with a Whitewater Boating Focus Group. This group would be comprised of PCWA, commercial outfitters, guides, instructional teachers, local and regional boaters, resource agency specialists and other knowledgeable persons representing a range of interests (i.e., skill levels, watercraft, various commercial enterprises). This group will focus on developing additional details about specific boating runs, existing and potential uses, access conditions or constraints, boatable flow ranges, types of watercraft used, and timing.
  - In consultation with the Recreation TWG develop a series of questions that are specific to this group. The series of questions would be used to help guide the focus group session and to address specific information needs identified by the Recreation TWG.
  - Prior to the focused session, obtain information from private whitewater boaters (boater's diaries) regarding the specific dates of previous whitewater boating experience in the bypass and peaking reaches. Using the hydrologic record, identify the specific flows when the previous runs were completed by the private boaters.
  - Assemble groups of users who are interested in participating in focus group interviews.
  - Conduct the focus group session. Aerial video and/or aerial photographs and maps will be available for use during the focus group session.

### **Whitewater Boating Flow Study to Identify Boatable Flows in the Peaking Reach**

- Conduct whitewater flow studies to refine boatable flow ranges for each of the runs in the peaking reach, including:
  - The Indian Bar Rafting Access to Ruck-a-Chucky (also known as Greenwood and Driver's Flat)
  - Ruck-a-Chucky to Mammoth Bar

- Mammoth Bar to the Confluence of the Middle and North Forks of the American River
- The Confluence to Oregon Bar

This study would focus on identifying boatable flow ranges for a variety of watercraft used by both commercial and private boaters, representing a range of interests and skill levels. However, the maximum flow evaluated during the study will be 1,000 cfs, the flow capacity of the Oxbow Powerhouse.

- Develop a whitewater boating survey instrument in consultation with the Recreation TWG. The survey instrument will be used to obtain information on physical logistics and the experiential values of whitewater boating runs under different flows. Conduct flow studies using a team of boaters with requisite skill levels using a variety of watercraft to identify boatable flow ranges.
- Document and record river conditions in the whitewater boating runs during the flow studies using video and photographs.
- Utilize the information developed during the flow study(s) combined with hydrologic information to characterize whitewater boating opportunities in the peaking reach under impaired and unimpaired flows in different water year types.
- Use information developed as part of the AQ1 – Instream Flow TSP to identify water travel time at different locations in peaking reach over a range of flows, with consideration to the effect that flow ramping might have on travel time.

### **Potential Whitewater Boating Studies on Runs in Bypass Reaches**

- The Recreation Technical Work Group will utilize the information developed through the focus group session to expand upon the information developed through existing sources. In consultation with the Recreation TWG and upon review of other TWG objectives, determine if whitewater boating studies are necessary to further assess whitewater boating opportunities in the bypass reaches based on information developed in the tasks above and a review of the hydrologic record. If appropriate, identify target reaches where flow studies are needed and determine study objectives that consider the physical and operational constraints of the Project, and PCWA's ability to release flows. This flow study proposal will be sent to the Plenary for approval.
- If determined to be necessary by the Plenary and the Recreation TWG, conduct whitewater boating studies using the methods described above under the peaking reach on specific runs in the bypass reaches.

### **Flow Information Dissemination**

- Characterize the type of flow information that is currently available to the public through, for example, existing web sites and flow phones.
- Identify, map, and characterize existing stream gaging stations (location, equipment, and data collection capabilities) in target reaches.
- Consult with stream-based recreational users, for example whitewater boaters, anglers, equestrians, swimmers, and waders, to identify target reaches or locations where flow information may enhance stream-based recreation opportunities.

### Public Safety

- Public and worker safety will be described in Land 3 – Emergency Action and Public Safety TSP
- Determine whether there are signs present at key river access and crossing points that warn the public of potential flow fluctuations. If present, document the condition and location of these signs and describe their content.
- Use the results of surveys completed as part of REC 2 – Recreation Visitor Surveys TSP and consultation with resource agencies and local user groups to identify potential safety concerns along the bypass and peaking reaches.

### SCHEDULE:

<b>Date</b>	<b>Activity</b>
September through December 2007	Acquire, compile, review, and summarize existing recreation information and hydrologic data.
December 2007 and January 2008	Consult with Recreation TWG regarding focus group participants and survey questions.
February through April 2008	Conduct structured focus group interviews.
April and May 2008	Consult with Recreation TWG and develop survey instruments for angling, stream crossing, and whitewater boating flow studies.
March through October 2008	Conduct angling, stream crossing, and whitewater boating flow studies.
September 2008 through February 2009	Complete data analysis and prepare draft report.
March 2009	Submit draft report to Recreation TWG.
April and May 2009	TWG review and comment period.
June through October 2009	Resolve comments and prepare final report.
April through October 2009	If appropriate, conduct contingency whitewater boating studies, data analysis and report production.

### REFERENCES:

None.

**TABLES**

**Table REC 4-1. Bypass and Peaking Reaches Associated with the Middle Fork Project.**

River or Stream	Bypass Reaches <sup>1</sup>
Middle Fork American River	French Meadows Dam to Middle Fork Interbay Middle Fork Interbay Dam to Ralston Afterbay
Duncan Creek	Duncan Creek Diversion Dam to the Middle Fork American River Confluence
Rubicon River	Hell Hole Dam to Ralston Afterbay
North Fork Long Canyon Creek	North Fork Long Canyon Diversion Dam to the Confluence of Long Canyon Creek
South Fork Long Canyon Creek	South Fork Long Canyon Diversion Dam to the Confluence of Long Canyon Creek
Long Canyon Creek	Confluence of North and South Forks of Long Canyon Creek to confluence of Rubicon River
	<b>Peaking Reach<sup>2</sup></b>
Middle Fork American River	Oxbow Powerhouse to the North Fork American River Confluence
North Fork American River	Middle Fork American River Confluence to the Folsom Reservoir High Water Mark

<sup>1</sup>Bypass reaches are those where water is rerouted from the stream or river at a diversion dam and reintroduced below a powerhouse.

<sup>2</sup>Peaking reach is where daily and within-day changes in river flow occur as a result of power releases that are scheduled to follow power demand.



### POTENTIAL RESOURCE ISSUE:

Visual quality.

### PROJECT NEXUS:

The presence of Project facilities, features, and operations could affect visual quality.

### POTENTIAL LICENSE CONDITION:

- Visual Resources Plan

### STUDY OBJECTIVES:

- Identify, map, and describe United States Department of Agricultural - Forest Service (USDA-FS) inventories associated with existing Project facilities features, and potential Project betterments.
- Document the existing visual condition (EVC) of all Project facilities and features from associated viewsheds.

### EXTENT OF STUDY AREA:

The study area will include the Project facilities and features identified in Table REC 5-1 and their associated viewsheds. The viewsheds include travel routes, recreation areas, and water bodies from which the existing Project facilities and features are visible to the public.

The study area will also include potential Project betterments, including new facilities, roads and trails, staging and construction work sites, as identified in Table REC 5-2, and new inundation area associated with the Hell Hole Reservoir Seasonal Storage increase. . The Hell Hole Reservoir Seasonal Storage Increase would raise the maximum operating WSE at Hell Hole Reservoir by 10 feet.

### STUDY APPROACH:

USDA-FS currently uses the Visual Management System (VMS) to address aesthetic resources. However, the USDA-FS is moving towards a new system, the Scenery Management System (SMS). The SMS will be incorporated into the Tahoe National Forest (TNF) Land and Resource Management Plan (LRMP), which is scheduled to be updated in 2008 or 2009.

The USDA-FS met internally to discuss whether PCWA should utilize the VMS or the SMS. During the November 13, 2006 Recreation Technical Working Group (TWG) meeting, the USDA-FS recommended that PCWA use the VMS based on direction provided by the Regional Landscape Architect. Therefore, this Technical Study Plan is based on the VMS.

### USDA-FS VMS Inventories

- In coordination with the USDA-FS, identify and map all sensitivity level 1 and 2 viewsheds in the study area, including those associated with existing Project facilities, features, and potential Project betterments.

## REC 5 – Visual Quality Assessment Technical Study Plan

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- Map and summarize the Eldorado National Forest (ENF) Land and Resource Management Plan (LRMP) and Tahoe National Forest (TNF) LRMP Visual Quality Objectives (VQOs) in the study area.
- Identify and summarize the USDA-FS land management direction associated with the VMS inventories relative to the existing Project facilities, features, and potential Project betterments.
- Map the location of existing Project facilities, features, and proposed Project betterments with respect to their associated viewsheds and VMS inventories including VQOs, variety classes, sensitivity levels, and distance zones.
- Develop photo renditions of facilities associated with Project betterments from agreed upon Key Observation Points (KOPs).

### Existing Visual Condition

- Document the EVC of all existing Project facilities and features from associated viewsheds.
- In consultation with the USDA-FS, identify KOPs and photograph the existing Project facilities and features using agreed upon photographic protocols. Map and describe the locations of the KOPs.
- At Project reservoirs that undergo seasonal water level fluctuations (i.e., French Meadows and Hell Hole reservoirs), photograph the reservoirs from KOPs at full pool and lowest expected pool.
- Narratively describe water level fluctuations at Ralston Afterbay, including both daily and seasonal changes, and during maintenance outages. In consultation with the stakeholders, determine whether it is necessary to photo-document water level changes at Ralston Afterbay.

### Contingency Study – Photo-Document Water Level Changes at Ralston Afterbay

- In consultation with the stakeholders, determine specific KOPs from which water levels at Ralston Afterbay should be photographed.
- Photograph Ralston Afterbay at a range of water levels from specific KOPs.

## REC 5 – Visual Quality Assessment Technical Study Plan

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### SCHEDULE:

Date	Activity
<b>VMS Inventories and Existing Visual Conditions Assessment</b>	
October 2007 and July 2008	Identify KOPs associated with French Meadows and Hell Hole reservoirs in coordination with USDA-FS. Photograph Hell Hole and French Meadows reservoirs at low and high water levels
November 2007 through July 2008	Conduct VMS inventory in coordination with USDA-FS
July through September 2008	Conduct field surveys documenting EVC of existing Project facilities.
October and November 2008	Analyze data and prepare draft report
November 2008	Distribute draft report to the Recreation TWG
December 2008 through February 2009	Recreation TWG 90-day review and comment period
February and March 2009	Resolve comments and prepare final report
April 2009	Distribute final report to the Recreation TWG and Plenary
<b>Contingency Study - Water Level Changes at Ralston Afterbay</b>	
February and March 2008	Consult with the resource agencies to determine need to photo-document water level changes at Ralston Afterbay
March 2008 through April 2009	Conduct field surveys, analyze data, prepare and distribute draft and final reports

### REFERENCES:

Placer County Water Agency (PCWA). 2006. Middle Fork American River Hydroelectric Project (FERC No. 2079) Draft Existing Resource Information Reports, Second Series.

United States Department of Agriculture Forest Service (USDA-FS). 1973. National Forest Landscape Management (Volume 1).

USDA-FS. 1974. National Forest Landscape Management (Volume 2, Chapter 1): The Visual Management System (Agricultural Handbook 462).

USDA-FS. 1995. Landscape Aesthetics. A Handbook for Scenery Management. (Agricultural Handbook 701).

**TABLES**

**Table REC 5-1. Existing Project Facilities and Features.**

<b>Dams, Reservoirs, and Diversion Pools</b>
<b>Large Dams</b>
French Meadows Dam and Outlet Works
Hell Hole Dam and Outlet Works
<b>Medium Dams</b>
Middle Fork Interbay Dam
Ralston Afterbay Dam
<b>Small Dams</b>
Duncan Creek Diversion Dam
North Fork Long Canyon Diversion Dam
South Fork Long Canyon Diversion Dam
<b>Large Reservoirs</b>
French Meadows Reservoir
Hell Hole Reservoir
<b>Medium Reservoirs</b>
Middle Fork Interbay
Ralston Afterbay
<b>Small Diversion Pools</b>
Duncan Creek Diversion Pool
North Fork Long Canyon Diversion Pool
South Fork Long Canyon Diversion Pool

### **Water Conveyance Systems**

<b>Tunnels</b>
Duncan Creek - Middle Fork Tunnel
French Meadows - Hell Hole Tunnel
Hell Hole - Middle Fork Tunnel
Middle Fork - Ralston Tunnel
Ralston - Oxbow Tunnel
<b>Diversion Pipes and Drop Inlets</b>
North Fork Long Canyon Diversion Pipe and Drop Inlet
South Fork Long Canyon Diversion Pipe and Drop Inlet
<b>Surge Shafts and Adits</b>
Hell Hole - Middle Fork Tunnel Surge Shaft and Tank
Brushy Canyon Adit
Middle Fork - Ralston Tunnel Surge Shaft and Tank
<b>Removable Sections and Portals</b>
French Meadows - Hell Hole Tunnel Removable Section
North Fork Long Canyon Crossing Removable Section
Hell Hole - Middle Fork Tunnel Removable Section
Middle Fork - Ralston Tunnel Removable Section
Duncan Creek - Middle Fork Tunnel Portal
<b>Intakes and Gatehouses</b>
Duncan Creek - Middle Fork Tunnel Intake
French Meadows - Hell Hole Tunnel Intake
French Meadows - Hell Hole Tunnel Gatehouse
Hell Hole - Middle Fork Tunnel Intake
Hell Hole - Middle Fork Tunnel Gatehouse
Middle Fork - Ralston Tunnel Intake and Gatehouse
Ralston - Oxbow Tunnel Intake

**Table REC 5-1. Existing Project Facilities and Features (continued).**

<b>Water Conveyance Systems (continued)</b>	
<b>Penstocks and Valve Houses</b>	
French Meadows Powerhouse Penstock and Butterfly Valve House	
Middle Fork Powerhouse Penstock and Butterfly Valve House	
Ralston Powerhouse Penstock and Butterfly Valve House	
<b>Powerhouses, Switchyards, and Substations</b>	
French Meadows Powerhouse and Switchyard	
Hell Hole Powerhouse	
Hell Hole Substation	
Middle Fork Powerhouse and Upper and Lower Switchyards	
Ralston Powerhouse and Switchyard	
Oxbow Powerhouse and Switchyard	
<b>Gaging Stations and Weirs</b>	
<b>Stream Gages and Weirs</b>	
Duncan Creek Gage and Weir above Diversion Dam (USGS Gage and Weir No. 11427700)	
Duncan Creek Gage and Weir below Diversion Dam (USGS Gage and Weir No. 11427750)	
Middle Fork American River Gage and Weir below French Meadows Dam (USGS Gage and Weir No. 11427500)	
Middle Fork American River Gage at Interbay Dam (USGS Gage No. 11427770)	
Middle Fork American River Gage above Middle Fork Powerhouse (USGS Gage No. 11427760)	
Middle Fork American River Gage below Oxbow Powerhouse (USGS Gage No. 11433300)	
Rubicon River Gage and Weir below Hell Hole Dam (USGS Gage and Weir No. 11428800)	
North Fork Long Canyon Gage and Weir at Diversion Dam (USGS Gage and Weir No. 11433085)	
South Fork Long Canyon Gage and Weir at Diversion Dam (USGS Gage and Weir No. 11433065)	
<b>Diversion Gages</b>	
North Fork Long Canyon Gage at Diversion Dam (USGS Gage No. 11433080)	
South Fork Long Canyon Gage at Diversion Dam (USGS Gage No. 11433060)	
<b>Reservoir Gages</b>	
French Meadows Reservoir Gage (USGS Gage No. 11427400)	
French Meadows Reservoir Staff Gage	
Hell Hole Reservoir Gage (USGS Gage No. 11428700)	
Hell Hole Reservoir Staff Gage	
Middle Fork Interbay Reservoir Gage	
Ralston Afterbay Reservoir Gage	
<b>Powerhouse Gages</b>	
French Meadows Powerhouse Gage (USGS Gage No. 11427200)	
Middle Fork Powerhouse Gage (USGS Gage No. 11428600)	
Ralston Powerhouse Gage (USGS Gage No. 11427765)	
Oxbow Powerhouse Gage (USGS Gage No. 11433212)	
<b>Leakage Weirs</b>	
French Meadows Dam Leakage Weirs Nos. 1-6	
Hell Hole Dam Leakage Weir	
<b>Project Communication Lines and Powerlines</b>	
<b>French Meadows Area</b>	
French Meadows Dam Generator Building to French Meadows Dam Outlet Works Powerline	
French Meadows Dam Generator Building to French Meadows Dam Spillway Gates Powerline	

**Table REC 5-1. Existing Project Facilities and Features (continued).**

<b>Project Communication Lines and Powerlines (continued)</b>
<b>Hell Hole Area</b>
French Meadows Powerhouse to French Meadows Powerhouse Penstock and Butterfly Valve House Communication Line/Powerline
French Meadows Powerhouse and Switchyard to Hell Hole - Middle Fork Tunnel Gatehouse, Dormitory Facility, Operators Cottages, and Hell Hole Powerhouse Communication Line/Powerline
Dormitory and Cottages Water Supply Tank Powerline
Hell Hole Powerhouse to Rubicon River Gage and Weir below Hell Hole Dam Communication Line/Powerline
<b>Middle Fork Interbay Area</b>
Middle Fork Powerhouse to Middle Fork Powerhouse Butterfly Valve House Communication Line/Powerline
Middle Fork Powerhouse Butterfly Valve House to Radio Repeater near Hell Hole - Middle Fork Tunnel Surge Tank (underground) Communication Line/Powerline
Middle Fork Powerhouse to Middle Fork - Ralston Tunnel Intake and Gatehouse Communication Line/Powerline
Middle Fork Powerhouse to Middle Fork American River Gage above Middle Fork Powerhouse Communication Line/Powerline
<b>Ralston - Oxbow Area</b>
Ralston - Oxbow Tunnel Intake to Ralston Powerhouse Communication Line
Ralston Powerhouse to Ralston Powerhouse Butterfly Valve House Communication Line/Powerline
Ralston Afterbay Dam Generator Building to Ralston - Oxbow Tunnel Intake Communication Line/Powerline
Oxbow Powerhouse to Ralston Afterbay Dam Generator Building Communication Line/Powerline
<b>Photovoltaic Poles and Powerlines</b>
Photovoltaic Poles and Powerline to Duncan Creek Gage above Diversion Dam
Photovoltaic Pole and Powerline at Duncan Creek Gage below Diversion Dam
Photovoltaic Pole and Powerline at Middle Fork American River Gage below French Meadows Dam
Photovoltaic Pole and Powerline at Middle Fork American River Gage above Middle Fork Powerhouse
Photovoltaic Pole and Powerline at North Fork Long Canyon Gage at Diversion Dam
Photovoltaic Pole and Powerline at South Fork Long Canyon Gage at Diversion Dam
Photovoltaic Pole at Middle Fork American River Gage below Oxbow Powerhouse
<b>Microwave Reflectors and Radio Towers</b>
Passive Microwave Reflector Station above Middle Fork Interbay
Radio Communications Tower near French Meadows - Hell Hole Tunnel Gatehouse
Radio Communications Tower and Repeater near Hell Hole - Middle Fork Tunnel Surge Shaft and Tank
Passive Microwave Reflector Station above Ralston Afterbay
<b>Project Roads and Access Points</b>
<b>Duncan Creek Area</b>
Duncan Creek Diversion Intake Road and Diversion Pool Access Point
Duncan Creek Diversion Dam Road
Duncan Creek Diversion Pool Road and Access Point
<b>French Meadows Area</b>
Duncan Creek - Middle Fork Tunnel Portal Road and Spillway Access Point
French Meadows - Hell Hole Tunnel Gatehouse Road
French Meadows Dam Outlet Works and Leakage Weirs Road

**Table REC 5-1. Existing Project Facilities and Features (continued).**

<b>Project Roads and Access Points (continued)</b>	
<b>French Meadows Area (continued)</b>	
French Meadows Dam Staging Area Road	
Middle Fork American River Gage and Weir below French Meadows Dam Road	
<b>Hell Hole Area</b>	
Hell Hole Dam and Powerhouse Road and Spillway Southern Access Point	
Rubicon River Gage and Weir below Hell Hole Dam Road	
Hell Hole Dam Leakage Weir Road	
Hell Hole Dam Spillway Northern Access Point	
French Meadows - Hell Hole Tunnel Portal Road	
French Meadows Powerhouse Road	
Hell Hole - Middle Fork Tunnel Gatehouse Road	
Dormitory Facility Road	
Hell Hole Dam Spillway Discharge Channel Road	
<b>Long Canyon Area</b>	
North Fork Long Canyon Diversion North Road	
North Fork Long Canyon Diversion South Road	
North Fork Long Canyon Diversion Drop Inlet Road	
South Fork Long Canyon Diversion and Drop Inlet Road	
North Fork Long Canyon Crossing Removable Section North Road and Parking Area	
North Fork Long Canyon Crossing Removable Section South Road	
<b>Middle Fork Interbay Area</b>	
Middle Fork Powerhouse Butterfly Valve House Road	
Middle Fork Powerhouse Penstock and Butterfly Valve House Road	
Middle Fork Powerhouse Upper Switchyard Road	
Middle Fork Interbay Dam and Powerhouse Road and Interbay Access Points	
<b>Ralston - Oxbow Area</b>	
Brushy Canyon Adit Road	
Ralston Powerhouse Butterfly Valve House Road	
Ralston - Oxbow Tunnel Intake Road	
Oxbow Powerhouse Road	
Ralston Afterbay Road and Boat Ramp	
Ralston Afterbay Dam Road and Afterbay Access Point	
Ralston Afterbay Sediment Removal Access Point	
<b>Project Trails</b>	
<b>Duncan Creek Area</b>	
Duncan Creek Diversion Dam North Trail	
Duncan Creek Diversion Dam South Trail	
Photovoltaic Poles and Powerline to Duncan Creek Gage above Diversion Dam Trail	
Duncan Creek Gage and Weir above Diversion Trail	
Duncan Creek Gage and Weir below Diversion Trail	
<b>French Meadows Area</b>	
Middle Fork American River Gage and Weir below French Meadows Dam Trail	
<b>Middle Fork Interbay Area</b>	
Middle Fork American River Gage above Middle Fork Powerhouse Trail	
Passive Microwave Reflector Station above Middle Fork Interbay Trail	
<b>Ralston Afterbay Area</b>	
Passive Microwave Reflector Station above Ralston Afterbay Trail	
Middle Fork American River Gage below Oxbow Powerhouse Trail	



**Table REC 5-1. Existing Project Facilities and Features (continued).**

<b>Disposal Sites</b>
Duncan Diversion Dam Sediment Disposal Area
North Fork Long Canyon Crossing Sediment Disposal Area
Middle Fork Interbay Sediment Disposal Area
Ralston Ridge Sediment Disposal Area
Indian Bar Sediment Disposal Area
<b>Ancillary Facilities</b>
French Meadows Dam Generator Building
French Meadows Dam Staging Area
Operator Cottages and Shop
Dormitory Facility
Dormitory and Cottages Water Supply Tank
Hell Hole Staging Areas
Storage Building at Middle Fork - Ralston Tunnel Surge Shaft and Tank
Ralston Afterbay Dam Generator Building
Wabena Meadows Snow Course
Miranda Cabin Snow Course
Diamond Crossing Snow Course
Talbot Camp Snow Course
<b>Project Fences</b>
<b>Slope Fences</b>
French Meadows Powerhouse Penstock Rock Fence
French Meadows Powerhouse Slope Fence
Long Canyon Crossing Slope Fence
Middle Fork Powerhouse Upper Switchyard Slope Fence
Middle Fork Interbay Dam Slope Fence
Ralston Powerhouse Penstock and Butterfly Valve House Slope Fences
Ralston Powerhouse Slope Fence
Oxbow Powerhouse Slope Fence
<b>Public Safety Fences</b>
Hell Hole Dam General Parking Area Barrier Fence
Dormitory Facility Barrier Fence
North Fork Long Canyon Crossing Removable Section Barrier Fence

**Table REC 5-2. Potential Project Betterments.**

<b>Hell Hole Reservoir Seasonal Storage Increase</b>	
<b>Hell Hole Dam</b>	
<b>Modified Facilities</b>	
Hell Hole Dam Spillway Crest Gates	
Hell Hole Dam Parapet Walls	
<b>New Facilities</b>	
Hell Hole Dam Spillway Crest Gates Control Building	
Hell Hole Dam Spillway Crest Gates Control Building Powerline	
<b>Temporary Construction and Staging Areas</b>	
Hell Hole Dam Spillway Crest Gates Construction Road	
Hell Hole Dam Spillway Crest Gates Construction Work Area	
Hell Hole Dam Spillway Crest Gates and Control Building Construction Staging Area	
Hell Hole Dam Parapet Wall Construction Staging and Work Area	
Hell Hole Dam Spillway Crest Gates Control Building Construction Work Area	
Hell Hole Dam Spillway Crest Gates Control Building Powerline Construction Work Area	
Hell Hole Dam Spillway Crest Gates Control Building Powerline Construction Staging Area	
<b>Hell Hole-Middle Fork Tunnel Gatehouse</b>	
<b>Modified Facilities</b>	
Hell Hole - Middle Fork Tunnel Gatehouse Parapet Wall	
<b>Temporary Construction and Staging Areas</b>	
Hell Hole-Middle Fork Tunnel Gatehouse Parapet Wall Construction Staging and Work Area	
<b>French Meadows Powerhouse</b>	
<b>Modified Facilities</b>	
French Meadows Powerhouse Parapet Wall	
<b>Temporary Construction and Staging Areas</b>	
French Meadows Powerhouse Parapet Wall Construction Staging and Work Area	
<b>South Fork Long Canyon Diversion</b>	
<b>Modified Facilities</b>	
South Fork Long Canyon Diversion Dam Crest Gates	
<b>New Facilities</b>	
South Fork Long Canyon Diversion Dam Crest Gates Generator Building	
<b>Temporary Construction and Staging Areas</b>	
South Fork Long Canyon Diversion Dam Crest Gates and Generator Building Construction Staging and Work Area	
<b>French Meadows Powerhouse Capacity Upgrade</b>	
<b>French Meadows Reservoir</b>	
<b>Modified Facilities</b>	
French Meadows - Hell Hole Tunnel Intake Trash Rack	
<b>Temporary Construction and Staging Areas</b>	
French Meadows - Hell Hole Tunnel Intake Trash Rack Construction Staging Area	
French Meadows - Hell Hole Tunnel Intake Trash Rack Construction Work Area	
French Meadows - Hell Hole Tunnel Intake Trash Rack Construction Road	
<b>French Meadows Powerhouse</b>	
<b>Modified Facilities</b>	
French Meadows Powerhouse Switchyard	
<b>New Facilities</b>	
French Meadows Powerhouse	

**Table REC 5-2. Potential Project Betterments (continued).**

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**French Meadows Powerhouse Capacity Upgrade**

<b>French Meadows Powerhouse (continued)</b>
French Meadows Powerhouse Penstock
French Meadows - Hell Hole Tunnel Surge Shaft/Tank
French Meadows - Hell Hole Tunnel Surge Pipeline
French Meadows - Hell Hole Tunnel Surge Shaft or Pipeline Road
<b>Temporary Construction and Staging Areas</b>
French Meadows Powerhouse/Switchyard Construction Work Area
French Meadows Powerhouse/Switchyard Construction Staging Area
French Meadows Powerhouse Penstock Construction Work Area
French Meadows Powerhouse Penstock Construction Staging Areas
French Meadows - Hell Hole Tunnel Surge Shaft/Tank or Pipeline Construction Staging Areas
French Meadows - Hell Hole Tunnel Surge Shaft/Tank Construction Work Area
French Meadows - Hell Hole Tunnel Surge Pipeline Construction Work Area
French Meadows - Hell Hole Tunnel Surge Shaft or Pipeline Road Construction Staging and Work Area
<b>Non-Project Facilities Modified During Construction</b>
Forest Road 14N09A
Forest Road 14N09A Construction Staging and Work Area
<b>Middle Fork Powerhouse</b>
<b>Modified Facilities</b>
Middle Fork Powerhouse Upper and Lower Switchyard

**Ralston Powerhouse Capacity Upgrade**

<b>Ralston Powerhouse</b>
<b>Modified Facilities</b>
Ralston Powerhouse
<b>Temporary Construction and Staging Areas</b>
Ralston Powerhouse Construction Staging Area