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5.2.10 Land Management and Socioeconomics

This report describes land management and socioeconomic issues related to the four Big Creek Alternative Licensing Process (ALP) Projects (Mammoth Pool (FERC Project No. 2085), Big Creek Nos. 1 and 2 (FERC Project No. 2175); Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67); and Big Creek No. 3 (FERC Project No. 120)). The land management discussion includes land jurisdictions in the Projects areas, a description of existing land uses, and a description of planned land uses contained in federal, state, and local planning documents. The socioeconomic discussion includes population, employment, and other regional economic factors. Following these discussions is a summary of Project impacts on land management and socioeconomic conditions under the Proposed Action.

5.2.10.1 Land Management Plans and Policies

Depending on the ownership status, the land use and management is governed by federal, state, or local plans and regulations. Lands within the Project boundaries and adjacent areas are predominantly federal lands under management of the Sierra National Forest (SNF), under the United States Department of Agriculture-Forest Service (USDA-FS). Private land holdings in the vicinity of the Projects include small private in-holdings and lands owned by Southern California Edison Company (SCE). Lands in the vicinity of the four Big Creek ALP Projects are generally rural forest and foothills in character, and the existing land uses include: small communities of private residences or seasonal homes, hydroelectric power generation, rangeland, timber production, mining, research areas, wilderness areas, and recreation facilities.

Forest Service Management Plans

Lands within and adjacent to the Project boundaries are administered by the SNF for the protection and multiple use of natural resources, conservation of adjacent wilderness areas, and enhancement of recreational opportunities. Long-term land management direction of Forest Service lands is provided by the *Sierra National Forest Land and Resource Management Plan* (LRMP) (1992). The goal of this plan is to provide a management program that reflects a variety of activities, allow use and protection of USDA-FS resources, and fulfill legislative requirements while addressing local, regional, and national issues. The LRMP describes the desired future state of the SNF, forest-wide management direction and prescriptions for individual management areas, and includes management standards and guidelines. The SNF is scheduled to initiate a revision process for the LRMP in 2007. The LRMP recognizes hydropower and recreation as two important beneficial uses of the SNF. The four Big Creek ALP Projects support both of these beneficial uses. Based on the SNF LRMP (1992), the lands in the Project vicinity are classified into one of three management prescriptions:

1. "General Forest" - areas generally available, capable, and suitable for timber production.

2. "Front Country" - areas where wildlife and range management activities and adequate protection of watershed values are emphasized.
3. "Developed Recreation" - areas where developed recreation opportunities such as public campgrounds, picnic areas, visitor information centers, vistas, resorts, organization camps, and recreation residents are emphasized.

The 2001 Forest Plan Amendment augments the LRMP's for National Forests in the Sierra Nevada, including the SNF (USDA-FS 2001). The Forest Plan Amendment addresses the need to: 1) sustain the desired condition of old forest ecosystems; 2) protect and restore riparian, aquatic, and meadow ecosystems; 3) combat noxious weeds; 4) improve fire and fuels management; and, 5) sustain desired conditions of lower west side hardwood ecosystems in the affected National Forests. The Record of Decision (ROD) was submitted with the Final Environmental Impact Statement (FEIS) and includes the rationale regarding the decision basis for the preferred alternative. It applies a cautious approach for vegetation and fuels management in habitats for sensitive wildlife species, particularly those associated with old forest ecosystems, while recognizing the need to reduce fire threat to human communities.

The 2004 Forest Plan Amendment and associated documents address in greater detail, the three problem areas that were not adequately analyzed in the 2001 Forest Plan Amendment. These problem areas include: (1) old forest ecosystems and associated species; (2) aquatic, riparian and meadow ecosystems and associated species, and (3) fire and fuels management.

County Plans

The Project vicinity lands are located in Fresno and Madera counties and are subject to the *Fresno County General Plan (2000)* or the *Madera County General Plan (1995)*. The Big Creek Nos.1 and 2 and Big Creek Nos. 2A, 8 and Eastwood Projects are located within Fresno County. The Big Creek No. 3 and the Mammoth Pool Projects are located in Fresno and Madera counties. These two Projects are located along the San Joaquin River, which serves as the boundary line between Fresno and Madera counties in the vicinity of the four Big Creek ALP Projects. Lands to the north of the San Joaquin River are located within Madera County and lands to the south of the river are within Fresno County.

The *Fresno County General Plan* covers issues of land use, transportation, and environmental resource management. The General Plan identifies the Project vicinity lands as being within the Sierra-North Regional Plan Area and designates the Project area land use as Public Lands and Open Space. This designation is applied to land or water areas that are unimproved and planned to remain open in character. The designation provides for the preservation of natural resources, the managed production of resources, parks and recreation, and the protection of the community from natural and manmade hazards. While it is within the Fresno County boundaries, the General Plan does not refer specifically to the Project area because it is managed by the SNF, whose jurisdiction supercedes that of Fresno County.

The *Madera County General Plan* directs land use in the northeastern most portion of the Project vicinity, from the middle of the San Joaquin River, Dam 6 Forebay and Mammoth Pool Reservoir northward. The General Plan designates the lands in the Project vicinity as Open Space with some smaller parcels of land designated as Agriculture Exclusive. The Open Space designation provides for land uses that include: low intensity agricultural uses, irrigation canals, grazing, forestry, recreation and equestrian, transmission lines, and areas under public control. The Agricultural Exclusive designation provides for agricultural uses, limited agricultural support service uses, agriculturally oriented services, timber production, mineral extraction, public and quasi-public uses, and similar uses. While it is within Madera County boundaries, the General Plan does not specifically refer to the Project vicinity.

Other Resource Management Plans

SCE has developed or will develop management plans to protect environmental resources that may potentially be affected by the operation and maintenance of the Projects. The plans include: Fire Plan, Hazardous Substance Plan, Vegetation and Integrated Pest Management Plan, Valley Elderberry Longhorn Beetle Plan (VELB), Bald Eagle Management Plan, Transportation System Management Plan, Recreation Management Plan, Visual Plan, and a Small Diversions Decommissioning Plan. Provided is a description of each plan:

Fire Plan. Fire management responsibility in the Project vicinity falls to the USDA-FS and the local fire districts. Mutual aid agreements are in place for the fire responders to assist each other. SCE maintains a Project Fire Plan that covers all Project facilities and identifies SCE's responsibilities regarding prevention, reporting, control, and extinguishing of fires in the vicinity of the four Big Creek ALP Projects.

Hazardous Substance Plans. Federal and State regulations require SCE to prepare plans that identify procedures and measures for the handling, storage, spill prevention and clean up of hazardous material. These plans include Spill Prevention Control and Countermeasure Plans (SPCC) and Hazardous Materials Release Response Plans (Business Plans).

Vegetation and Integrated Pest Management Plan. This Plan covers vegetation management and pesticide use and includes specified avoidance, protection, and mitigation measures to protect sensitive resources that may be affected by the operation and maintenance of the Projects (SCE 2007; Volume 4, SD-G (Book 19)).

Valley Elderberry Longhorn Beetle (VELB) Management Plan. This Plan was developed to address VELB management during on-going operations and maintenance of all Project facilities, roads, trails and recreation features of the four Big Creek ALP Projects and includes specific avoidance, protection, and mitigation measures to protect VELB host plants (SCE 2007; Volume 4, SD-G (Books 19 and 24)).

Bald Eagle Management Plan. This Plan addresses ongoing maintenance and operations of the four Big Creek Projects and their potential impact to bald eagle in the vicinity of the Projects. The Plan includes specific avoidance, protection, and mitigation measures to protect bald eagles (SCE 2007; Volume 4, SD-G (Books 19 and 24)).

Transportation System Management Plan. This Plan describes the transportation system used by SCE to access the Projects facilities to conduct operation and maintenance activities. The Plan addresses road and trail issues related to access, maintenance activities, rehabilitation needs, road use/traffic control measures, and annual consultation. The Plan also describes measures that SCE will implement to minimize or eliminate potential impacts associated with the maintenance and operation of the four Big Creek ALP Projects roads (SCE 2007; Volume 4, SD-G (Books 19 and 24)).

Recreation Management Plan. This Plan identifies the existing recreation facilities and opportunities that are associated with SCE's hydroelectric Projects and proposed measures for continuing or improving recreation opportunities and resources. The Plan identifies the entities responsible for implementing, constructing, operating, and maintaining any existing or proposed measures or facilities (SCE 2007; Volume 4, SD-G (Books 19 and 24)).

Visual Resources Plan. This Plan addresses visual effects on the surrounding landscape of select Project-related facilities through the use of visual screening or color scheme selection. The implementation of this Plan should reduce visual conflicts between select facilities and existing land management goals and uses (SCE 2007; Volume 4, SD-G (Books 19 and 24)).

Small Diversions Decommissioning Plan. This Plan describes the approach for decommissioning six small diversions that are part of the Big Creek Hydroelectric System. The Plan provides a description of: (1) the physical characteristics and location of each of the small diversions; (2) the decommissioning activities, staging areas and equipment to be used; (3) the permitting requirements; and (4) the proposed schedule. The objective of the Plan is to provide the information and details necessary for Commission approval of the small diversion decommissioning and for regulatory agencies to issue any required permits. The removal of these small diversions will reduce conflicts between SCE's Hydro facilities and Wilderness land uses (SCE 2007; Volume 4, SD-G (Books 19 and 24)).

5.2.10.2 Socioeconomics

This section discusses the Project vicinity socioeconomic factors related to the operation of the four Big Creek ALP Projects.

Population and Employment

The nearest sizable population center to the Projects is the City of Fresno, located approximately 40 miles southwest of the Project area. In 2004, the City of Fresno had

an estimated population of 457,160 and Fresno County's population estimated at 865,620. The community of Big Creek, the private ownership portion of the small community next to Big Creek No.1 Powerhouse, company housing and support facilities, is the closest community to the Project. It is primarily made up of Big Creek employees and their families, and retirees and their families. Lakeshore, at Huntington Lake, is the next nearest community to the Project. It has a small year round population that increases significantly during the summer recreation months. Permanent human habitation in the wilderness areas surrounding the Projects is prohibited.

SCE employs area residents for operation and maintenance of all the projects of the Big Creek System. SCE's Northern Hydro Division currently employs about 100 full-time and seven part-time employees. These employees dedicate a portion of their time to the operation and maintenance of the four Big Creek ALP Projects. The majority of these employees are residents of the communities of Big Creek, Shaver Lake, Auberry, and Prather. The operation and maintenance of the four Big Creek ALP Projects has moderately affected population and employment in the vicinity. The continued operation of the four Big Creek ALP Projects will have moderately beneficial population and employment impacts.

Economic Factors

SCE contributes a number of land use fees to federal and local agencies for the operation and maintenance of the entire Big Creek System and its hydroelectric facilities. In 2007, SCE paid in land use fees to the FERC for federal lands within the four Big Creek ALP Projects. Land use fees for each of the four Big Creek ALP Projects were: \$143,245.14 for the Mammoth Pool Project; \$169,487.29 for the Big Creek Nos. 1 and 2 Project; \$180,034.37 for the Big Creek Nos. 2A, 8 and Eastwood Project; and \$52,093.85 for the Big Creek No. 3 Project.

For the 2005 tax year, SCE paid \$3,484,606 in property taxes for the four Big Creek ALP Projects, which was based on the assessed value of the Projects property.

5.2.10.3 Affected Environment

Mammoth Pool Project (FERC Project No. 2085)

Existing Land Use

Mammoth Pool Project, owned and operated by SCE, occupies 2,035.84 acres (under the No Action Alternative) within the SNF in unincorporated portions of Madera and Fresno counties. The Project area straddles the Pineridge Ranger District in the Fresno County and the Bass Lake Ranger District in the Madera County. No state or county owned lands are within the FERC Project boundary. Privately owned lands within the FERC Project boundary are located in the Kinsman Flat area where the Mammoth Pool Powerhouse-Big Creek 3 Transmission Line alignment crosses a private land parcel. Project facilities located within the FERC Project boundary include the hydroelectric Project facilities (dam, reservoir, water conveyance system, powerhouse, and

transmission line), and roads and trails that are maintained by SCE and needed for the operation and maintenance of the Project. Existing project facilities are listed in Table 3.1.2-1 (Section 3.0, Proposed Action and Alternatives).

SCE uses the Project lands for hydroelectric power generation. Mammoth Pool Reservoir, located on the San Joaquin River at a spill elevation of 3,300 feet above mean sea level (msl), is the third largest reservoir in the Big Creek System (BCS) at a usable storage capacity of 119,940 acre-feet (ac-ft). Water for hydroelectric generation is conveyed from the reservoir through the 7.5 mile long Mammoth Power Tunnel to the Mammoth Pool Powerhouse (187 megawatts (MW)). A detailed description of Project facilities and water management is provided in Section 3.1.4.2, Water Management. Electricity generated at the powerhouse is conveyed over the Mammoth Pool Powerhouse–Big Creek 3 Transmission Line to the Big Creek No. 3 Switchyard.

Non-industrial land uses within the FERC Project boundary are recreation-oriented. These include: a boat-in campground, boat launch, and a picnic area at the Mammoth Pool Reservoir. The lands adjacent to the Project area are Forest Service lands and the land uses are primarily natural resource conservation or recreation based. The recreation-related facilities in the vicinity of the Projects include the Mammoth Pool Campground (located adjacent to the northern upstream extent of the reservoir along the San Joaquin River) and the Ansel Adams Wilderness, which was, designated in 1964.

Proposed Project Boundary Modifications

SCE is proposing two Project boundary modifications to include a helicopter landing site and trail along Shakeflat Creek that will provide access to a Project stream gage located on the San Joaquin River. Section 3.1.3.1, Mammoth Pool Project, describes in detail the proposed Project boundary modifications to the Mammoth Pool Project.

Wetlands and Floodplains

The Project area's steep terrain limits the amount of potential wetlands. Except for the streams and forebay, relatively few portions of the Project area are subject to regulation by the U.S. Army Corps of Engineers (USACE). The USACE jurisdiction is limited to areas of the streambed below the high water line and also includes any area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Within the Project vicinity, some potential wetland habitat types have been identified, including wet meadows and riparian floodplain communities. Two meadows are located in the vicinity of Mammoth Pool Reservoir: Logan Meadow and Fuller Meadow. Both meadows are located above the high water line of the reservoir. The meadows are not hydrologically connected to the reservoir and are supported by other upland groundwater and surface water sources. Sparse riparian communities are interspersed along Project stream segments.

Three stream segments are associated with the Mammoth Pool Project:

1. San Joaquin River - Mammoth Pool Dam to Dam 6
2. Rock Creek - Diversion to San Joaquin River
3. Ross Creek - Diversion to San Joaquin River

Floodplain development along these stream segments is limited, due to the boulder/bedrock substrate and steep narrow topography of the canyon through which the river and streams flow (for further descriptions of the geomorphology, (see CAWG 2, Geomorphology, 2003 Technical Study Report (TSR) (SCE 2004; Volume 4, SD-D (Books 11 and 23)). The San Joaquin River is highly confined by towering bedrock walls of the San Joaquin River Canyon, so that any lateral adjustment in planform is restricted. Numerous coarse bars located on this segment of the San Joaquin River segment are sparsely vegetated or lined with younger individuals near the water. This riparian vegetation is supported by the existing minimum instream flows and spills during above normal and wet years (for further descriptions of the riparian resources and impacts, (see Section 5.2.6, Riparian Resources, and CAWG 11, Riparian, 2003 TSR (SCE 2004; Volume 4, SD-D (Books 14 and 23)).

Transportation System

The system of Project roads and trails needed for the operation and maintenance of the Project provides access to four geographic areas: (1) Mammoth Pool Dam and Reservoir; (2) Shakeflat helicopter landing site, trail and stream gage; (3) Mammoth Pool Powerhouse; and (4) Mammoth Pool Powerhouse-Big Creek 3 Transmission Line. The Project-related roads and figures depicting their location are in the Transportation System Management Plan (SCE 2007; Volume 4, SD-G (Books 19 and 24)).

Primary access to the Mammoth Pool Reservoir is provided by Minarets Road (USDA-FS Road No. 4S81), a Madera County road, and USDA-FS Road Nos. 6S25 (Mammoth Pool Road) and 6S76. Mammoth Pool Road provides access to the Mammoth Pool Dam and Spillway, and is maintained by the Forest Service from Minarets Road to the FERC Project boundary at the dam and spillway. USDA-FS Road No. 6S76 provides access to Mammoth Pool Boat ramp and is maintained by the USDA-FS. In cooperation with the California Department of Fish and Game (CDFG), the USDA-FS closes the Mammoth Pool Road to vehicular traffic each year between May 1 and June 15, to protect mule deer during the spring migration season.

Primary access to the Mammoth Pool Powerhouse is provided by USDA-FS Road No. 8S03. USDA-FS Road No. 8S03 is open to public access from Minarets Road (USDA-FS Road No. 4S81) to the San Joaquin River and is maintained by the USDA-FS. At the San Joaquin River crossing, USDA-FS Road No. 8S03 is restricted to public vehicular access by a SCE controlled gate. SCE maintains the road beyond the locked gate.

SCE maintains a number of roads along the Mammoth Pool Powerhouse-Big Creek 3 Transmission Line corridor. These roads include USDA-FS Road Nos. 8S44 and 9S42, and a number of spur roads. Public vehicle access to these roads is restricted and controlled by SCE locked gates.

Big Creek Nos. 1 and 2 (FERC Project No. 2175)

Existing Land Use

The Big Creek Nos. 1 and 2 Project, owned and operated by SCE, occupy 2,078.51 acres (under the No Action Alternative) within the SNF in an unincorporated portion of Fresno County. The Project area is located in the Pineridge Ranger District. No state or county owned lands are within the FERC Project boundary. SCE owns some land parcels located at Huntington Lake and near Big Creek Powerhouse No. 2. The Project boundary includes: Dam 4, Huntington Lake reservoir, a water conveyance system, two powerhouses, and roads and trails that are maintained by SCE and needed for the operation and maintenance of the Project. Existing Project facilities are listed in Table 3.1.2-1 (Section 3.0, Proposed Action and Alternatives).

SCE uses the Project lands for hydroelectric power generation. Huntington Lake, located on Big Creek at a spill elevation of approximately 6,950 feet msl is the fourth largest reservoir in the Big Creek system, at a useable storage capacity of 89,166 ac-ft. Water for hydroelectric generation is conveyed from the lake through the two mile long Tunnel 1 to penstocks connected to Powerhouse No. 1 (66.5 MW) and discharged to Dam 4 Forebay. Water is subsequently conveyed from Dam 4 Forebay through the 4.1 mile long Tunnel No. 2 to penstocks, and finally to Powerhouse No. 2 (83.5 MW). A detailed description of Project facilities and water management in the Project is provided in Section 3.1.4.2, Water Management.

Non-industrial land uses within the Project boundary are recreation-oriented. These include the Eastwood Overlook and Parking Area, the undeveloped Eastwood Overflow Camping Area, and the Huntington Lake East Boat Ramp and Parking Area. Land uses adjacent to the FERC Project boundary are SNF lands and are primarily natural resource conservation or recreation based. The recreation-based lands include seven developed Forest Service campgrounds and four day-use areas that are located around the northern perimeter of Huntington Lake, and immediately north of Huntington Lake is the Kaiser Wilderness Area (designated as a wilderness area in 1976). Other existing land uses include small communities of private residences and vacation homes, private Boy Scout camps, and several commercial business facilities (store, restaurant and marina).

Proposed Project Boundary Modifications

SCE is proposing ten modifications to the FERC Project boundary as described in Section 3.1.3.2, Big Creek No. 1 and 2. Six modifications remove lands from the FERC Project boundary. These modification include removal of: a portion of Rancheria Creek; portion of a right-of-way (ROW) along a USDA-FS road; a communication line ROW;

former company housing areas; a USDA-FS road; and excess lands near Powerhouse 2/2A. Four modifications add lands to the FERC Project boundary. These modifications include addition of: the Eastwood Overflow Campground; the Eastwood Overlook; and two USDA-FS roads.

Wetlands and Floodplains

The Project area's steep terrain limits the amount of potential wetlands. Except for the streams and forebay, relatively few portions of the Project area are subject to regulation by the USACE.

Within the Project vicinity, some potential wetland habitat types have been identified, including wet meadows and riparian floodplain communities. A wet meadow community is located along Big Creek below Huntington Lake within the stream channel floodplain. Several small, isolated wet meadows are located upslope around the perimeter of Huntington Lake at locations where small tributaries flow into the lake. These small meadows are not connected hydraulically to the lake and their source of water is from upslope ground and surface water.

Six stream segments are associated with the Big Creek Nos. 1 and 2 Project:

1. Big Creek - Huntington Lake to Dam 4
2. Big Creek - Dam 4 to Dam 5
3. Balsam Creek - Diversion to Big Creek
4. Adit 8 Creek
5. Ely Creek - Diversion to Big Creek
6. Rancheria Creek below Portal Powerhouse

The majority of these stream segments are steep bedrock and boulder channels, such that minimal floodplain areas are present, except for one 2 mile segment on Big Creek immediately downstream of Huntington Lake and a 500 foot artificially constructed channel on Rancheria Creek that has been widened to approximately 100 feet (for further descriptions of the geomorphology, see CAWG 2, Geomorphology, 2003 TSR (SCE 2004; Volume 4, SD-D (Books 11 and 23))).

- The 2 mile floodplain segment on Big Creek (river miles (RM) 8 to 10) supports a wide riparian corridor (for further descriptions of the riparian resources, see CAWG 11, Riparian, 2003 TSR (SCE 2004; Volume 4, SD-D (Books 14 and 23))). Under existing operations, the riparian community is solely supported by the minimum instream flow release provided by SCE into Big Creek, dam leakage, and local run-off. Spills or high flow releases are very infrequent, such that overbanking connectivity rarely occurs. Historically, these areas along the channel would have been completely inundated for prolonged periods of time during spring run-off.

Riparian and geomorphic resource issues and impacts that have been caused by changes in hydrologic regime are discussed in Section 5.3.4, Geomorphology, and Section 5.3.7, Riparian Resources.

- Below Portal Powerhouse, the channel has been artificially widened, and riparian vegetation has established along it (for further descriptions of the geomorphology and riparian resources and discussion of impacts, see Section 5.3.4, Geomorphology, Section 5.3.7, Riparian Resources, and CAWG 11, Riparian 2003 TSR (SCE 2004; Volume 4, SD-D (Books 14 and 23)). This area is currently supported by flows released from the Ward Tunnel and Portal Powerhouse, which both discharge to Rancheria Creek. No formal jurisdictional wetlands have been delineated in the Project boundary or verified by the USACE.

The Project is not formally operated for flood management purposes. However, in order to coordinate activities, the Friant Water Users consult with SCE during the spring run-off period, so Big Creek operations unnecessarily do not conflict with the operation of Millerton Reservoir downstream in its flood management.

Transportation System

The system of Project roads and trails needed for the operation and maintenance of the Project provide access to two geographic areas: Huntington Lake and the Big Creek Canyon. The Project-related roads and figures depicting their location are in the Transportation System Management Plan (SCE 2007; Volume 4, SD-G (Books 19 and 24)).

Primary access roads to Huntington Lake include State Highway 168 and Huntington Lake Road (M2710 a Fresno County maintained road). Both roads provide access to Huntington Lake from Shaver Lake. Highway 168 climbs-up and crosses Tamarack Ridge and provides access to the east end of Huntington Lake. Huntington Lake Road begins at Highway 168 at Shaver Lake and drops into the Big Creek Canyon, to the community of Big Creek, and continues along the north shore of Huntington Lake. In the Huntington Lake area, SCE maintains a number of roads (USDA-FS Road No. 8S66 and associated spurs) that provide access to Dams 1, 2, 3 and 3A and associated facilities located at the southwestern end of the Huntington Lake.

The community of Big Creek, Powerhouse No. 1 and Powerhouse No. 2 are located in the Big Creek Canyon. SCE maintains a number of roads in the community of Big Creek that provide access to Powerhouse No. 1, Northern Hydro offices, and other various Project support facilities. Access to Project facilities located downstream in Big Creek Canyon is provided by the Canyon Road (USDA-FS Road No. 8S05) which is located off Huntington Lake Road. The Canyon Road is a SCE maintained road that is gated and restricted to public vehicle access. The Canyon Road provides access to Powerhouse No. 2 and associated facilities. SCE also maintains a number of secondary roads off the Canyon Road providing access to ancillary facilities associated with the Project.

Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67)

Existing Land Use

The Big Creek Nos. 2A, 8 and Eastwood Project, owned and operated by SCE, occupies 2,389.54 acres of land (under the No Action Alternative) within the SNF in an unincorporated portion of Fresno County. The Project area is located in the Pineridge Ranger District. No state or county owned lands are within the FERC Project boundary. SCE owns lands within the FERC Project boundary in the vicinity of Shaver Lake and Balsam Meadows Forebay. SCE uses these lands for hydroelectric generation, recreation, timber harvesting, and wildlife management. Portions of SCE's private lands in the Project boundary on the western and southwestern shore of Shaver Lake are designated as "Public Facilities" in the *Fresno County Shaver Lake Community Plan* amended in 1986. The Project boundary includes roads and trails maintained by SCE and needed for the operation and maintenance of the Project. The boundary is comprised of three geographic areas:

1. The Upper Basin area including Florence Lake
2. Shaver Lake and Balsam Meadows Forebay area
3. The lower Big Creek Canyon area, including Big Creek Powerhouse Nos. 2A, 8 and Eastwood

SCE uses the FERC Project No. 67 lands for hydroelectric power generation by diverting water from Florence Lake and various other medium and small back-country diversions into Huntington Lake (a component of Big Creek Nos. 1 and 2 Project) via Ward Tunnel and the Mono-Bear Siphon. From Huntington Lake, water for hydroelectric power generation is routed through a series of tunnels that provide water to the Eastwood Power Station (200 MW), Powerhouse No. 2A (98.5 MW) and Powerhouse No. 8 (64.5 MW). There are two major reservoirs included in the Project-

1. Florence Lake, located on the South Fork San Joaquin River, is the fifth largest reservoir in the Big Creek System at 64,604 ac-ft of useable storage capacity.
2. Shaver Lake, located on Stevenson Creek is the largest reservoir in the Big Creek System, at 135,568 ac-ft of useable storage capacity.

The Project includes the 4.7 mile long 220kV Eastwood Powerstation-Big Creek No. 1 Transmission Line. A detailed description of Project facilities and water management is provided in Section 3.1.4.3, Water Management in the Four Big Creek ALP Projects.

In the Upper Basin area, SCE operates eight small diversions on small tributary streams to the South Fork San Joaquin River. Two of the small diversions, Crater Creek Diversion and Tombstone Creek Diversion, are located within the John Muir Wilderness Area, which surrounds the Florence Lake area. Another two small diversions, North and South Slide Creek diversions, are located within 200 feet of the wilderness area boundary. These four small diversions were constructed in 1945 before the designation

of the wilderness area in 1964. The North Slide Creek, South Slide Creek, Tombstone Creek, and Crater Creek diversions are proposed for decommissioning, according to the Decommissioning Plan described above.

Non-industrial land uses within the FERC Project boundary near Florence Lake are recreation-oriented. The recreation uses within the FERC Project boundary at Florence Lake include a developed campground at Jackass Meadows along the South Fork San Joaquin River downstream of the reservoir, and a day-use area and boat ramp at the lake. Non-industrial land uses adjacent to Florence Lake are mostly oriented towards recreation and wildlife resource management.

In the vicinity of Shaver Lake, the non-industrial land uses within the FERC Project boundary include SCE owned and operated recreation facilities that include a developed campground, day-use area and boat launch at Camp Edison, and developed day-use areas along the lakeshore at Eagle Point and North Shore. A private concessionaire operated facility at Sierra Marina is also within the FERC Project boundary. At Balsam Meadow Forebay, the recreation based non-industrial land use within the FERC Project boundary includes SCE's Balsam Meadow Forebay Day-Use Picnic Area. The land uses adjacent to the FERC Project boundary in the vicinity of Shaver Lake include private residential and commercial in-holdings in the community of Shaver Lake, timber harvest and wildlife management on SCE owned lands, and recreation use at the SNF operated Dorabelle Campground and day-use area. The land uses adjacent to the FERC Project boundary, in the vicinity of Balsam Meadow Forebay, are timber harvest and wildlife management on SCE owned lands, and natural resource management on adjacent SNF lands.

In the vicinity of Big Creek Powerhouse No. 2A, the non-industrial land uses within the FERC Project boundary and on lands adjacent to the boundary, is natural resource management.

Proposed Project Boundary Modifications

SCE is proposing 35 modifications to the FERC Project boundary as described in Section 3.1.3.3, Big Creek No. 2A, 8 and Eastwood. Eight modifications remove excess lands from the FERC Project boundary. These modifications include removal of: excess lands located southwest of Powerhouse No. 2 and 2A, and along the southern side of Rancheria Creek; Eastwood Overflow Camping area; Eastwood Overlook; two USDA FS roads; Chinquapin Diversion piping; and the Florence Lake Day-use Area. Twenty-seven modifications add lands to the FERC Project boundary. These include lands around: eleven Project roads; four foot trails leading to Project facilities, three gaging stations; and nine helicopter landing sites.

Wetlands and Floodplains

The Project area's steep terrain limits the amount of potential wetlands. Except for the streams and forebay, relatively few portions of the Project area are subject to regulation by the USACE.

Within the Project vicinity, several wetland types have been identified, including wet meadows and riparian floodplain communities. Wet meadows are found in the vicinity of Shaver Lake, Balsam Meadows Forebay, Crater Creek, and South Fork San Joaquin River near Mono Hot Springs, Mono Creek, and the North Fork Stevenson Creek. Further descriptions of these resources are provided below and in Section 5.2.3, Geomorphology; Section 5.2.6, Riparian Resources; and CAWG 11, Riparian 2003 TSR (SCE 2004; Volume 4, SD-D (Books 14 and 23)).

There are 16 stream segments associated with the Big Creek Nos. 2A, 8 and Eastwood Project which have been broken into three groups.

Large to medium-sized streams:

1. South Fork San Joaquin River
2. Florence Lake to San Joaquin River
3. Bear Creek - Diversion to South Fork San Joaquin River
4. Mono Creek - Diversion to South Fork San Joaquin River

Upper Basin tributaries:

1. Bolsillo Creek - Diversion to South Fork San Joaquin River
2. Camp 62 Creek - Diversion to South Fork San Joaquin River
3. Chinquapin Creek - Diversion to South Fork San Joaquin River
4. Crater Creek - Diversion to South Fork San Joaquin River
5. North Slide Creek - Diversion to South Fork San Joaquin River
6. South Slide Creek - Diversion to Confluence with North Slide Creek
7. Tombstone Creek - Diversion to South Fork San Joaquin River
8. Hooper Creek - Diversion to South Fork San Joaquin River

Lower Basin tributaries:

1. Balsam Creek - Forebay to Balsam Creek Diversion
2. Big Creek - Dam 5 to San Joaquin River
3. North Fork Stevenson Creek – Tunnel 7 Outlet to Shaver Lake
4. Pitman Creek - Diversion to Big Creek

5. Stevenson Creek - Shaver Lake Dam to San Joaquin River

The majority of these streams have steep, bedrock and boulder channels that support minimal to no floodplain development. Five floodplain areas were identified along these stream segments, as follows:

Large to Medium-Sized Streams

1. Numerous meadows comprise the Jackass Meadow Complex (1.65 miles) on the South Fork San Joaquin River (RM 26.1 to 27.7). The meadow and floodplain vegetation communities are supported by groundwater connectivity of the meadow and the river and from upland groundwater. In addition, inundation of the meadow and floodplain areas periodically occurs during some, but not all, wet years. Historically, inundation likely occurred almost every year during spring run-off. For further descriptions of the geomorphology and riparian resources and discussions of impacts, see Sections 5.2.3, Geomorphology and 5.2.6, Riparian Resources; and CAWG 11, Riparian, 2003 TSR (SCE 2004; Volume 4, SD-D (Books 14 and 23)).
2. Two meadows occur in the vicinity of Mono Hot Springs on the south-side of the South Fork San Joaquin River (0.6 mile between RM 20.2 and 20.8). These meadows historically functioned as terraces, such that they were only rarely inundated by surface flows, and continue to function as terraces today. These meadow communities are supported by upland groundwater and hillside run-off (for further descriptions of the geomorphology and riparian resources and discussions of impacts, see Section 5.2.3, Geomorphology; Section 5.2.6, Riparian Resources; and CAWG 11, Riparian; 2003 TSR (SCE 2004; Volume 4, SD-D (Books 14 and 23)).
3. Floodplain areas are found along 0.7 mile of Mono Creek (RM 2.3 - 2.8 and RM 3.5 - 3.7). The majority of the stream is a fairly steep, boulder-dominated channel that does not support floodplain development. Historically, the floodplains on Mono Creek were annually inundated during spring run-off. Under existing conditions, the floodplains and bars are only inundated during wetter years (for further descriptions of the geomorphology and riparian resources and discussions of impacts, see Section 5.2.3, Geomorphology; Section 5.2.6, Riparian Resources; and CAWG 11, Riparian; 2003 TSR (SCE 2004; Volume 4, SD-D (Books 14 and 23)). Under existing conditions, the vegetation community along the river is supported by minimum instream flows and infrequent high flows during wetter years. In addition, numerous meadows occur along Mono Creek between RM 2.8 and 4.3. These meadows historically were terraces, such that they were rarely inundated by surface flows, and continue to function as terraces under existing operations, see CAWG 11, Riparian; 2002 TSR, (SCE 2004; Volume 4, SD-C (Books 9 and 21)).

Upper Basin Tributaries

4. Hellhole Meadow is located on Crater Creek from RM 0 to 0.4 at the confluence with the South Fork San Joaquin River. Under existing conditions, the diversion captures most of the instream flow, considerably reducing the hydrologic connectivity between the meadow and channel. Historically, this meadow was hydrologically supported by groundwater from the channel, hillside run-off, and high flows during spring run-off (for further descriptions of the geomorphology and riparian resources and discussions of impacts, see Section 5.2.3, Geomorphology; Section 5.2.6, Riparian Resources; and CAWG 11, Riparian; 2003 TSR (SCE 2004; Volume 4, SD-D (Books 14 and 23))).

Lower Basin Tributaries

5. Floodplain areas are found along 0.9 mile of North Fork Stevenson Creek. These areas were created by high flows (1,000 cubic feet per second (cfs) or more, compared to unimpaired annual high flows of approximately 45 cfs) that occurred during historic operations of North Fork Stevenson Creek when SCE used the channel to convey water from Huntington Lake to Shaver Lake prior to the construction of Eastwood Power Project. Under existing conditions, the vegetation community is supported by minimum instream flows, hillslope run-off, and infrequent high flows (for further descriptions of the geomorphology and riparian resources and impacts, see Section 5.2.3, Geomorphology; Section 5.2.6, Riparian Resources; and CAWG 11, Riparian; 2003 TSR (SCE 2004; Volume 4, SD-D (Books 14 and 23))). The majority of the stream is a steep bedrock and boulder channel that does not support floodplain development.

The Project is not formally operated for flood management purposes. However, in order to coordinate activities, the Friant Water Users consult with SCE during the spring run-off period, so Big Creek operations unnecessarily conflict with the operation of Millerton Reservoir downstream in its flood management.

Transportation System

The system of Project roads and trails needed for the operation and maintenance of the Project provides access to three geographic areas:

1. Upper Basin area including Florence Lake;
2. Shaver Lake and Balsam Meadows Forebay area; and
3. Lower Big Creek Canyon, including Powerhouse Nos. 2A, 8 and Eastwood.

The Project-related roads and figures depicting their locations are provided in the Transportation System Management Plan (SCE 2007; Volume 4, SD-G (Books 19 and 24)).

Primary access roads into the Upper Basin area include Kaiser Pass Road (USDA-FS Road No. 5S80) and Florence Lake Road (USDA-FS Road No. 7S01). Both are USDA-FS maintained roads that are open to vehicular travel each year from approximately the end of May until the first snow fall in late October/early November. Kaiser Pass Road begins at the east end of Huntington Lake. At approximately 3 miles northeast of Huntington Lake, Kaiser Pass Road changes from a two lane to a single lane road. Kaiser Pass Road climbs over Kaiser Pass, providing access to the upper basin back-country area and terminates at Lake Thomas A. Edison (a component of the Vermilion Valley Hydroelectric Project (FERC Project No. 2086)). At Camp 62 in the back-country, Kaiser Pass Road intersects with Florence Lake Road (USDA-FS Road No. 7S01). Florence Lake Road is also a single lane road that continues for 7 miles to Florence Lake. SCE vehicles use Kaiser Pass Road and Florence Road during the summer months. Based on the result of the LAND 6, Traffic Circulation Study, completed in support of the ALP (SCE 2004; Volume 4, SD-C (Books 9 and 21)), it is estimated that SCE vehicle use on Kaiser Pass Road accounts for approximately 1.4% of the total vehicle traffic on the road. SCE also uses USDA-FS Road No. 7S65 to access facilities on Hooper Creek in the Florence Lake area, and USDA-FS Road No. 6S83 (a 4-wheel drive route) to access the Bear Diversion facilities. Both roads are SNF maintained roads. SCE maintains a number of spur roads and foot trails to access facilities associated with the Florence Work Camp and the small diversions in the Upper Basin area.

Primary access roads to facilities in the vicinity of Shaver Lake and Balsam Meadows Forebay area include State Highway 168 and Huntington Lake Road. SCE maintains and controls access along a number of secondary roads and associated spur roads on SCE owned lands to access Project facilities including a road along the northeast side of Shaver Lake (USDA-FS Road No. 9S58), and a road to Balsam Meadows Forebay (USDA-FS Road No. 9S32).

Primary access roads to facilities in the Big Creek Canyon associated with Powerhouse Nos. 2A and 8 include the Canyon Road (USDA-FS Road No. 8S05) and a few spur roads. The Canyon Road is closed to public vehicle access and is maintained by SCE.

Big Creek No. 3 (FERC Project No. 120)

Existing Land Use

SCE uses the Project lands for hydroelectric generation. The Big Creek No. 3 Project facilities, owned and operated by SCE, occupy 433.52 acres of land (under the No Action Alternative) within the SNF in unincorporated Fresno County. The Project area is located in the San Joaquin River canyon of the Pineridge Ranger District. No state or county owned lands are within the FERC Project boundary. Private lands within the Project boundary, owned and managed by SCE, are located near Big Creek Powerhouse No. 3. The Project boundary includes areas in the vicinity of Dam No. 6 Forebay and Big Creek Powerhouse No. 3. The boundary includes roads and trails that are maintained by SCE and needed for the operation and maintenance of the Project.

Dam No. 6, located on the San Joaquin River at a spill elevation of 2,230 feet msl, forms a 993 ac-ft. forebay. Water for hydroelectric generation is conveyed from the forebay through the 5.3 mile long Tunnel 3 to the Big Creek Powerhouse No. 3 (181.9 MW). A detailed description on water management in the Project is provided in Section 3.1.4.2, Water Management.

The community of Big Creek 3, located adjacent to Powerhouse No. 3, includes administrative offices, maintenance shops and facilities that support the hydroelectric operations in the lower Canyon Area. The community also includes three employee-housing structures. The lands associated with these support facilities and employee housing remain in the current FERC Project boundary.

Non-industrial land uses in the Project boundary are open space-oriented. Lands in the Project boundary adjacent to Powerhouse No. 3 Forebay are SNF lands and are managed primarily for open space and natural resources.

Proposed Project Boundary Modifications

SCE is proposing two modifications that remove lands from the FERC Project boundary. These modifications include removal of excess lands around the perimeter of Dam 6 Forebay, and excess unused lands in the vicinity of the Big Creek No. 3 community. Proposed Project boundary modifications to the Big Creek No. 3 Project are described in detail in Section 3.1.3.4, Big Creek No. 3 Project.

Wetlands and Floodplains

The Project area's steep terrain limits the amount of potential wetlands. Except for the stream and forebay, relatively few portions of the Project area are subject to regulation by the USACE.

One stream segment is associated with the Big Creek No. 3 Project, including the San Joaquin River - Dam 6 to Redinger. Floodplain development along this 5.7 mile stream segment is limited, due to the boulder/bedrock substrate and steep narrow topography of the canyon through which the river flows (for further descriptions of geomorphic resources, see CAWG 2, Geomorphology, 2003 TSR (SCE 2004; Volume 4, SD-D (Books 11 and 23))). The San Joaquin River is highly confined by the towering bedrock walls of the San Joaquin River Canyon, so that any lateral adjustment in planform is restricted. A few coarse bars located on this San Joaquin River segment are sparsely vegetated. This riparian vegetation is supported by the existing minimum instream flows and spills during above normal and wet years (for further discussion of riparian resources, see Section 5.2.6, Riparian Resources and CAWG 11, Riparian, 2003 TSR (SCE 2004; Volume 4, SD-D (Books 14 and 23))).

The Project has no significant storage capability and is not operated for flood management purposes.

Transportation System

The system of Project roads and trails needed for the operation and maintenance of the Project provides access to two geographic areas:

1. Dam 6 Forebay
2. Big Creek Powerhouse No. 3

The Project-related roads, and figures depicting their locations, are provided in the Transportation System Management Plan (SCE 2007; Volume 4, SD-G (Books 19 and 24)).

The primary access road to Project facilities in the vicinity of Dam 6 is the Canyon Road (USDA-FS Road No. 8S05). The Canyon Road is closed to public vehicle access and is gated and maintained by SCE. There are three ways to access the Dam 6 Forebay: (1) from the Northern Hydro offices area by taking Huntington Lake Road and then the Canyon Road along Big Creek to the San Joaquin River; (2) from the Powerhouse No. 3 area, by traveling north on the Canyon Road along the San Joaquin River; or (3) from the Mammoth Pool Powerhouse area by traveling south on USDA-FS Road No. 8S03, along the San Joaquin River.

Primary access to Powerhouse No. 3 and the Big Creek No. 3 community from the Northern Hydro offices is by Jose Basin Road (a Fresno County maintained road) through the community of Auberry, or by the Canyon Road (USDA-FS Road No. 8S05) from Dam 6 Forebay. SCE also uses and maintains a number of spur roads in the Big Creek No. 3 area.

5.2.10.4 Impacts of Proposed Action

Consistency with Land Management Plans

The Fresno or Madera general plans do not include specific policies or guidelines regarding SCE hydroelectric facilities. Both general plans were recently revised and reflect the existing condition, with the facilities as they exist today. The Proposed Action does not propose any changes in the planned land use in the Project vicinities. The four Big Creek ALP Projects facilities represent an established land use in the Project vicinities and do not conflict with any other developed or planned use. SCE's hydroelectric facilities present no land use compatibility issues or policy conflicts with county plans in Fresno or Madera counties.

The Proposed Action includes a variety of mitigation and enhancement measures developed to protect and enhance environmental resources in accordance with the goals and guidelines contained in the Forest Service Land and Resource Management Plan (LRMP) and the 2001 and 2004 Sierra Nevada Forest Plan Amendments. Accordingly, continued operation and maintenance of the four Big Creek ALP Projects conforms to the guidelines and goals contained in the LRMP, and the 2001 and 2004 Sierra Nevada Forest Plan Amendments.

Under the Proposed Action, SCE recommends decommissioning six small diversions, including:

1. Tombstone Creek Diversion
2. North Slide Creek Diversion
3. South Slide Creek Diversion
4. Crater Creek Diversion
5. Snow Slide Creek Domestic Diversion
6. Pitman Creek Domestic Diversion

Tombstone Creek and Crater Creek diversions are located within the John Muir Wilderness Area and the North and South Slide Creek diversions are located adjacent to the wilderness, within 200 feet of the wilderness boundary. These diversions were constructed prior to the designation of the wilderness area. The decommissioning of these diversions will result in an increase in the wilderness values in the vicinity of Big Creek Nos. 2A, 8 and Eastwood Project. The decommissioning presents no land use compatibility issues with the Forest Service LRMP or policy conflicts with Fresno or Madera County Plans, see Small Diversions Decommissioning Plan, (SCE 2007; Volume 4, SD-G (Books 19 and 24)).

Socioeconomics

For the 2005 tax year, SCE paid \$3,484,606 in property taxes for the four Big Creek ALP Projects, which was based on the assessed value of the Projects property. In relation to the limited amount of agency services provided in the Project area, and consequently the limited agency expenditures, the Project fees and taxes result in a net economic benefit to these agencies.

SCE employs area residents for operation and maintenance of all the projects of the Big Creek System. SCE's Northern Hydro Region currently employs about 100 full-time and seven part-time employees. The majority of these employees are residents of the communities of Big Creek, Shaver Lake, Auberry, and Prather. Under the Proposed Action, SCE employment needs for the operation and maintenance of the Project facilities will increase moderately (an increase of approximately twenty full-time employees), and will have a beneficial impact on population and employment in the nearby communities.

Under the Proposed Action, developed recreation facilities will be rehabilitated during the term of the new Project License. The rehabilitation of these facilities will contribute to the local economy by providing continued revenue derived from recreation to the SNF and local businesses, as well as some seasonal employment to local residents, and through the lodging and food expenditures of construction crews working in the vicinity. The proposed schedule for rehabilitation activities is proposed over a 30-year period,

thereby contributing to the local economy and resulting in a net benefit to the local economy for extended time periods when rehabilitation activities are taking place.

The Proposed Action will maintain the existing character of the recreation resources. Recreation facility carrying capacity will not greatly increase under the Proposed Action and recreation use levels are anticipated to remain consistent with past use levels. Therefore, it is not anticipated that contributions to the local economy will greatly increase, based on recreational use patterns.

Project Boundary Modifications

The Proposed Action includes proposed boundary modifications to remove lands not needed, and add lands necessary for the safe and efficient operation of the hydroelectric Projects. The proposed boundary modifications conform to the requirements of 18 CFR 4.51(b) Exhibit A, which states that land included within a Project's boundary must be related in some way to Project purposes. These purposes may include protection of environmental resources. Incorporating lands into a Project boundary allows the FERC to condition a license to protect, mitigate, and enhance environmental resources, while ensuring that protective measures would not be compromised by conflicting management objectives of other landowners.

Transportation System Management

Under the Proposed Action, SCE will maintain Project roads needed for the safe and efficient operation of the Project. SCE has prepared a Transportation System Management Plan, which outlines responsibilities and procedures for the maintenance of Project roads and trails (SCE 2007; Volume 4, SD-G (Books 19 and 24)). The Plan addresses transportation system management issues as they relate to the roads and trails used to operate and maintain the four Big Creek ALP Projects. The Plan describes measures that SCE will implement to minimize or eliminate potential impacts to the environment that may occur as the result of road maintenance or improvements associated with the operation of the four Big Creek ALP Projects. The implementation of the environmental protection measures identified in the Plan will result in a benefit to the four Projects.

5.2.10.5 Unavoidable Adverse Impacts

No unavoidable adverse impacts to land resources under the Proposed Action were found.