

83 FERC ¶ 62,241

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSIONSouthern California Edison
Company

Project No. 1930-014

ORDER ISSUING NEW LICENSE
(Major Project)

JUN 16 1998

On May 2, 1994, Southern California Edison Company (Edison) filed an application, pursuant to Sections 4(e) and 15 of the Federal Power Act (FPA), 1/ for a new license authorizing the continued operation and maintenance of the 26.3-megawatt (MW) Kern River No. 1 Hydroelectric Project No. 1930 (Kern River No. 1 Project), located on the Kern River in Kern County, California. The project occupies about 140 acres of the Sequoia National Forest. Edison proposes no new capacity or construction.

The Commission issued the original license for the Kern River No. 1 Project on August 9, 1946. 2/ That license expired on June 1, 1996, and since then Edison has operated the project pursuant to successive annual licenses pending the disposition of its application for a new license. For the reasons discussed below, I will issue a new license to Edison for the Kern River No. 1 Project.

I. BACKGROUND

Notice of the application was published on January 3, 1995. 3/ Kern River Outfitters (KRO) 4/ and American Whitewater Affiliation (AWA) filed an early joint motion to intervene on August 29, 1994, which was automatically granted pursuant to the Commission's regulations. 5/ The Cities of Anaheim, Riverside, Banning, Colton, and Azusa, California (Cities) filed a timely joint motion to intervene on March 6, 1995, which was automatically granted. Late motions to intervene were filed by

-
- 1/ 16 U.S.C. §§ 797(e), 808.
 - 2/ The effective date of the license was May 1, 1946; 5 FPC 689.
 - 3/ 60 Fed. Reg. 5379 (January 27, 1995).
 - 4/ Kern River Outfitters is an ad hoc organization of the following four commercial rafting companies: Chuck Richards' Whitewater, Outdoor Adventures, Kern River Tours, and Whitewater Voyages.
 - 5/ 18 C.F.R. § 385.214 (1996).

FERC - DOCKETED

JUN 16 1998

980617-0277-3

Project No. 1990-014

-2-

Friends of the River (FOR) and Kern River Alliance (KRA) on August 28, 1995, and January 16, 1996, respectively. The respective motions were granted on December 1, 1995, and February 12, 1996.

In their motions, KRO, AWA, and KRA express concerns regarding the amount and timing of water releases and river access needs for whitewater recreation (discussed in detail in Section IX of this order). The Cities seek a sharing with Edison of the output of the Kern River No. 1 Project. FOR believe that Edison needs neither the capacity nor energy generated from the project, and that decommissioning and cost of the environmental externalities that could be mitigated by decommissioning should be seriously considered.

The Commission issued a public notice on September 11, 1996, indicating the project was ready for environmental analysis and soliciting comments, recommendations, and terms and conditions. Comments, recommendations, and terms and conditions were received from the U.S. Forest Service (FS) and jointly from FOR and AWA.

A draft Environmental Assessment (EA), prepared jointly by the Commission and the U.S. Forest Service, Sequoia National Forest, 6/ was issued on July 31, 1997. The draft EA recommended that the project be licensed as proposed by Edison, with mandatory section 4(e) and 401 water quality certification conditions and some additional staff recommendations. Comments on the draft EA were filed by the North Kern Water Storage District; jointly by Friends of the River, Kern River Outfitters, Kern Valley Chamber of Commerce, Kern Valley Community Consensus Council, and Sierra Club Kern-Kaweah Chapter; Southern Sierra Fat Tire Association; Edison; San Joaquin Valley Unified Air Pollution Control District; County of Kern Planning Department; Kern River Watermaster; Kern River Alliance; and 63 individuals. Staff addressed these comments in the final EA (specific responses to these comments are included in Appendix B and C of the EA). The final EA was issued on March 19, 1998, and is incorporated by reference in this order. Background information, analysis of impacts, and the basis for a finding of no significant impact on the environment are contained in the final EA.

By letters dated April 22, 1998, and April 30, 1998, Edison and FOR, respectively, filed unsolicited comments on the final EA.

All comments received from interested agencies, organizations, and individuals on both the draft and final EAs

6/ The Forest Service, Sequoia National Forest, is a cooperating agency on the EA.

Project No. 1930-014

-3-

have been fully considered in determining whether, or under what conditions, to issue this license.

II. PROJECT DESCRIPTION

The Kern River No. 1 Project consists of: (1) a 29-foot-high, 204-foot-long, concrete overflow diversion dam (Democrat dam) with crest elevation at 1,912.7 feet mean sea level, impounding a 27-acre pond; (2) a gated intake structure with trash racks at the left abutment; (3) a water conduit consisting of 42,884 feet of tunnel; a 104-foot-long, 20-foot-wide, concrete sandbox at the tunnel exit; 390 feet of rectangular flume; 904 feet of Lennon flume on steel structure; and 612 feet of arched-concrete conduit; (4) a 45-foot-long, 33-foot-wide, 11-foot-deep forebay; (5) a 1,693-foot-long buried penstock, varying in diameter from 108 inches at the intake to 27 inches at the end of the header at the powerhouse; (6) a 170-foot-long, 71-foot-wide, reinforced concrete powerhouse containing four Pelton-type generating units with a total installed capacity of 26.3 MW; (7) a rectangular tailrace that discharges flows over a weir section into the Kern River; (8) a 1.9-mile-long, 66-kilovolt transmission line tying into Edison's transmission system; and (9) appurtenant facilities. There is about a 10.2-mile-long bypassed reach of the Kern River between Democrat Dam and the project tailrace. The applicant proposes to continue to operate the project in a run-of-river mode.

III. APPLICANT'S PLANS AND CAPABILITIES

In accordance with Sections 10(a)(2)(C) and 15(a) of the FPA, 7/ staff evaluated Edison's record as a licensee with respect to the following: (A) consumption improvement program; (B) compliance history and ability to comply with the new license; (C) safe management, operation, and maintenance of the project; (D) ability to provide efficient and reliable electric service; (E) need for power; (F) transmission services; (G) cost effectiveness of plans; and (H) actions affecting the public. I accept the staff's conclusion in each of these areas.

Here are staff's findings:

A. Consumption Improvement Program

Edison's conservation programs 8/ demonstrate progress in implementing energy management measures for both non-residential and residential customers, including low-income, senior citizens,

7/ 16 U.S.C. §§ 803 and 808.

8/ See Exhibit H(a)-6 in Edison's license application, April 1994.

Project No. 1930-014

-4-

disabled, and non-English speaking customers.

Edison has filed two documents with the Public Utilities Commission of California: Demand-Side Management Annual Program Summary Report (March 1992) and Energy Management Programs (April 1991). These reports document Edison's efforts and progress made to conserve electricity and promote energy conservation by its customers.

Staff concluded that Edison's efforts have brought about significant improvements in electricity consumption efficiency and that Edison has in place an adequate electricity consumption improvement program.

B. Compliance History and Ability to Comply with the New License

Staff reviewed Edison's compliance with the terms and conditions of the existing license. Staff found that Edison's overall record of making timely filings and compliance with its license is satisfactory and conclude that Edison has the ability to comply with the conditions of a new license and of orders issued thereunder.

C. Safe Management, Operation, and Maintenance of the Project

Staff reviewed Edison's record of management, operation and maintenance of the Kern River No. 1 Project pursuant to project safety. Staff found that the dam and other project works are safe and that the licensee's record of managing, operating, and maintaining these facilities supports the decision to issue a license.

D. Ability to Provide Efficient and Reliable Service

To increase project equipment reliability, Edison has either replaced or plans to replace in the near future the stator iron and windings in all four project generators. Edison has no plans to further increase capacity or generation at the project.

Edison coordinates all of its generation facilities through an operations center to maximize production at minimal economic and environmental cost. The Kern River No. 1 powerhouse is operated semi-automatically, with alarms connected to the Kern River No. 3 powerhouse which is attended 24 hours a day. Because the Kern River No. 1 Project operates in a run-of-river mode on irrigation flow releases made from Lake Isabella, Edison does not need to coordinate its operation with any upstream or downstream water resources projects other than to notify downstream water resource projects when an emergency shut down becomes necessary.

Over the five-year period, 1989 to 1994, the project lost 2,437 MWh of energy due to unscheduled outages. Over half of

Project No. 1930-014

-5-

this loss occurred over a 5-day period of project shut down caused by a wall collapse in one of the project tunnels. The average annual energy production for this project is 178,585 MWh based on the 15-year period, 1977 through 1992.

Staff found that Edison has operated the project in an efficient manner within the constraints of the existing license and can continue to provide efficient and reliable electric service in the future.

E. Need for Power

Edison is a public utility serving about 4.2 million customers in an area of about 50,000 square miles in southern California, excluding the city of Los Angeles. This area includes some 800 cities and communities and a population of about 11 million people. Edison has owned and operated the Kern River No. 1 Project since 1907. The project has been serving a portion of the power requirements of Edison's customers for a continuous period of nearly 90 years. The project accounts for 24.8 MW of Edison's total hydroelectric resources of 1,153.3 MW.

If a new license is not issued for the project, Edison would need to replace the project's capacity and average annual generation of 179 gigawatthours (GWh). Over the short term (up to 5 years), generation from existing gas-fired units or power purchases could be an alternative to the project's dependable capacity and energy production. If generation from Edison's oil-fired and gas-fired units currently held in standby reserve were to provide needed replacement energy and capacity, the schedule for returning these units to service would have to be advanced, requiring significant capital investments.

The Kern River No. 1 Project displaces oil-fired and gas-fired energy, providing an average annual savings equivalent to nearly 300,000 barrels of oil. Replacement of the project by fossil-fired generation would increase air pollutant emissions in the South Coast Air Basin, where most of Edison's oil and gas units are located. By offsetting the need to produce 179 GWh of energy annually from such generation, the Kern River No. 1 Project reduces direct air emissions in the Los Angeles area.

In addition to the need for project power to serve Edison's customer load, the Kern River No. 1 Project and its associated transmission facilities is needed to provide voltage support when transmission line outages occur on Edison's Cummings or Gorman lines. Without the project, Edison would need to construct additional transmission facilities.

Besides looking at Edison's need, staff also looked at the regional need for power. The electricity generated from the project would benefit the region by providing a portion of the

Project No. 1930-014

-6-

needed regional power. In its 1996 report, the Western Systems Coordinating Council shows that the utilities in the California-Southern Nevada area plan to add over 2,500 MW of capacity to the system over the 10-year planning period (1995-2005).

As licensed, the project will continue to meet part of Edison's needs and a small part of the region's needs. In addition the project will continue to displace fossil-fueled electric power generation the regional utilities now use, and thereby conserve nonrenewable fossil fuels and reduce the emission of noxious byproducts caused by the combustion of fossil fuels.

F. Transmission Services

Project generation provides voltage support for local loads of about 30 MW when line outages occur in a 100-mile-long transmission line serving the Cummings and Gorman areas. Removal of project generation would require Edison to construct new transmission lines or other facilities to avoid interruption of service to these areas. Edison estimates the cost of these facilities would exceed \$20 million.

There are no other transmission lines associated with the project in the area and Edison proposes no modifications to the transmission system.

Staff concluded that Edison's transmission service is sufficient for the project and that no changes are necessary at this time.

G. Cost Effectiveness of Plans

Edison has no plans for additional facilities or project modifications, other than operational improvements, and wildlife, recreational, aesthetic, and cultural resource enhancements. Staff found that the project, as presently configured and as operated according to this order consistent with environmental considerations, fully develops the economical hydropower potential of the site in a cost-effective manner.

H. Actions Affecting the Public

Environmental enhancement measures and recreation improvements included in the license will generally improve environmental quality, particularly for aquatic and wildlife resources, and will have a beneficial affect on public use of project facilities for recreational purposes.

Project No. 1930-014

-7-

IV. WATER QUALITY CERTIFICATION

Under Section 401(a)(1) of the Clean Water Act, 9/ the Commission may not issue a license for a hydropower project unless the relevant state agency has either issued a water quality certification for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year. 10/

On April 26, 1994, Edison applied to the California State Water Resources Control Board (Cal. Water Board) for water quality certification. The Cal. Water Board received the certification request on May 2, 1994. On May 1, 1995, the Cal. Water Board issued certification for the project. On December 2, 1997, Edison submitted a petition for reconsideration of the certification. The Cal. Water Board issued a revised Section 401 certification on January 12, 1998. 11/

The certification contains conditions that require Edison to implement a five-year water quality monitoring program in order to ensure that water temperature objectives for the Tulare Lake Basin Water Quality Control Plan continue to be met, to prevent pollutants and other nuisance materials from entering the surface waters, and to coordinate with the California Fish and Game and take reasonable protection measures during any project-related dewatering activities. Article 408 requires Edison to file a schedule for conducting the water temperature study plan and reserving the Commission's authority to modify project operation to achieve the state's temperature objective for protection of the COLD water beneficial use of the project's bypassed reach. 12/

9/ 33 U.S.C. § 1341(a)(1).

10/ Section 401(a)(1) requires an applicant for a federal license or permit to conduct any activity that may result in any discharge into navigable waters to obtain from the state in which the discharge originates certification that any such discharge will comply with applicable water quality standards.

11/ See Appendix A to this order.

12/ In their April 22, 1998, letter, Edison states that the final EA focuses exclusively on cold water fish habitat and that a specific numeric water temperature criterion would be both inappropriate and incompatible with the Tulare Lake Basin Water Quality Control Plan and the 401 Certification. The final EA (see EA at 11-13) explicitly states the January 12, 1998, water quality certification conditions. The final EA also describes both the cold and warm water fishery in

Project No. 1030-014

-8-

V. SECTION 4(e) CONDITIONS

Section 4(e) of the FPA 13/ requires that Commission licenses for projects located within United States reservations must include all conditions that the Secretary of the department under whose supervision the reservation falls shall deem necessary for the adequate protection and utilization of such reservation. A portion of the Kern River No. 1 Project is located in the Sequoia National Forest, which is under the supervision of the Forest Service.

By letter dated April 29, 1998, the Forest Service provided its final Section 4(e) conditions. 14/ These conditions are included in the license pursuant to ordering paragraph (D) and Appendix B of this order. 15/

the bypassed reach (see EA at 23-24) and the frequency that cold water conditions are met (see EA at 21-22). Further staff does not recommend in the final EA, nor does this order require, that a specific temperature be maintained.

13/ 16 U.S.C. § 797(e).

14/ Forest Service Condition 28 would prohibit a variety of discriminatory employment practices by Edison under Title VI of the Civil Rights Act of 1964. I question whether this condition bears any relationship to the adequate protection and utilization of the reservation, nor does the Commission have the authority to enforce that law. See NAACP v. FPC, 425 U.S. 662 (1975). However, the Supreme Court, in Escondido Mutual Water Co. v. LaJolla Band of Mission Indians, 466 U.S. 765, 777-78, n.21 (1984), held that when the Secretary proposes conditions which the Commission believes to be unreasonable, the Commission may either decline to issue the license or issue the license with the conditions and explain its objections, thereby leaving the court of appeals the final determination of reasonableness.

15/ In their April 22, 1998, letter, Edison requested the Forest Service eliminate the additional enhancement measures at the Upper Richbar Day Use Area (a second accessible, double unit, sweet smelling toilet) not agreed to by Edison (see Forest Service Condition No. 5), because the Forest Service failed to show why this extra enhancement is necessary to protect and use the Forest and that any affect is not project induced. Absent this, Edison requested the Commission license acknowledge the lack of evidence to support the need for the extra facility.

The condition is included in this license in accordance with
(continued...)

Project No. 1930-014

-9-

The Forest Service's Decision Notice on the Section 4(e) conditions is subject to appeal under its own administrative decision making process. 16/ This license is being issued before the Forest Service appeals process is completed. Consequently, any valid revisions to the Section 4(e) conditions included in this license that result from the administrative appeals that may come before the Forest Service will be incorporated in the license. Upon the submittal of such provisions by the Forest Service, the Commission will issue an order amending the license. 17/ The licensee will then have the opportunity to request rehearing, and thereafter file for court review, of such revisions. 18/

VI. THREATENED AND ENDANGERED SPECIES

Section 7(a) of the Endangered Species Act of 1973 (ESA) 19/ requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of designated critical habitat. Based on distribution, habitat requirements, and site survey results, staff determined that the endangered Bakersfield cactus, endangered peregrine falcon, threatened bald eagle, and threatened valley elderberry longhorn beetle are federally-listed species that may find suitable habitat in the vicinity of the Kern River No. 1 Project. The staff's EA concluded that

15/ (...continued)

the Supreme Court decision, in Escondido Mutual Water Co. v. LaJolla Band of Mission Indians, 466 U.S. 765, 777-78, n.21 (1984) (see footnote 14). Regarding the support for this facility, the final EA, jointly supported by Commission and Forest Service staff, adequately describes the reasons for requiring the additional facility: project operations can directly affect the recreational experience at these facilities which are at or exceeding capacity; the recommended facilities would substantially improve public use of the area and they would improve access for individuals with disabilities; they would help attain Forest Service recreation management objectives; and they would ensure continued benefit of the recreational facilities throughout the license term (see EA at 52 and 74).

16/ 36 CFR 215.

17/ See Ordering Paragraph (D) below.

18/ See Escondido Mutual Water Co. v. LaJolla Band of Mission Indians, 466 U.S. 765 (1984).

19/ 16 U.S.C. § 1536(a).

Project No. 1930-014

-10-

continued project operation and maintenance, with staff's recommended mitigation measures, including the requirement to prepare a biological evaluation prior to any land-disturbing activities (Forest Service Condition 11), would not affect these species. 20/ By letter dated October 1, 1997, FWS determined that the project is not likely to adversely affect any federally listed species and that no further action pursuant to the Endangered Species Act of 1973, as amended, is necessary. I concur.

VII. RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES

Section 10(j)(1) of the FPA 21/ requires the Commission, when issuing a license, to include license conditions, based on recommendations of federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act, 22/ to "adequately and equitably protect, mitigate damages to, and enhance, fish and wildlife (including related spawning grounds and habitat)" affected by the project. No agency submitted conditions pursuant to Section 10(j) of the FPA.

VIII. WILD AND SCENIC RIVER SYSTEM

The Wild and Scenic Rivers Act 23/ prohibits the Commission from licensing any hydroelectric project that is on or directly affects rivers Congress has designated for either inclusion in the Wild and Scenic Rivers System or study for potential inclusion in the System (study rivers). The Forest Service has determined that the lower Kern River, from Isabella dam to the canyon mouth above Bakersfield, meets Wild and Scenic eligibility requirements and, if found suitable, would be an appropriate addition to the National River System. The reach between Democrat dam and the National Forest boundary (Segment 3), where the project is located, was determined to be eligible as a Recreation River because of its remarkable wildlife, scenic, and recreation values.

The criteria for Recreation River classification includes existing impoundments and diversions, as long as the waterway remains generally natural and riverine in appearance. Staff concluded that none of the alternatives analyzed in this EA include proposals, such as constructing new impoundments or

20/ See EA section V.C.4.

21/ 16 U.S.C. § 803(j)(1).

22/ 16 U.S.C. § 661 et seq.

23/ 16 U.S.C. §§ 1271-87.

Project No. 1930-014

- 11 -

reducing flows in the bypassed reach, that would detract from the current condition and the outstanding remarkable values on which the Forest Service determined the eligibility of the lower Kern River. Thus, issuing a new license for the project would not affect the river's eligibility for Wild and Scenic River status, nor, would additional measures be necessary to mitigate effects on outstanding remarkable values. I concur.

IX. INTERVENOR'S ISSUES

A. Whitewater Recreation

The record in this proceeding contains extensive information, comments, analysis, and discussion of whitewater recreation, specifically whitewater boating flows, access improvements, and flow information concerns. 24/ As stated in the EA, the Kern River is a regionally important recreation resource because it provides high quality whitewater opportunities for residents of Southern California and the San Joaquin Valley. It is also important to the local economy because of the tourist spending and jobs associated with boating opportunities.

Friends of the River and American Whitewater Affiliation (Friends) recommend that Edison provide a set schedule of 14 days of augmented flows of 1,250 to 2,350 cfs on weekends, holidays, and special recreation dates from June through August during the hours of 10 a.m. to 7 p.m. The Forest Service doesn't recommend any whitewater flow augmentation. No other agency has recommended whitewater boating flows or access improvements. In their comments on the draft EA, the North Kern Water Storage District (Kern Water Storage District) strongly opposed any re-regulation of flows to accommodate recreationists (letter from C.H. Williams, Engineer-Manager, North Kern Water Storage District, Bakersfield, California, August 21, 1997).

Edison doesn't propose any additional flow for whitewater boating. Edison believes that sufficient flows are available. Edison also contends that because it has control over a relatively small amount of water compared to the large releases from Lake Isabella, the resulting unpredictability of releases from Lake Isabella would mean that augmented flows would be set on a very short time scale, and would not be useful for boaters planning a trip.

In the EA, staff concluded from its review of 20 years of flow records and the results of a whitewater boating study that was conducted with the participation and review of Friends and

24/ See, EA at 52-60, 68, 69, 74-76, and attached letters of comment and responses thereto in Appendices B and C.

Project No. 1930-014

-12-

others, that ample flows for whitewater boating are available for much of the boating season, that present use of the project bypassed reach is low even when ample flows for whitewater boating are available, and that increasing flows for whitewater boating could reduce the recreational experiences for other activities such as swimming, fishing, and recreational mining. 25/

In their April 30, 1998, comments on the FEA, FOR says it recognizes that the Kern River No. 1 license cannot mandate Lake Isabella releases, then goes on to reiterate its recommendation of adding days of "scheduled augmented optimum flows". As staff acknowledge in the final EA, the licensee can only augment flows by 412 cfs to reach a desired flow level when available from Lake Isabella releases. 26/ If the licensee cannot control the releases that produce the desired flows at the project diversion, it has a very limited ability to "schedule" optimum flows in the project bypassed reach. Even if Edison scheduled specific days when it would shut down the Project and direct the entire 412 cfs project flow to the bypassed reach, this would not insure the occurrence of optimum whitewater flows in the range of 700 to 1,250 cfs. The licensee has no way to predict in advance what the flow released from Isabella will be and, therefore, cannot be required to "schedule" specific flows in advance. FOR says that

25/ As stated by staff in the EA at 55-57:

We believe that the available data indicates that current flow conditions allow for a reasonable balance for all the recreation users. On average, "suitable" and "optimum" whitewater boating conditions are available 64 (59 days) and 55 (51 days) percent of the time between June and August, respectively; and 48 (73 days) and 41 (62 days) percent of the time between June and October, respectively. Flows of 1,250 cfs, are available, on average, 11 of the 14 days recommended by FOR/AWA, or about 45 percent of all weekend days during June through August. In contrast, flows (100-300 cfs) that might be desired by other recreational users are present about 9 percent (8 days) and 10 percent (15 days) of the time between June and August and June and October, respectively. Given the existing annual use of about 25 to 100 visits and the availability of about 120 usable days a year (WRC-Environmental 1996), it appears that existing whitewater boating use is not significantly limited or constrained by the project's present operation.

26/ See EA, Appendix B at B-10 and B-11.

Project No. 1930-014

-13-

if additional flows are not provided, whitewater boating cannot develop further on the bypassed reach. From the analysis in the EA, it is apparent that, despite the frequent occurrence of suitable whitewater boating flows under existing conditions, whitewater boating use is minimal and not presently constrained by insufficient flows.

Based on my review of the facts in this case, I agree with staff that changes in operation to provide additional whitewater boating flows are not warranted at this time.

Staff, however, also acknowledge that whitewater boating use may increase in the future as knowledge of the resource becomes more widely known and as access is improved. 27/ Article 410 requires Edison to provide a mechanism to inform the public of flow levels in the bypassed reach. This will help all users plan their activities in the area.

To further improve recreation in the project reach and to help offset project effects on available flows, Article 411 requires Edison to prepare an access improvement plan that would assess and implement, where feasible, safe access improvements in the project bypassed reach. I agree with staff that specific recommendations for access improvements cannot be made at this time because of various unknown factors that would influence such a decision, including traffic and pedestrian safety, protected species, competing interests of various users, Forest Service land management objectives, and cost. Developing the access improvement plan will provide a means to base a more informed decision on safe and effective access improvements that will benefit the various users and the resources.

In their April 22, 1998, letter, Edison argues that access improvements are not appropriate as a flow-related mitigation measure because no evidence has been provided regarding the severity of project effects on recreation experiences. Edison also argues that to consider access improvements as an enhancement measure is inappropriate in the context of electric utility deregulation in California because such measures may make the project uneconomic and uncompetitive.

27/ The whitewater boating study attributed the low use to the previous belief by boaters that the Forest Service closed this portion of the river to boating, to the level of expertise needed to run many of the rapids, and to limited access. Friends believe that as the word of this resource continues to spread and as the river becomes easier to use (permits, access and river descriptions), its usage will likewise increase (letter from Richard Bowers, AWA, August 30, 1996).

Project No. 1930-014

-14-

The Commission must fully evaluate the recreational resources of all projects under federal license and the ultimate development of these resources, consistent with the needs of the area. The Commission expects licensees to develop suitable public recreational facilities upon project lands and waters and to make provisions for adequate public access to such project facilities and waters. 28/ A desire for better access has been expressed by numerous whitewater boating enthusiasts. 29/ Staff found that access improvements would have definite value in meeting recreation needs in the project reach, if such facilities can be provided in a manner that ensures public safety and appropriate land stewardship. Staff determined that access problems created by topography and the sinuosity of Highway 178, which parallels the project bypassed reach, may be limiting use of the project bypassed reach by whitewater boaters, that other recreational users would also benefit from such access improvements, and that such improvements would help offset effects of project altered flows. 30/ I believe there is sufficient reason to examine how access might be improved to enhance recreational opportunities in the bypassed reach. Article 411 requires Edison to evaluate potential opportunities to improve access. The Commission will carefully consider the costs of any future enhancements that may be recommended from the study before requiring their implementation. However, the specific cost to the project cannot be determined until we know what measures, if any, may be recommended and what options for cost sharing might be recommended. 31/

Article 409 requires Edison to file a plan to monitor recreation use in the project bypassed reach for five years to

28/ 18 CFR Section 2.7.

29/ Several non-governmental organizations (FOR, American Whitewater Affiliation, and others) and over 53 individual commented on the need for access improvements (See EA, Appendices A and B).

30/ See EA at 58 and 59.

31/ In their April 30, 1998, letter commenting on the FEA, FOR says an "implementing mechanism" is needed for any new environmental measures that might be recommended as a result of post-licensing studies. We believe a suitable implementing mechanism is available through the license amendment process and through the specific reservation of authority in Articles 403 (smallmouth bass monitoring study), 409 (recreation monitoring study), and 411 (access improvement study) to require implementation of any recommended measures, as appropriate, that are developed from the above referenced studies.

Project No. 1930-014

-15-

determine if future demands for river recreation warrant operational modifications to protect and enhance recreational values. The article also requires Edison to evaluate the effects of any recommended changes in operation that may result from the study on other recreation uses, irrigation, and energy generation. Other provisions in the article require Edison to coordinate this study, to the extent practicable, with the relicensing efforts for Edison's Borel Project (FERC No. 382) and Pacific Gas and Electric Company's (PG&E) Kern Canyon Project (FERC NO. 178). 32/ With this information and any bypassed reach access improvements, staff will be in a much better position to determine the long-term need and effects of whitewater boating in much of the Kern Canyon below Lake Isabella. Moreover staff will be able to provide, if needed, a coordinated recommendation for changes in operation at all three projects that would have greater benefits for the resources throughout much of the canyon.

Edison also recommends that access improvements be considered, if at all, after the recreation use monitoring study is completed because the study should provide a better indication of whether or not access enhancements are justified and for what purposes. As discussed earlier, sufficient information exists to warrant looking at access improvements now. Moreover, such improvements may influence the recreational use that would be monitored. Therefore, I am requiring that the access improvement plan be filed within one year of license issuance.

In summary, I disagree with the Friends' proposed whitewater augmentation flows because these flows would maximize benefits to whitewater boating at the expense of all other developmental (e.g., power generation) and non-developmental (e.g., other recreation uses) values. Our mandate under the FPA is to balance all competing interests. I believe the new license by requiring the recreation monitoring study, access improvement plan, and flow information service does so. Finally, I reject the Intervenor's argument that the EA is inadequate because staff failed to quantify the monetary benefits of whitewater boating. In their April 30, 1998, comments on the final EA, FOR reiterate their concern that the final EA underestimates the value of whitewater recreation and overestimates the value of lost generation. FOR suggest that a midpoint value between FOR and

32/ Edison requested in their April 22, 1998, letter, that the license reflect that Edison cannot compel PG&E to either conduct their own or participate in the required recreation monitoring. I agree and article 409 requires Edison to coordinate to the extent practicable. A concerted effort, however, would likely be prudent for both parties in terms of cost savings and efficiency in conducting the studies and gathering relevant information affecting both licensee's projects.

Project No. 1930-014

-16-

WRC-Environmental estimates of an incremental annual value of a whitewater boating from augmented flows (\$67,425 when flows of 750 cfs are met and \$49,155 when flows of 950 cfs are met) should be used in the Commission's summary calculation of economic costs and benefits of continued operation of the project, rather than ignoring the benefit estimates. Staff didn't ignore the economic value of boating. However, the Commission is not required to assign dollar values to each benefit and impact, and I do not believe that it is necessary to do so in this case because it would not change my decision. 33/

33/ As stated by the Commission staff in response to comments on the draft EA at page B-38 of the EA:

...The Commission's goal is not to maximize one single aspect of the resource to the detriment of all others, but to balance all uses in the most comprehensive fashion, consistent with our mandate in Section 10(a)(1) of the FPA.

See also staff response to comments at page B-13.

Environmental valuation is a controversial and difficult analysis to conduct. Our analysis is not based on assigning dollar values to all uses of the waterway, nor do we agree that such an approach is feasible and appropriate (see discussion in section V.C.8 of the EA). The monetary worth of a resource use is only one measure of value and should not be the singular determinant in balancing competing uses in the public interest.

We further note that the Commission has determined that it cannot estimate future cost or price trends for the value of energy with any certainty over the 30- to 50-year term of a license. Thus, the economic analyses are based on a current cost approach to comparing the costs and values of various alternatives. Our ability to forecast recreation demands and potential associated economic benefits is similarly constrained. In the face of this uncertainty, we have made what we think is a reasonable balance of competing interests.

In any case, we didn't not recommend augmenting flows for whitewater based solely on the cost of lost power. As we explain in section VII, Comprehensive Development and Recommended Alternative, the available data

(continued...)

Project No. 1930-014

-17-

B. Minimum Flow

Edison proposes to continue to release a minimum instream flow of 50 cubic feet per second (cfs) or inflow, whichever is less, in the bypassed reach between June 1 and September 30 of each year, and a minimum instream flow of 15 cfs or inflow from October 1 through May 31 of each year. 34/ Forest Service Condition No. 4 requires releasing the proposed minimum instream flows for the protection of fishery resources. Article 401 requires that the above minimum flows be provided unless temporary modifications are required by operational emergencies.

In their August 27, 1997, comments on the draft EA, FOR 35/ argue that no studies have been conducted to determine whether the recommended flows are sufficient to support the smallmouth bass fishery and that such a study should be required of any new license issued. Similar comments were provided by various individuals commenting on the draft EA. 36/

The required flows are based on the results of an Instream Flow Incremental Methodology (IFIM) study conducted in consultation with California Department of Fish and Game. 37/

(...continued)

indicates that current flow conditions allow for a reasonable balance of all recreation uses and that whitewater boating use is not significantly constrained by the project's present operation. Augmenting flows could conflict with other recreation uses.

34/ By Order Requiring Minimum Flow Release, dated February 14, 1991, Edison was required to release the above minimum flows (54 FERC ¶ 62,105).

35/ These were joint comments of American Whitewater, FOR, Kern River Outfitters, Kern Valley Chamber of Commerce, Kern Valley Community Consensus Council, Sierra Club Kern-Kaweah Chapter. See EA, Appendix B at B-12.

36/ See EA, Appendix C.

37/ Neither the California Department of Fish and Game nor the United States Fish and Wildlife Service recommended any minimum flows in response to the Commission's Notice of Ready for Environmental Analysis, issued September 11, 1996. The California Department of Fish and Game, in a letter to Edison dated October 5, 1990, stated that 50 cfs from June through September would maintain adequate spatial habitat for adult trout, and that 15 cfs during October through May would maintain adequate habitat for all life stages of

(continued...)

Project No. 1930-014

-18-

The IFIM study showed that 83 percent-of-maximum habitat (expressed as weighted useable area or WUA) for adult rainbow trout is available at 50 cfs, and a minimum of 94 percent-of-maximum WUA for the adult, juvenile, and fry life stages of smallmouth bass is available at 15 cfs. Commission staff believe that these flows should be adequate to protect fishery resources in the bypassed reach, but recognize that the relationship between WUA and fish production is theoretical. 38/ Staff, therefore, recommend that Edison develop a plan to study the adequacy of the minimum flows for protecting and enhancing the smallmouth bass fishery in the project's bypassed reach. Article 403 so requires.

In their April 22, 1998, comments on the final EA, Edison states that the recommended smallmouth bass study is inappropriate because the study would not be meaningful unless the population of smallmouth bass is controlled by habitat-limited factors that are in turn controlled by Edison's required instream flows. Edison believes that large flow fluctuations released from Lake Isabella to meet irrigation demands is the most likely factor, among many recognized in the final EA, affecting smallmouth populations. Edison believes it is unreasonable and unduly burdensome to require it to monitor impacts outside of its control and for which it could not take any action to remedy the problems stemming from the management actions of other parties.

Staff recognize that there are factors affecting the smallmouth population that are not directly attributable to project operation. 39/ However, minimum instream flows are a contributing factor. Staff believe that a monitoring plan to evaluate the effectiveness of the required minimum instream flows in meeting its desired goal of protecting the fishery in the bypassed reach is reasonable and prudent. Such an effort, the level of which would be determined in consultation with the relevant resource management agencies and Edison, would also provide the Commission, the licensee, and the resource agencies a means to adapt the license to changing conditions and needs of the resource and of energy generation. I concur.

Friends also contend that to be consistent with the Sequoia National Forest Land and Resource Management Plan (Forest Plan) no more than 50 percent of the flow in the project bypassed reach should be diverted in order to protect the Kern's fishery,

37/ (...continued)
smallmouth bass.

38/ See Section V.2.b of the EA.

39/ See Section V.2.b of the EA.

Project No. 1930-014

-19-

riparian habitat, and endangered species. I reject Friends' argument because such minimum flows are not necessary for protecting these resources, and information provided by the Forest Service indicates that this guideline applies to other activities such as diversions for drafting water for dust abatement. Moreover, the Kern River No. 1 Project was a recognized and accepted use when the Forest Plan was drafted.

C. Lower Kern Trust Fund

Friends recommend that Edison be required to establish a mitigation fund based on a percentage of Edison's projected revenues over the life of the license, to account for its "free" use of this public waterway over the last 89 years. The fund would be initially funded by Edison at a level of \$500,000, with annual supplements provided by Edison and public subscription. The fund would be managed by a Lower Kern Advisory Board made up of various stakeholders on the Lower Kern including Edison, Forest Service, AWA, FOR, the Kernville and Lake Isabella Chamber of Commerce, KRA, the Kern River Flyfishers, the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the Bureau of Land Management. The funds would be dedicated to the acquisition of riparian land and water rights, improving public access, and recreational use of the Lower Kern.

The Commission disagrees with the idea that there must be mitigation for impacts of original project construction, but will consider alternatives for enhancing resources and mitigating ongoing impacts. 40/ Staff concluded in the EA that project operation has little effect on riparian vegetation. 41/ Staff recommends and this order requires measures to protect and enhance the fishery resources (minimum flows, Article 401; smallmouth bass study, Article 403), recreation access (access improvement study, Article 411), and recreation use (recreation monitoring, Article 409; flow information service, Article 410; and developed recreation enhancements, Forest Service Condition No. 5) in the Lower Kern River. The stakeholders that would be included in Friends' Advisory Board are to be consulted in developing the studies and any recommended measures. I, therefore, reject the need for a mitigation fund.

40/ The Commission's policy on baseline is found in the two following orders for the Cushman Project (FERC No. 460): (1) Declaratory order on nature of proceeding on application for a subsequent license after a minor part license expires, 67 FERC ¶61,152 (May 4, 1994); and (2) Order granting intervention and denying rehearing, 71 FERC ¶61,381 (June 22, 1995).

41/ See EA at page 33.

Project No. 1930-014

-20-

D. Decommissioning and Retirement

Friends recommend that the Commission fully investigate the potential benefits of decommissioning the Kern River No. 1 Project because "Edison needs neither the capacity nor energy generated" and because it would benefit the fishery, riparian habitat, and whitewater recreation. Staff evaluated the decommissioning alternative in the EA. 42/ The record shows there is a need for the project, and that the minimum instream flows and monitoring studies will protect the fishery resources affected by the project. 43/ Staff believe that the incremental environmental improvement associated with decommissioning is small for most resources, 44/ and may even be negative for some uses and resources (angling and wading, for example) when compared to continued operation with staff-recommended mitigation and enhancement measures. 45/ No resource agency has recommended decommissioning the project. I do not believe that decommissioning the Kern River No. 1 Project would be in the public interest at this time.

Friends also recommended that a decommissioning fund be established. They believe that such a burden on Edison would be modest and would be fairer than a system that arbitrarily imposes the costs of decommissioning on future rate payers.

42/ Staff evaluated the alternative of decommissioning without removal of project structures for each resource throughout the EA. Staff considered but eliminated from detailed study the alternative of decommissioning with dam removal because no participant suggested that this alternative would be appropriate and because the potential benefits would also be obtained without dam removal, except for unobstructed fish movement and whitewater boating. See EA at 8-9.

43/ See Section III.E, and IX.B, *infra*.

44/ Edison believes that final EA failed to recognize the fact that water rights issues complicate the perceived benefits of decommissioning because water not released by the Watermaster to fulfill Edison's senior water rights might not be released from Lake Isabella. Consequently, decommissioning would not necessarily result in the restoration of 412 cfs of flow to the diverted stretch of the river. Edison's opinion is noted. The final EA provides an analysis of the benefits that would result from not diverting a maximum of 412 cfs (see EA at 9); staff did not intend to suggest that decommissioning would return a maximum of 412 cfs to the diverted reach.

45/ See Response to Comments at B-15.

Project No. 1930-014

-21-

The Commission has discussed this issue recently in a number of cases and in our December 14, 1994 Policy Statement on Project Decommissioning at Relicensing. ^{46/} The record does not reveal any reasons to question either the project's future viability or usefulness at the end of the license term, or Edison's ability to finance decommissioning at a future time. Therefore, a decommissioning fund is not warranted.

X. OTHER ISSUES

A. Sediment Monitoring Program

In 1996, Edison began a two-year study to monitor sediment deposition in pools in the project bypassed reach to address sediment management concerns raised by California Department of Fish and Game during scoping. Article 402 requires Edison to file the results of the monitoring study and to adjust their sediment releasing operations, if necessary, based on the monitoring results and consultation with state and federal resource agencies.

B. Monitoring Leaking Flumes to Protect Wildlife Habitat

Water leaking from and splashing over the sides of the project flumes enhances small pockets of riparian vegetation and wildlife habitat. Edison proposes to annually monitor these leaking flumes and to consult with the Forest Service before taking measures that would reduce the leakage. Article 405 requires Edison to consult with the Forest Service to determine what measures might be taken to sustain these habitats if repairs to the flumes are required and to implement the agreed upon measures.

C. Cultural Resources

Edison proposes to implement protective measures outlined in its cultural resources management plan to avoid and mitigate impacts to the historical integrity of the Kern River No. 1 Historic District. Article 407 requires Edison to implement the cultural resources management plan. If additional archeological or historic sites are discovered during project operation, Article 408 requires preparation of a site-specific plan to avoid or mitigate impacts to these sites.

^{46/} See, 60 Fed. Reg. 339, 346 (Jan 4, 1995); III FERC Stats. & Regs., Regs. Preambles, 31,011 at pp. 31,232-33 (Dec. 14, 1994). Cf. Wisconsin Electric Power Company, 73 FERC 61,346 (1995); Menominee Company, et al., 74 FERC 61,023 (1996); Southern California Edison, 77 FERC 61,313 (1996).

Project No. 1930-014

-22-

D. Use and Occupancy of Project Lands and Waters

Requiring a licensee to obtain prior Commission approval for every use or occupancy of project land would be unduly burdensome. Article 412 allows Edison to grant permission, without prior Commission approval, for the use and occupancy of project lands for such minor activities as landscape plantings. Such uses must be consistent with the purpose of protecting and enhancing the scenic, recreational, and environmental values of the project. To further protect the visual quality of the canyon, Article 406 requires Edison to consult with the Forest Service prior to painting project facilities and to select colors that reduce the contrast of the project facilities with the surrounding environment.

E. Administrative Conditions

The Commission collects annual charges from licensees for the administration of the FPA and for recompensing the United States for the use, occupancy and enjoyment of its lands. Article 201 provides for the collection of such funds. Article 202 requires the filing of aperture cards for project drawings. Article 203 requires the establishment and maintenance of amortization reserve account. Article 204 requires Edison to reimburse the owner of a storage reservoir or other headwater improvement project that directly benefits the licensee's project. The benefits will be assessed in accordance with Subpart B of the Commission's regulations.

XI. COMPREHENSIVE PLANS

Section 10(a)(2)(A) of the FPA ^{47/} requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving waterways affected by the project. Pursuant to this section, federal and state agencies filed 35 comprehensive plans that address various resources in California. Of these, staff identified five plans relevant to the Kern River No. 1 Project. ^{48/} No conflicts with these comprehensive plans were

^{47/} 16 U.S.C. § 803(a)(2)(A).

^{48/} (1) Forest Service. 1988. Sequoia National Forest Land and Resource Management Plan, Department of Agriculture, Porterville, California. March 1988, as amended by the Sequoia National Forest Mediated and Management Plan 1990 Settlement Agreement. July 1990. (2) California Department of Water Resources. 1983. The California water plan: projected use and available water supplies to 2010. Bulletin 160-83. Sacramento, California. December 1983.

(continued...)

Project No. 1980-014

-23-

found for this project.

Two other plans, which are not designated as qualifying comprehensive plans, address water quality resource concerns for the area. ^{49/} No conflicts with these two plans were found for this project.

XIII. COMPREHENSIVE DEVELOPMENT

Sections 4(e) and 10(a)(1) of the FPA ^{50/} require the Commission, in acting on applications for license, to give equal consideration to the power development purposes and to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of fish and wildlife, the protection of recreational opportunities, and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgement will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for beneficial public uses. The decision to license this project, and the conditions included herein, reflects such consideration.

The EA analyzed the effects associated with the issuance of a new license for the Kern River No. 1 Project, and the EA recommends a variety of measures to protect and enhance the environmental resources, which, as discussed above, I adopt. I conclude that issuance of a new license for the Kern River No. 1 Project will not constitute a major federal action significantly affecting the quality of the human environment.

In determining whether a proposed project will be best adapted to a comprehensive plan for developing a waterway for beneficial public purposes, pursuant to Section 10(a)(1) of the

(...continued)

268 pp. and attachments. (3) California Department of Water Resources. 1994. California water plan update. Bulletin 160-93. Sacramento, California. October 1994. (4) California State Water Resources Control Board. 1975. Water quality control plan report. Sacramento, California. (5) California - The Resources Agency. Department of Parks and Recreation. 1983. Recreation needs in California. Sacramento, California. March 1983. 39 pp. and appendices.

^{49/} (1) California Regional Water Quality Control Board, Central Valley Region (CRWQCB). 1995. Water quality control plan for the Tulare Lake Basin. Second Edition - 1995. (2) State Water Resources Control Board (SWRCB). 1993. California inland surface waters plan. 93-4 WQ. May 1993.

^{50/} 16 U.S.C. §§ 797(e) and 803(a)(1), respectively.

Project No. 1930-014

-24-

FPA, the Commission considers a number of public interest factors, including the economic benefits of project power.

Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in Mead Corp., 51/ the Commission employs an analysis that uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

In making these determinations, the Commission considers the project power benefits both with the applicant's mitigative proposals and with the Commission's mitigative proposals. Based on current economic conditions, without future escalation or inflation, the Kern River No. 1 Project, if licensed as Edison proposes, would provide a dependable capacity of 4.2 MW and produce an average of about 179,000 MWh of energy annually, at an annual cost of about \$1,310,000 (7.32 mills/kWh). 52/ This is about \$30,000 more than the current annual cost of providing power under the No-Action alternative, which is estimated to be about \$1,279,000 (7.14 mills/kWh), for the same dependable capacity and annual generation. If licensed with the mandatory Forest Service and 401 water quality conditions and staff modifications adopted herein, the proposed project would provide the same capacity and generation at an annual cost of about \$1,369,000 (7.65 mills/kWh), or about \$90,000 more than the No-Action alternative.

The current annual value of the project's power would be \$3,945,000 (22.04 mills/kWh) for all of the above alternatives, since they all provide the same amount of capacity and energy. 53/ To determine whether the project is currently

51/ 72 FERC ¶ 61,027 (1995).

52/ In their April 22, 1998, letter, Edison says that the cost estimate include in Section VII.3 of the final EA (page 75) does not include the \$18,000 cost of preparing the recreation monitoring plan. Staff did include this cost and refers Edison to page 74 of the EA: "We believe the cost of the monitoring plan, estimated to be \$20,000 a year for a period of 5 years plus \$18,000 at the end of the five years for a report..."

53/ Staff estimated the energy and capacity values based on the
(continued...)

Project No. 1930-014

-25-

economically beneficial, the project's cost is subtracted from the value of the project's power. I find the project as licensed by the Commission would be economically beneficial, costing about \$2,577,000 (14.39 mills/kWh) less than the current cost of alternative power.

Based upon my review of the agency and public comments filed on this project, including my review of staff's evaluation of the environmental and economic effects of the proposed project and its alternatives, and my independent analysis pursuant to Sections 4(e) and 10(a) of the FPA, I find that the Kern River No. 1 Project, with the mitigative and enhancement measures included herein, will be best adapted to the comprehensive development of the North Fork Kern River for beneficial public uses.

XIII. LICENSE TERM

Section 15(e) of the FPA 54/ specifies that any license issued shall be for a term that the Commission determines to be in the public interest, but not less than 30 years, nor more than 50 years from the date on which the license is issued. Commission policy is to grant 30-year terms for projects with little or no redevelopment, new construction, new capacity, or environmental mitigative and enhancement measures, 40-year terms for projects with a moderate amount thereof, and 50-year terms for projects with an extensive amount thereof. The environmental

(...continued)

cost of combined cycle combustion turbines and regional natural gas fuel cost and alternative capacity cost using a heat rate of 10,000 Btu/kWh.

In their April 30, 1998, comments, FOR says that the power value used for the EA is too high and should be revised to reflect spot market prices and a much lower capacity value. We acknowledge FOR's comments, but do not believe that spot market prices which vary widely over short time periods is a good basis for appraising the replacement value of a constructed hydropower project. Staff's method of appraisal, which is based on replacement value using combined cycle combustion turbine technology, is a valid basis for our decision-making purposes on this project. Using a somewhat lower power value would not change our decision, since other equally important considerations, as discussed in the final EA and elsewhere in this order, contribute to our decision not to require the licensee to augment flows in the bypassed reach for whitewater boating purposes at this time.

54/ 16 U.S.C. § 808(e).

Project No. 1930-014

-26-

mitigation and enhancement costs of the new license for the Kern River No. 1 Project warrant a term of 30 years, effective the first day of the month in which this license is issued.

XIV. SUMMARY

Background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment are contained in the EA.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if operated and maintained in accordance with the requirements of this license.

The Commission orders:

(A) This license is issued to Southern California Edison Company (Licensee), for a period of 30 years, effective the first day of the month in which this order is issued, to operate and maintain the Kern River No. 1 Hydroelectric Project. This license is subject to the terms and conditions of the FPA, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Federal Power Act.

(B) The project consists of:

(1) All lands, to the extent of the Licensee's interests in those lands, enclosed by the project boundary shown by exhibit G:

<u>Exhibit G Drawing</u>	<u>FERC No. 1930-</u>	<u>Showing</u>
5233859	47	Diversion Dam
		Reservoir
5233860	48	Diversion Dam Access
		Road and Water
		Conduit
5233861	49	Water Conduit
5233862	50	Water Conduit
5233863	51	Water Conduit
5233864	52	Water Conduit
5233865	53	Water Conduit
5233866	54	Powerhouse and
		Appurtenances
5234617	55	Transmission Line
5234618	56	Overhead Profile
		Along Conduit

(2) Project works consisting of: (1) a 29-foot-high, 204-foot-long, concrete overflow diversion dam (Democrat dam) with crest elevation at 1912.7 feet mean sea level, impounding a 27-

Project No. 1930-014

-27-

acre pond; (2) a gated intake structure with trash racks at the left abutment; (3) a water conduit consisting of 42,884 feet of tunnel; a 104-foot-long, 20-foot-wide, concrete sandbox at the tunnel exit; 390 feet of rectangular flume; 904 feet of Lennon flume on steel structure; and 612 feet of arched-concrete conduit; (4) a 45-foot-long, 33-foot-wide, 11-foot-deep forebay; (5) a 1,693-foot-long buried penstock, varying in diameter from 108 inches at the intake to 27 inches at the end of the header at the powerhouse; (6) a 170-foot-long, 71-foot-wide, reinforced concrete powerhouse containing four Pelton-type generating units with a total installed capacity of 26.3 MW; (7) a rectangular tailrace that discharges flows over a weir section into the Kern River; (8) a 1.9-mile-long, 66-kilovolt transmission line tying into Edison's transmission system; and (9) appurtenant facilities

The project works generally described above are more specifically shown and described by the following exhibits that also form a part of the application for license and that are designed and described as:

Exhibit A: Description of the Project

<u>Section</u>	<u>Title</u>
A(1)	<u>General Configuration</u>
A(2)	<u>Storage Capacity</u>
A(3)	<u>Turbines and Generators</u>
A(4)	<u>Transmission Lines</u>
A(5)	<u>Mechanical, Electrical, and Transmission Equipment</u>
A(6)	<u>Lands of the United States within Project Boundary</u>

Exhibit F: Project Drawings

<u>Exhibit F Drawing</u>	<u>FERC No. 2290-</u>	<u>Showing</u>
5232260	57	Diversion Dam
5232261	58	Intake Trash Racks
5232262	59	Intake Gates
5232263	60	Intake and Drainage Tunnel Inlets
5232264	61	Gate at Lower End of Drainage Tunnel
5232265	62	Sand Box at Head of Flume No. 1
5232266	63	Concrete Transition for Ends of Flume No. 1
5232267	64	Profile of Flume No. 1
5232268	65	Standard Steel Bents for Flume No. 1
5232269	66	Covered Concrete Conduit No. 3
5232270	67	Flume No. 2 Cow Creek

Project No. 1930-014

-28-

5232271	68	Flume No. 2 Cow Creek Gaging Station
5232272	69	Typical Flume Details
5232274	70	Flume No. 4 Lucas Creek
5232275	71	Flume No. 5 Dougherty Creek
5232276	72	Flume No. 6 Starks Creek
5232277	73	Forebay and Tunnel Sections
5232278	74	Penstock
5232279	75	Steel Pipe Spillway from Forebay
5232280	76	Plan of Powerhouse and 66-kV rack
5232281	77	Section of Powerhouse

(3) All of the structures, fixtures, equipment, or facilities used to operate or maintain the project and located within the project boundary, all portable property that may be employed in connection with the project, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) Exhibits A, F, and G as designated in ordering paragraph (B) above are approved and made part of the license.

(D) This license is subject to the conditions submitted by the Forest Service under Section 4(e) of the FPA, as those conditions are set forth in Appendix B to this order. The Commission reserves the right to amend this ordering paragraph and Appendix B to this order as appropriate in light of the Forest Service's ultimate disposition of any appeals of the Section 4(e) conditions that might arise, and to make whatever additional conforming changes in the license may be necessitated by any such amendment.

(E) This license is subject to the articles set forth in Form L-1 (October 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting Lands of the United States," 54 FPC 1792, 1799 (October 1975), and the following additional articles:

Article 201. The licensee shall pay the United States the following annual charges as determined by the Commission, effective the first day of the month in which this license is issued for the purposes of:

- (1) Reimbursing the United States for the costs of administering Part I of the FPA. The authorized installed capacity for that purpose is 26,300 kilowatts.

Project No. 1930-011

-29-

- (2) Recompensing the United States for the use, occupancy, and enjoyment of 116.69 acres of its lands.
- (3) Recompensing the United States for the use, occupancy, and enjoyment of 23.03 acres of its lands for transmission line right-of-way.

Article 202. Within 45 days of the issuance of the license, the licensee shall file three complete original sets of aperture cards of all the approved drawings, and a fourth, partial original set of aperture cards showing only the Exhibit G drawings. The sets must be reproduced on silver or gelatin 35 mm microfilm. All microfilm must be mounted on type D (3-1/4" x 7-3/8") aperture cards. The licensee shall submit two copies of Form FERC-587 with the aperture cards.

Prior to microfilming, the FERC Drawing Number shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number must be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (e.g., F-1, G-1, etc.), Drawing Title, and date of issuance of this license must be typed on the upper left corner of each aperture card.

Two complete original sets of aperture cards, and one copy of the Form FERC-587, must be filed with the Secretary of the Commission, ATTN.: Division of Licensing and Compliance/ERB. A third complete set of aperture cards shall be filed with the Commission's San Francisco Regional Office. The fourth partial set of aperture cards (Exhibit G only) and the remaining copy of Form FERC-587 shall be filed with the Bureau of Land Management Office at the following address:

State Director
California State Office
Bureau of Land Management
Branch of Adjudication and Records (CA-943.5)
ATTN.: FERC Withdrawal Recordation
2135 Butano Drive
Sacramento, CA 95825-0451

Article 203. Pursuant to Section 10(d) of the FPA, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The licensee shall set aside in a project amortization reserve account at the end of each fiscal year one half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the licensee shall

Project No. 1930-014

-30-

deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensee shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensee shall maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves shall be calculated annually based on current capital ratios developed from an average of thirteen monthly balances of amounts properly includible in the licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rate for such ratios shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall be the interest rate on ten-year government bonds (reported as the Treasury Department's ten-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 204. If the licensee's project was directly benefitted by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the licensee shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license.

Article 401. The licensee shall release from the Democrat dam into the Kern River the continuous minimum flow required by United States Forest Service Condition No. 4 in Appendix B, or inflow to the project, whichever is less, for the protection of fishery resources in the bypassed reach of the Kern River.

This flow may be temporarily modified if required by operation emergencies beyond the control of the licensee, and for short periods upon agreement among the licensee, the Forest Service, and the California Department of Fish and Game. If the flow is so modified, the licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

Article 402. Within six months of license issuance, the licensee shall file for Commission approval the results of the 2-year sediment monitoring program that it began in 1996. The filing also shall contain a sediment management plan for implementing any necessary adjustments to the licensee's sediment releasing operations based on the monitoring results.

Project No. 1930-014

-31-

The sediment management plan shall include a schedule for: implementation of any additional monitoring; implementation of any changes in operation to manage sediment releases in the bypassed reach; consultation with the appropriate federal and state agencies; and filing the results, agency comments, and licensee's response to agency comments with the Commission.

The licensee shall prepare the plan after consultation with the California Department of Fish and Game, Forest Service, and State Water Resources Control Board. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed sediment management plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 403. Within 6 months from the date of issuance of this license, the licensee shall file for Commission approval a plan to study the adequacy of the minimum flows, required by Forest Service Condition No. 4, for protecting and enhancing the smallmouth bass fishery in the project bypassed reach.

The plan shall include a schedule for: implementation of the study plan; consultation with the appropriate federal and state agencies; and filing the results, agency comments, and licensee's response to agency comments with the Commission.

The licensee shall prepare the plan after consultation with the California Department of Fish and Game and the Forest Service. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed study plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Project No. 1930-014

-32-

Authority is reserved to the Commission to modify the minimum flows required by article 404 if the study results show that flow modifications are warranted.

Article 404. Within 3 months from the date of issuance of this license, the licensee shall file for Commission approval a schedule for conducting the "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan", submitted by the licensee on December 2, 1997, and required as a condition of the water quality certification.

If the results of the temperature study indicate that changes in project structures or operations, including alternative flow releases, are necessary to achieve the state's temperature objective for protection of the COLD water beneficial use for the project section of the Kern River, the Commission may direct the licensee to modify project structures or operations.

Article 405. The licensee shall inspect the project flumes at least once each year to monitor the structural integrity of the leaking flumes. Prior to making any repairs that would reduce the existing leakage, which is providing micro-riparian habitats important to vegetation and wildlife, the licensee shall consult with the Forest Service and the Commission to determine what measures may be possible to continue to sustain the micro-riparian habitats created by the leaking flumes. The licensee shall implement the agreed to measures upon Commission approval.

The licensee may take whatever measures are necessary in an emergency to prevent a catastrophic failure of the flowline. If such emergency measures become necessary, the licensee shall notify the Forest Service and the Commission as soon as possible, but no later than 24 hours after each such incident.

Article 406. Prior to painting project facilities, the licensee shall consult with the United States Forest Service on the colors necessary to reduce the contrast of the project facilities with the surrounding environment.

Article 407. The licensee shall implement its cultural resources management plan contained in appendix E-9 of its license application for the Kern River No. 1 Water Power Project, FERC No. 1930, filed with the Commission on May 2, 1994, to avoid and mitigate impacts to the historical integrity of the Kern River No. 1 Historic District (District).

If modifications are proposed that will alter the historical integrity of the District, the licensee shall file a plan for mitigating impacts based on consultation with the California State Historic Preservation Officer and the Forest Service, for Commission approval. The Commission may require additional work and changes to the plan based on this filing. The licensee shall

Project No. 1930-014

-33-

not proceed with modifications until a plan for mitigation has been approved by the Commission and implemented.

Article 408. If archeological or historic sites are discovered during project construction or operation, the licensee shall: (1) consult with the California State Historic Preservation Officer (SHPO) and the Forest Service (FS) about the discovered sites; (2) prepare a site-specific plan, including a schedule, to evaluate the significance of the sites and to avoid or mitigate any impacts to sites found eligible for inclusion in the National Register of Historic Places; (3) base the site-specific plan on recommendations of the SHPO and the FS, and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; (4) file the site-specific plan for Commission approval, together with the written comments of the SHPO and the FS; and (5) take the necessary steps to protect the discovered archeological or historic sites from further impact until notified by the Commission that all of these requirements have been satisfied.

The Commission may require cultural resources surveys and changes to the site-specific plans based on the filings. The licensee shall not implement a cultural resources management plan or begin any land-clearing or land-disturbing activities in the vicinity of any discovered sites until informed by the Commission that the requirements of this article have been fulfilled.

Article 409. Within 9 months from the date of issuance of this license, the licensee shall file for Commission approval a plan to monitor recreation use in the project's bypassed reach for the purpose of determining whether future demands for river recreation in the project's bypassed reach warrant modifications to the project's operating scheme to protect and enhance recreational values of the Kern River. Recreational activities to be monitored, at a minimum, should include those activities directly influenced by river flows--whitewater boating, swimming, fishing, wading, recreational mining, etc. Monitoring should document, at a minimum, the numbers of people participating in each activity, flow levels during the survey, and the recreation experience achieved at those flow levels and the factors affecting that experience. The licensee shall coordinate, to the extent practicable, the monitoring study with the relicensing studies that will be conducted for the Borel (FERC Project No. 382) and Kern Canyon Projects (FERC Project No. 178) in order to provide a coordinated recommendation for all three projects that would benefit much of the lower Kern River affected by the three projects.

The monitoring plan shall include a description of the methods to be employed, the objectives of the monitoring study, the parameters to be measured, and a monitoring schedule.

Project No. 1930-014

-34-

Monitoring shall be conducted every year for 5 years and at the end of the 5-year period the licensee shall file a report with the Commission that includes, at a minimum, the monitoring results, an evaluation of the need for revisions to the flow regime to accommodate recreation interests, and recommendations for any future monitoring efforts. Any recommendations for flow modifications should assess the effects on any conflicting recreation, irrigation, and power uses and needs of the waterway.

The licensee shall prepare the monitoring plan after consultation with the Forest Service, California Department of Fish and Game, Fish and Wildlife Service, CALTRANS, Kern River Watermaster, North Kern Water Storage District, Kern County Search and Rescue, Friends of the River, American Whitewater Affiliation, Kern River Alliance, Kern River Outfitters, Kernville and Lake Isabella Chambers of Commerce, Sierra Club Kern-Kaweah Chapter, Kern Valley Community Consensus Council, Pacific Gas and Electric Company, and other interested recreation advocacy groups. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and other interested parties, and specific descriptions of how the agencies' and other interested parties comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies and other interested parties to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission. The Commission also reserves the right to require changes to the project's operational scheme if the study results show that flow modifications are warranted to protect and enhance recreation values in the project bypassed reach.

Article 410. Within 1 year from the date of issuance of this license, the licensee shall file for Commission approval a plan to implement a mechanism to provide flow information to the public. The plan may complement the existing services provided by the Forest Service, Kern River Watermaster, Bureau of Land Management, and the local Chambers of Commerce, as long as the information is readily available to the public (such as a 1-800 telephone number) and provides, at a minimum, information specific to the daily flows in the Kern River No. 1 bypassed reach.

The licensee shall prepare the plan after consultation with the Forest Service, Bureau of Land Management, Kern River Watermaster, Friends Of the River, American Whitewater

Project No. 1930-014

-35-

Affiliation, Kern River Alliance, Kern River Outfitters, Kernville and Lake Isabella Chambers of Commerce, Sierra Club Kern-Kaweah Chapter, Kern Valley Community Consensus Council, and other interested recreation advocacy groups. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and other interested parties, and specific descriptions of how the agencies' and other interested parties comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies and other interested parties to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 411. Within 1 year from the date of issuance of this license, the licensee shall file for Commission approval an access improvement plan that, as a minimum, assesses the feasibility of providing safe access improvements within the project's bypassed reach. The plan should evaluate, at a minimum, the feasibility of providing safe access at the following locations in the project bypassed reach: (1) access for kayakers at the start of the Upper Study section; (2) access for kayakers and rafters at the start of the Lucas Study Section; (3) a portage around Lucas Falls for both kayaks and small rafts; (4) access just upstream of the Cataracts Study Section; and (5) access to, or just upstream of the Kern River No. 1 powerhouse.

The plan shall include a construction plan and an implementation schedule for any recommended portage, trail, trail head, or parking area construction, improvement, or modification of existing areas in the project's bypassed reach. For any recommended improvement, the plan shall also address, as a minimum, the following factors: vehicle and pedestrian safety, traffic congestion and other conflicts, Forest Service management objectives, effects on other resources, including threatened and endangered and Forest Service sensitive species and their habitat, and the cost and the entity responsible for constructing and maintaining the recommended improvements.

The licensee shall prepare the plan after consultation with the Forest Service, California Department of Fish and Game, Fish and Wildlife Service, CALTRANS, Kern River Watermaster, North Kern Water Storage District, Kern County Search and Rescue, Friends Of the River, American Whitewater Affiliation, Kern River Alliance, Kern River Outfitters, Kernville and Lake Isabella Chambers of Commerce, Sierra Club Kern-Kaweah Chapter, Kern Valley Community Consensus Council, Southern Fat Tire

Project No. 1930-014

-36-

Association, and other interested recreation advocacy groups. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and other interested parties, and specific descriptions of how the agencies' and other interested parties comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies and other interested parties to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan and to implement the recommended improvements. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 412. (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement.

Project No. 1930-014

-37-

To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir.

No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or

Project No. 1930-014

-38-

permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than ten watercraft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved exhibit R or approved report on recreational resources of an exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least seventy-five feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than fifty total acres of project lands for each project development are conveyed under this clause (d) (7) in any calendar year.

At least sixty days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within forty-five days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (I) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to insure

Project No. 1930-014

-39-

that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee shall not unduly restrict public access to project waters.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(I) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(J) This order is final unless a request for rehearing is filed within 30 days from the date of its issuance, as provided in Section 313(a) of the FPA. The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order, except as specifically ordered by the Commission. The licensee's failure to file a request for rehearing shall constitute acceptance of this license.



Carol L. Sampson
Director
Office of Hydropower Licensing

Project No. 1930-014

-40-

APPENDIX A

WATER QUALITY CERTIFICATION CONDITIONS

Accordingly, the State Water Resources Control Board certifies that the Kern No. 1 Project will comply with Sections 301, 302, 303, 306, and 307 of the Clean Water Act, and with applicable provisions of state law provided SCE complies with the following terms and conditions:

- 1) Natural temperature waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.

Elevated temperature wastes shall not cause the temperature of waters designated COLD or WARM to increase by more than 5°F above natural receiving water temperature.

In order to demonstrate the attainment of the COLD beneficial use and compliance with the Basin Plan temperature objective for the Kern River, as defined in the Tulare Lake Basin Water Quality Control Plan (5D), from the SCE Kern River No. 1 powerhouse upstream to Democrat Dam, SCE shall:

- a) Conduct the temperature monitoring and modeling study (for a period not to exceed five years) as described in the "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan" (Plan) submitted by SCE to the SWRCB on December 2, 1997 (Attachment 2). The specific conditions of the Plan are hereby incorporated into this modification to the water quality certification by reference.
- b) An annual progress report shall be prepared and submitted to the Chief of the Division of Water Rights of the SWRCB and the Director of the California Department of Fish and Game by the following March 1 after each year of temperature monitoring. The progress report will summarize data collected, initial analyses, if any, and results of model calibration, when appropriate. The progress report will include any recommendations for changes to the monitoring program, and when appropriate will recommend conclusion of monitoring. Cessation of monitoring before the completion of five years of monitoring shall occur only upon approval of the Executive Director of the SWRCB.
- c) A final summary report shall be prepared within six months of the conclusion of temperature monitoring. The summary report will provide the results of model

Project No. 1930-014

-41-

calibration, validation, and simulations. This will include an accurate description of the model, the data used for calibration and validation, and the measured performance of the model. The results of the temperature simulation model will be tables and plots of simulated longitudinal temperatures, which can be interpolated to estimate stream temperatures for project release flows. The report will summarize the effect of natural warming, the effect of project-related warming, and the likelihood that the project will maintain the COLD beneficial use and the thermal objective of the Basin Plan.

- d) If, based on modeling and as determined by the Executive Director of the SWRCB, the results suggest that project operations may not maintain the COLD beneficial use and/or the thermal objective for the conditions evaluated, SCE shall prepare an operations plan for approval by the Executive Director of the SWRCB. The operations plan will indicate what controllable water quality factor actions need to be taken to achieve the temperature objective for protection of the COLD water beneficial use for that section of the Kern River. Upon review of the final report of the temperature monitoring and modeling study described in "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan", the SWRCB will utilize the operations plan to determine what additional terms and conditions may be necessary, if any, to maintain the COLD beneficial use. SCE shall implement any additional terms and conditions established by the SWRCB.
- 2) In order to protect the beneficial use designations identified in the Basin Plan, operation of the project shall not add the following substances to surface waters:
- a) Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses;
 - b) Perceptible floating material including, but not limited to, solids, liquids, foams or scums which could result in degradation of water quality;
 - c) Suspended or settleable material in concentrations that cause a nuisance or adversely affect beneficial uses;
 - d) Oil, greases, waxes or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water;

Project No. 1930-014

-42-

- e) Toxic pollutants present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health; and,
 - f) Coliform organisms attributable to human wastes.
- 3) If the permittee or licensee initiates any activities requiring installation of concrete or grout, fresh concrete or grout shall not be allowed to contact or enter surface water.
 - 4) Any project dewatering activities shall be coordinated with the California Department of Fish and Game, and all reasonable measures taken to protect the beneficial uses of water.
 - 5) Only water used for power generation is authorized for discharge. Discharge of any other materials is prohibited.

Project No. 1930-014

-43-

APPENDIX B

FOREST SERVICE SECTION 4(E) CONDITIONS

I. GENERAL

As a co-operating agency, the Forest Service provides the following FINAL 4(e) conditions for inclusion in the license for FERC project No. 1930-014, Kern River No. 1. These FINAL 4(e) conditions are being provided within 45 days of completion of the final environmental assessment.

License articles contained in the Commission's Standard Form L-1 (revised October 1975) issued by Order No. 540, dated October 31, 1975, cover general requirements that the Secretary of Agriculture, acting by and through the Forest Service, considers necessary for adequate protection and utilization of the land and resources of the Sequoia National Forest. For the purposes of section 4(e) of the Federal Power Act (16 U.S.C. 797(e)), the purposes for which National Forest System lands were created or acquired shall be the protection and utilization of those resources enumerated in the Organic Administration Act of 1897 (30 Stat. 11), the Multiple-Use Sustained Yield Act of 1960 (74 Stat. 215), the National Forest Management Act of 1976 (90 Stat. 2949), and any other law specifically establishing a unit of the National Forest system or prescribing the management thereof (such as the Wilderness Act or Wild and Scenic Rivers Act), as such laws may be amended from time to time, and as implemented by regulations and approved Forest Plans prepared in accordance with the National Forest Management Act.

Pursuant to said section 4(e) of the Federal Power Act, the following conditions covering specific requirements for protection and utilization of National Forest System lands shall also be included in any license issued.

II. STANDARD FOREST SERVICE PROVISIONSCondition No. 1 - Forest Service Approval of Final Design

Before any construction of the project occurs on national Forest System land, the Licensee shall obtain the prior written approval of the Forest Service for all final design plans for project components which the Forest Service deems as affecting or potentially affecting National Forest system resources. The Licensee shall follow the schedules and procedures for design review and approval specified in the conditions included herein. As part of such prior written approval, the Forest Service may require adjustments in final plans and facility locations to preclude or mitigate

Project No. 1930-014

-44-

impacts and to assure that the project is compatible with on-the-ground conditions. Should such necessary adjustments be deemed by the Forest Service, the Commission, or the Licensee to be a substantial change, the Licensee shall follow the procedures of Article 2 of the license. Any changes to the license made for any reason pursuant to Article 2 or Article 3 shall be made subject to any new terms and conditions of the Secretary of Agriculture made pursuant to section 4(e) of the Federal Power Act.

Condition No. 2 - Approval of Changes After Initial Construction

Notwithstanding any Commission approval or license provisions to make changes to the project, the Licensee shall get written approval from the Forest Service prior to making any changes in the location of any constructed project features or facilities, or in the uses of project lands and waters, or any departure from the requirements of any approved exhibits filed with the Commission. Following receipt of such approval from the Forest Service, and at least 60 days prior to initiating any such changes or departure, the Licensee shall file a report with the Commission describing the changes, the reasons for the changes, and showing the approval of the Forest Service for such changes. The Licensee shall file an exact copy of this report with the Forest Service at the same time it is filed with the Commission. This article does not relieve the Licensee from the amendment or other requirements of Article 2 or Article 3 of this License.

Condition No. 3 - Consultation

Each year during the 60 days preceding the anniversary date of the license, the Licensee shall consult with the Forest Service with regard to measures needed to ensure protection and development of the natural resource values of the project area. Within 60 days following such consultation, the Licensee shall file with the Commission evidence of the consultation with any recommendations made by the Forest Service. The Commission reserves the right, after notice and opportunity for hearing, to require changes in the project and its operation that may be necessary to accomplish natural resource protection.

III. FOREST SERVICE PROVISIONS

A. FISH AND WILDLIFE RESOURCE MANAGEMENT

Condition No. 4 - Minimum Streamflow Requirements

The minimum instream flow for fisheries in the existing

Project No. 1930-014

-45-

license is to be required for the new license.

The Licensee shall release the minimum instream flow of 50 CFS or inflow, whichever is less, from June 1 through September 30 of each year.

The Licensee shall release the minimum instream flow of 15 CFS or inflow, whichever is less, from October 1 through May 31 of each year.

These instream flow releases shall be continuously monitored by the Licensee at the existing USGS gage Station No. 11192500. If monitoring of streamflows in the bypassed reach of the Kern River No. 1 Project identifies a violation of the minimum flow requirements, the Licensee shall file a report with the Commission within 30 days from the date that the data becomes available indicating the violation. The Licensee shall file a report that identifies the cause, duration, and severity of the violation, any environmental impacts resulting from the violation, and the measures that were implemented to correct the violation. Based on this report, the Commission reserves the right to require modifications to the projects facilities and operations to ensure future compliance.

B. RECREATION RESOURCE MANAGEMENT

Condition No. 5 - Project Recreation Plan

Within 1 year following the date of issuance of this license and before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for accommodation of project-induced recreation.

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule.

The following new construction and enhancements to existing facilities are needed for the protection and utilization of NFS lands. These improvements shall be designed and constructed to be accessible to people of all abilities. These facility improvements are further described in the estimates of construction costs for developed recreation facilities, submitted by Southern California Edison on November 7, 1994 to the FERC.

Project No. 1930-014

-46-

a. The Live Oak Day Use Area shall have two accessible picnic tables and Bar-B-Que's installed. One double unit pre-fabricated accessible SST (Sweet Smelling Toilet) vault toilet shall be installed. One existing toilet will be removed. Parking sites for persons with disabilities shall be identified. The parking area and paths shall be surfaced with a compacted water bound macadam type material and striped. Accessibility signs shall be installed. Container trees shall be installed. Estimated cost is \$60,000.

b. The Upper Richbar Day Use Area shall have one accessible picnic table and Bar-B-Que installed. The existing vault toilet shall be removed. Two double unit pre-fabricated accessible SST vault toilets shall be installed. Parking sites for persons with disabilities shall be identified. The parking area and paths shall be surfaced with a compacted water bound macadam type material and striped. Accessibility signs shall be installed. Estimated cost is \$134,000.

c. The Lower Richbar Day Use Area shall have one accessible picnic table and Bar-B-Que installed. One double unit pre-fabricated accessible SST vault toilet shall be installed. Parking sites for persons with disabilities shall be identified. The parking area and paths shall be surfaced with compacted water bound macadam type material and striped. Accessibility signs shall be installed. Estimated cost is \$50,000.

d. Democrat Raft Take-Out shall have one accessible picnic table and Bar-B-Que installed. One double unit pre-fabricated accessible SST vault toilet shall be installed. The existing toilet shall be removed. Parking sites for persons with disabilities shall be identified. Paths and a portion of the parking area shall be surfaced with a compacted water bound macadam type material and striped. Accessibility signs shall be installed. Estimated cost is \$49,500.

C. SOIL CONSERVATION AND PROTECTION OF WATER QUALITY

Condition No. 6 - Erosion Control Plan

Before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for the control of erosion, stream sedimentation, dust, and soil mass movement.

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60

Project No. 1930-014

-47-

days following the filing date, unless the Director, Office of Hydropower Licensing, prescribed a different commencement schedule.

Condition No. 7 - Solid Waste and Waste Water Plan

Before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan, approved by the Forest Service, for the treatment and disposal of solid waste and waste water generated during construction and operation of the project. At a minimum, the plan must address the estimated quantity of solid waste and waste water generated each day; the location of disposal sites and methods of treatment; implementation schedule; areas available for disposal of wastes; design of facilities; comparisons between on and offsite disposal; and maintenance programs.

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule.

Condition No. 8 - Hazardous Substances Plan

Within 1 year following the date of issuance of this license and at least 60 days before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for oil and hazardous substances storage and spill prevention and cleanup.

At a minimum, the plan must require the Licensee to (1) maintain in the project area, a cache of spill cleanup equipment suitable to contain any spill from the project; (2) to periodically inform the Forest Service of the location of the spill cleanup equipment on National Forest system lands and of the location, type, and quantity of oil and hazardous substances stored in the project area; and (3) to inform the Forest Service immediately of the nature, time, date, location, and action taken for any spill.

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule.

Condition No. 9 - Spoil Disposal

Project No. 1930-014

-48-

Before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for the storage and/or disposal of excess construction/tunnel spoils and slide material. At a minimum, the plan must address contouring of any storage piles to conform to adjacent land forms and slopes, stabilization and rehabilitation of all spoil sites and borrow pits, and prevention of water contamination by leachate and runoff. The plan also must include an implementation schedule and maintenance program.

The licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule.

E. AESTHETICS

Condition No. 10 - Visual Resource Protection

Before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for the design and construction of the project facilities in order to preserve or enhance its visual character. The plan must consider facility configurations and alignments, building materials, color, conservation of vegetation, landscaping, and screening. Project facilities of concern to this plan include, among other things, clearings, diversion structures, penstocks, pipes, ditches, powerhouses, other buildings, transmission lines and corridors, and access roads.

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule.

F. ENDANGERED SPECIES

Condition No. 11 - Protection of Sensitive and T&E Species

Before starting any activities the Forest Service determines to be of a land-disturbing nature on Forest Service land, the Licensee shall prepare a Biological Evaluation evaluating the potential impact of the action on the species

Project No. 1930-014

-49-

or its habitat and submit it to the Forest Service for approval. In consultation with the Commission, the Forest Service may require mitigation measures for the protection of the sensitive species proposed for listing or listed under the Federal Endangered Species Act, or that may affect that species' critical habitat, the Licensee shall prepare a Biological Assessment evaluating the potential impact of the action on the species or its critical habitat and submit it to the Forest Service for review prior to submission to the commission and the relevant Service agency (United States Fish and Wildlife Service or National Marine Fisheries Service) for consultation pursuant to the Endangered Species Act of 1973.

G. OTHER CONDITIONS

Condition No. 12 - Development Plans

Development plans; layout plans; construction, reconstruction, or alteration of improvements plans; or revision of layout or construction plans for this area must be approved in advance and in writing by the Forest Supervisor. Trees or shrubbery on the licensed area may be removed or destroyed only after the authorized officer has approved, and has marked or otherwise designated that which may be removed or destroyed. Timber cut or destroyed will be paid for by the Licensee as follows: Merchantable timber at appraised value and young growth timber below merchantable size at current damage appraisal value; provided, that the Forest Service reserves the right to dispose of the merchantable timber to others than the Licensee at no stumpage cost to the Licensee. Trees, shrubs, and other plants may be planted in such manner and in such places about the premises as may be approved by the authorized officer. Removal of hazards shall be done after securing approval from the authorized officer.

Condition No. 13 - Maintaining Improvements

The Licensee shall maintain the improvements and premises to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the authorized officer. For example, trash, debris unusable machinery, and so forth, will be disposed of separately; other materials will be stacked, stored neatly, or within buildings. Disposal will be at an approved existing location, except as otherwise agreed to by the authorized officer.

Condition No. 14 - Existing Claims

This Licensee is subject to all valid claims and existing rights.

Project No. 1930-014

-50-

Condition No. 15 - Regulation Compliance

The Licensee, in exercising the privileges granted by this license, shall comply with the regulations of the Department of Agriculture and all Federal, State, county, and municipal laws, ordinances, or regulations that are applicable to the area or operations covered by this license.

Condition No. 16 - Protection United States Property

The Licensee shall exercise diligence in protecting from damage the land and property of the United States covered by and used in connection with this license.

Condition No. 17 - Surrender of License

Prior to any surrender of this license, the Licensee shall submit a restoration plan for approval by the Forest Supervisor, and shall restore National Forest System resources to a condition satisfactory to the Forest Supervisor.

Condition No. 18 - Indemnification

The Licensee shall indemnify, defend, and hold the United States harmless for any costs, damages, claims, liabilities, and judgements arising from past, present, and future acts or omissions of the Licensee in connection with the use and/or occupancy authorized by this license. This indemnification and hold harmless provision includes but is not limited to acts and omissions of the Licensee or the Licensee's heirs, assigns, agents, employees, contractors or lessees in connection with the use and or occupancy authorized by this license which results in: (1) violations of any laws and regulations which are now or which may in the future become applicable, and including but not limited to environmental laws; (2) judgements, claims, demands, penalties, or fees assessed against the United States; (3) costs, expenses, and damages incurred by the United States; or (4) the release or threatened release of any solid waste, hazardous substances, pollutant, contaminant, or oil in any form in the environment.

Condition No. 19 - License is Not Exclusive

This license is not exclusive. The Forest Service reserves the right to use or permit others to use any part of the licensed area under Forest Service jurisdiction, for any purpose, provided such use does not interfere with the rights and privileges hereby authorized, or authorized under the Federal Power Act. The Licensee shall allow officers of

Project No. 1930-014

-51-

the United States free and unrestricted access to the project lands and project works in the performance of their official duties.

Condition No. 20 - Construction Approval

All construction, reconstruction, substantial change, or alteration shall be submitted for approval by the authorized officer issuing this license; the proposed action may commence only upon approval by said authorized officer of plans, specifications, and written construction stipulations; such construction stipulations shall become part of this license during the term of the proposed action as long as deemed necessary by said authorized officer.

Condition No. 21 - Project Safety

The Licensee shall carry out all operations in a skillful manner, having due regard for the safety of employees and the public, and shall safeguard unsafe areas. The Licensee shall regularly inspect its facilities and provide further effective safety measures as needed for safety protection.

Condition No. 22 - Water Pollution

The Licensee shall discharge no waste or by-product if it contains any substances in concentrations that would result in violation of water quality standards set forth by the State; would impair present or future beneficial uses of water; would cause pollution, nuisance, or contamination; or would unreasonably degrade the quality of any waters. During the construction and operation of the project, the Licensee shall protect project water quality by using the existing Best Management Practices mutually agreed to by the Forest Service and the State.

Condition No. 23 - Damage - High Hazard Clause

The Licensee is hereby made liable for all injury, loss, or damage to the United States land and property, including but not limited to, fire suppression costs, directly or indirectly resulting from or caused by the Licensee's powerlines covered by this license or other high risk use and occupancy of the area covered by the license, regardless of whether the Licensee is negligent or otherwise at fault, provided that the maximum liability without fault shall not exceed \$1,000,000 for any one occurrence and provided further that the Licensee shall not be liable when such injury, loss, or damage results wholly, or in part, from a negligent act of the United States, or from an act of a third party not involving the facilities of the Licensee. Determination of liability for injury, loss, or damage,

Project No. 1930-014

-52-

including fire suppression costs, in excess of the specified maximum, shall be according to the laws governing ordinary negligence.

Condition No. 24 - Risk and Hazards

The Licensee is responsible for inspecting National Forest System lands covered by this license for dangerous trees, hanging limbs, and other evidence of hazardous conditions and, after securing permission from the Forest Service is responsible for removing such hazards.

Condition No. 25 - Signs

The Licensee shall consult with the Forest Service prior to erecting signs related to safety issues on the area covered by this license. Prior to erecting any other signs or advertising devices on the area covered by this license the Licensee must obtain approval of the Forest Service as to location, design, size, color, and message.

Condition No. 26 - Pesticide-Use Restrictions

Pesticides may not be used to control undesirable woody and herbaceous vegetation, aquatic plants, insects, rodents, trash fish, and so forth, without the prior written approval of the Forest Service. The Licensee shall submit a request for approval of planned uses of pesticides. The report must cover annual planned use and be updated as required by the Forest Service. The Licensee shall provide information essential for review in the form specified. Exceptions to this schedule may be allowed only when unexpected outbreaks of pests require control measures that were not anticipated at the time the report was submitted. In such an instance, an emergency request and approval may be made.

On National Forest System lands the Licensee shall use only materials registered by the U.S. Environmental Protection Agency for the specific purpose planned. The Licensee must strictly follow label instructions in the preparation and application of pesticides and disposal of excess materials and containers.

Condition No. 27 - Area Access

The United States shall have unrestricted use of any road constructed within the project area for all purposes deemed necessary or desirable in connection with the protection, administration, management, and utilization of Federal lands or resources and alone shall have the right to extend rights and privileges for use of the road to States and local subdivisions thereof, as well as to other users, including

Project No. 1930-014

-53-

members of the public, except contractors, agents and employees of the Licensee; provided, that the agency having jurisdiction shall control such use so as not unreasonably to interfere with use of the road by the Licensee, particularly as to safety or security uses, or cause the Licensee to bear a share of the costs of maintenance greater than the Licensee's use bears to all use of the road.

Condition No. 28 - Nondiscrimination in Employment & Services

During the duration of this license, the Licensee agrees that:

- a. In connection with the performance of work under this license, including, maintenance, and operation of the facilities, the Licensee shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, age or handicap. (Ref. Title VII of the Civil Rights Act of 1964 as amended).
- b. The Licensee and its employees shall not discriminate by segregation or otherwise against any person on the basis of race, color, religion, sex, national origin, age, or handicap by curtailing or refusing to furnish accommodations, facilities, services, or use privileges offered to the public generally. (Ref. Title VI of the Civil Rights Act of 1964 as amended, Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendments, and the Age Discrimination Act of 1975).
- c. Title VI of the Civil Rights Act of 1964, as amended, attaches coverage to the Licensee's employment practices if discrimination in employment impeded the delivery of services and benefits to people on the basis of their race, color or national origin.
- d. The Licensee shall include and require compliance with the above nondiscrimination provisions in any contract made with respect to the operations, maintenance and constructions under this license.
- e. Signs setting forth this policy of nondiscrimination to be furnished by the Forest Service will be conspicuously displayed by the Licensee at the public entrance to the premises, and at other exterior or interior locations as directed by the Forest Service.
- f. The Forest Service shall have the right to enforce the forgoing nondiscrimination provisions through the FERC by suit for specific performance or by any other available remedy under the laws of the United States or the State in

Project No. 1930-014

-54-

which the breach or violation occurs.

Condition No. 29 - Construction Stipulations

a. Plans, Part of Approval

The Licensee shall prepare the following plans in consultation with Forest Service and other appropriate agencies.

A. Revegetation/rehabilitation

B. Fire

C. Spill Prevention

D. Construction

The Licensee shall submit these plans for Forest Service approval six months prior to commencement of construction activities. Said plans shall be attached hereto and marked as Exhibits A through D, respectively.

b. Fire Plan Part of Approval

A project fire plan describing the Licensee's responsibilities for prevention and suppression of fires, developed by the Licensee, and subject to Forest Service approval, shall become part of this approval, as Exhibit B to be attached hereto. The Licensee shall obtain Forest Service approval for said plan before beginning any on-the-ground construction and shall strictly follow its terms.

c. Designation of Construction Manager

The Licensee shall designate a construction manager for the project construction. This individual shall be qualified to represent the Licensee and shall be present or have a qualified acting representative present at all times while project construction activities are taking place. This individual shall be the person who receives the on-the-ground approvals and directions from the designated Forest Service representative(s).

d. Construction Inspections by Licensee

The Licensee shall perform daily (or on a schedule otherwise agreed to by the Forest Service in writing) inspections of Licensee's operations while they are proceeding. The Licensee shall document these inspections (informal writing sufficient) and shall deliver such documentation to the Forest Service on a weekly basis. The inspections must specifically include fire plan compliance, public safety, and environmental protection. The Licensee shall act immediately to correct any items found to need correction.

Project No. 1930-014

-55-

e. Site Development Schedule

As a part of this authorization, the Licensee shall, in consultation with the Forest Service, prepare a schedule for the progressive development of the licensed site and installation of facilities. Such a schedule shall be prepared six months prior to commencement of construction activities, and shall set forth an itemized priority list of planned improvements and the planned date for completion. This schedule shall be made a part of this authorization. The Licensee may accelerate the scheduled date for installation of any improvement authorized, provided the Licensee has met other scheduled priorities; and provided further, that the Licensee has completed all priority installations authorized to the satisfaction of the Forest Service prior to the scheduled due date.

The Licensee shall submit all construction plans to the Forest Service for approval a minimum of 45 days before anticipated start of construction. All plans for construction of facilities must have the approval with signature of a registered professional engineer of the appropriate specialty, and must have the approval of the Forest Service prior to the use of these plans in constructing this project. These plans shall then become part of this authorization as Exhibit E, to be attached hereto.

The Licensee shall ensure that construction bid invitations are in compliance with this authorization and with all applicable environmental protection standards.

In the actual layout on-the-ground, the Licensee shall use accurate mapping based on an adequate survey of the land, including the location of special areas such as water courses.

The Licensee shall furnish to officers of the United States such information as may be required concerning the construction, operation, and maintenance of the project, and any alteration thereof.

When asked by the Forest Service, the Licensee shall provide for an on-the-ground review with the Forest Service of the plans for any area of concern to the Forest Service at least 7 days prior to beginning construction on that area.

f. Use of Explosives

1. The Licensee shall use only electronic detonators for blasting, except near high-voltage powerlines. The Forest

Project No. 1930-014

-56-

Service may allow specific exceptions when in the public interest.

2. In the use of explosives, the Licensee shall exercise the utmost care not to endanger life or property and shall comply with the requirements of the Forest Service. The Licensee shall be responsible for any and all damages resulting from the use of explosives and shall adopt precautions to prevent damage to surrounding objects. The Licensee shall furnish and erect special signs to warn the public of the Licensee's blasting operations. The Licensee shall place and maintain such signs so they are clearly evident to the public during all critical periods of the blasting operations, and shall ensure that they include a warning statement to have radio transmitters turned off.

3. The Licensee shall store all explosives in a secure manner, in compliance with State and local laws and ordinance, and shall mark all such storage places "DANGEROUS - EXPLOSIVES." Where no local laws or ordinances apply, the Licensee shall provide storage that is satisfactory to the authorized officer and in general not closer than 1,000 feet from the road or from any building or camping area.

4. When using explosives, the Licensee shall adopt precautions to prevent damage to landscape features and other surrounding objects. When directed by the authorized officer, the Licensee shall leave trees within an area designated to be cleared as a protective screen for surrounding vegetation during blasting operations. The Licensee shall remove and dispose of trees so left when blasting is complete. When necessary, and at any point of special danger, the Licensee shall use suitable mats or some other approved methods to smother blasts.

g. Unattended Construction Equipment

The Licensee shall not place construction equipment on National Forest Land prior to actual use or allow it to remain on National Forest land subsequent to actual use. The Licensee shall remove equipment from National Forest System land unless a permit is issued for equipment storage.

h. Protection of Wildlife and Plant Species

If threatened, endangered, or sensitive (as defined in the Forest Service manual) wildlife and plant species are found during use under this authorization, the Licensee shall notify the Forest Service and shall take immediate measures to protect said species as directed by the Forest Service.

i. Traffic Safety

Project No. 1930-014

-57-

When construction is in progress adjacent to or on Forest Service controlled roads open to public travel, the Licensee shall furnish, install, and maintain temporary traffic controls to provide the public with adequate warning and protection from hazardous or potentially hazardous conditions associated with the Licensee's operations. Devices must be appropriate to current conditions and must be covered or removed when not needed. Except as otherwise agreed, flagmen and devices must be as specified in the "Manual or Uniform Traffic Control Devices for Streets and Highways" (MUTCD).

j. Surveys, Land Corners

The Licensee shall protect, in place, all public land survey monuments, private property corners, and forest boundary markers. In the event that any such land markers or monuments are destroyed in the exercise of the privileges authorized by this authorization, depending on the type of monument destroyed, the Licensee shall reestablish or reference same in accordance with (1) the procedures outlined in the "Manual of Instructions for the Survey of the Public Land of the United States," (2) the specifications of the County Survey, or (3) the specifications of the Forest Service.

Further, the Licensee shall ensure that any official survey records affected are amended as provided by law.

k. Cultural Resource Discoveries

If, prior to or during excavation work, items of potential cultural, historical, archeological, or paleontological value are reported or discovered, or a known deposit of such items is disturbed, the Licensee shall immediately cease excavation in the area so affected. The Licensee shall then notify the Forest Service and shall not resume excavation until it receives written approval from the authorized officer.

If it deems it necessary or desirable, the Forest Service may require the Licensee to have performed recovery, excavation, and preservation of the site and its artifacts at the Licensee's expense. At the option of the Forest Service, this authorization may be terminated at no liability by the United States when such revocation is deemed necessary or desirable to preserve or protect archaeological, paleontological, or historic sites and artifacts.

Form L-1
(October, 1975)

FEDERAL ENERGY REGULATORY COMMISSION

TERMS AND CONDITIONS OF LICENSE
FOR CONSTRUCTED MAJOR PROJECT AFFECTING
LANDS OF THE UNITED STATES

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project area and project works shall be in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Article 4. The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not conducted upon lands

of the United States, shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him such information as he may require concerning the operation and maintenance of the project, and any such alterations thereto, and shall notify him of the date upon which work with respect to any alteration will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall submit to said representative a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of any such alterations to the project. Construction of said alterations or any feature thereof shall not be initiated until the program of inspection for the alterations or any feature thereof has been approved by said representative. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights or occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a non-power licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

Article 7. The actual legitimate original cost of the project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Federal Power Act and the Commission's Rules and Regulations thereunder.

Article 8. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall

make return of such records annually at such time and in such form as the Commission may prescribe.

Article 9. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 10. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 11. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act.

Article 12. The operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Commission may prescribe for the purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region

for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 14. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by any other lawful authority for avoiding or eliminating inductive interference.

Article 15. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the

project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 17. The Licensee shall construct, maintain, and operate, or shall arrange for the construction, maintenance, and operation of such reasonable recreational facilities, including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities, and utilities, giving consideration to the needs of the physically handicapped, and shall comply with such reasonable modifications of the project, as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal or State agencies, after notice and opportunity for hearing.

Article 18. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 19. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 20. The Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate

Federal, State, and local statutes and regulations.

Article 21. Timber on lands of the United State cut, used, or destroyed in the construction and maintenance of the project works, or in the clearing of said lands, shall be paid for, and the resulting slash and debris disposed of, in accordance with the requirements of the agency of the United States having jurisdiction over said lands. Payment for merchantable timber shall be at current stumpage rates, and payment for young growth timber below merchantable size shall be at current damage appraisal values. However, the agency of the United States having jurisdiction may sell or dispose of the merchantable timber to others than the Licensee: Provided, That timber so sold or disposed of shall be cut and removed from the area prior to, or without undue interference with, clearing operations of the Licensee and in coordination with the Licensee's project construction schedules. Such sale or disposal to others shall not relieve the Licensee of responsibility for the clearing and disposal of all slash and debris from project lands.

Article 22. The Licensee shall do everything reasonably within its power, and shall require its employees, contractors, and employees of contractors to do everything reasonably within their power, both independently and upon the request of officers of the agency concerned, to prevent, to make advance preparations for suppression of, and to suppress fires on the lands to be occupied or used under the license. The Licensee shall be liable for and shall pay the costs incurred by the United States in suppressing fires caused from the construction, operation, or maintenance of the project works or of the works appurtenant or accessory thereto under the license.

Article 23. The Licensee shall interpose no objection to, and shall in no way prevent, the use by the agency of the United States having jurisdiction over the lands of the United States affected, or by persons or corporations occupying lands of the United States under permit, of water for fire suppression from any stream, conduit, or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license, or the use by said parties of water for sanitary and domestic purposes from any stream, conduit, or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license.

Article 24. The Licensee shall be liable for injury to, or destruction of, any buildings, bridges, roads, trails, lands, or other property of the United States, occasioned by the construction, maintenance, or operation of the project works or of the works appurtenant or accessory thereto under the license. Arrangements to meet such liability, either by compensation for such injury or destruction, or by reconstruction or repair of damaged property, or otherwise, shall be made with the appro-

priate department or agency of the United States.

Article 25. The Licensee shall allow any agency of the United States, without charge, to construct or permit to be constructed on, through, and across those project lands which are lands of the United States such conduits, chutes, ditches, railroads, roads, trails, telephone and power lines, and other routes or means of transportation and communication as are not inconsistent with the enjoyment of said lands by the Licensee for the purposes of the license. This license shall not be construed as conferring upon the Licensee any right of use, occupancy, or enjoyment of the lands of the United States other than for the construction, operation, and maintenance of the project as stated in the license.

Article 26. In the construction and maintenance of the project, the location and standards of roads and trails on lands of the United States and other uses of lands of the United States, including the location and condition of quarries, borrow pits, and spoil disposal areas, shall be subject to the approval of the department or agency of the United States having supervision over the lands involved.

Article 27. The Licensee shall make provision, or shall bear the reasonable cost, as determined by the agency of the United States affected, of making provision for avoiding inductive interference between any project transmission line or other project facility constructed, operated, or maintained under the license, and any radio installation, telephone line, or other communication facility installed or constructed before or after construction of such project transmission line or other project facility and owned, operated, or used by such agency of the United States in administering the lands under its jurisdiction.

Article 28. The Licensee shall make use of the Commission's guidelines and other recognized guidelines for treatment of transmission line rights-of-way, and shall clear such portions of transmission line rights-of-way across lands of the United States as are designated by the officer of the United States in charge of the lands; shall keep the areas so designated clear of new growth, all refuse, and inflammable material to the satisfaction of such officer; shall trim all branches of trees in contact with or liable to contact the transmission lines; shall cut and remove all dead or leaning trees which might fall in contact with the transmission lines; and shall take such other precautions against fire as may be required by such officer. No fires for the burning of waste material shall be set except with the prior written consent of the officer of the United States in charge of the lands as to time and place.

Article 29. The Licensee shall cooperate with the United States in the disposal by the United States, under the Act of

July 31, 1947, 61 Stat. 681, as amended (30 U.S.C. sec. 601, et seq.), of mineral and vegetative materials from lands of the United States occupied by the project or any part thereof: Provided, That such disposal has been authorized by the Commission and that it does not unreasonably interfere with the occupancy of such lands by the Licensee for the purposes of the license: Provided further, That in the event of disagreement, any question of unreasonable interference shall be determined by the Commission after notice and opportunity for hearing.

Article 30. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 31. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 32. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

POOR QUALITY ORIGINAL

Southern California Edison) Project No. 1930-014
Company)

ORDER ISSUING NEW LICENSE
(Major Project)
(Issued JuneJune 16, 1998())

On May 2, 1994, Southern California Edison Company (Edison) filed an application, pursuant to Sections 4(e) and 15 of the Federal Power Act (FPA),¹ for a new license authorizing the continued operation and maintenance of the 26.3-megawatt (MW) Kern River No. 1 Hydroelectric Project No. 1930 (Kern River No. 1 Project), located on the Kern River in Kern County, California. The project occupies about 140 acres of the Sequoia National Forest. Edison proposes no new capacity or construction.

The Commission issued the original license for the Kern River No. 1 Project on August 9, 1946.² That license expired on June 1, 1996, and since then Edison has operated the project pursuant to successive annual licenses pending the disposition of its application for a new license. For the reasons discussed below, I will issue a new license to Edison for the Kern River No. 1 Project.

I. BACKGROUND

3 Notice of the application was published on January 3, 1995.
Kern River Outfitters (KRO) and American Whitewater
Affiliation (AWA) filed an early joint motion to intervene on
August 29, 1994, which was automatically granted pursuant to the
Commission's regulations. 5 The Cities of Anaheim, Riverside,

1 / 16 U.S.C. §§ 797(e), 808.

2 / The effective date of the license was May 1, 1946; 5
FPC 689.

3 / 60 Fed. Reg. 5379 (January 27, 1995).

4 / Kern River Outfitters is an ad hoc organization of the following four commercial rafting companies: Chuck Richards' Whitewater, Outdoor Adventures, Kern River Tours, and Whitewater Voyages.

Project No. 1930-014

-2-

Banning, Colton, and Azusa, California (Cities) filed a timely joint motion to intervene on March 6, 1995, which was automatically granted. Late motions to intervene were filed by Friends of the River (FOR) and Kern River Alliance (KRA) on August 28, 1995, and January 16, 1996, respectively. The respective motions were granted on December 1, 1995, and February 12, 1996.

In their motions, KRO, AWA, and KRA express concerns regarding the amount and timing of water releases and river access needs for whitewater recreation (discussed in detail in Section IX of this order). The Cities seek a sharing with Edison of the output of the Kern River No. 1 Project. FOR believe that Edison needs neither the capacity nor energy generated from the project, and that decommissioning and cost of the environmental externalities that could be mitigated by decommissioning should be seriously considered.

The Commission issued a public notice on September 11, 1996, indicating the project was ready for environmental analysis and soliciting comments, recommendations, and terms and conditions. Comments, recommendations, and terms and conditions were received from the U.S. Forest Service (FS) and jointly from FOR and AWA.

A draft Environmental Assessment (EA), prepared jointly by the Commission and the U.S. Forest Service, Sequoia National Forest,⁶ was issued on July 31, 1997. The draft EA recommended that the project be licensed as proposed by Edison, with mandatory section 4(e) and 401 water quality certification conditions and some additional staff recommendations. Comments on the draft EA were filed by the North Kern Water Storage District; jointly by Friends of the River, Kern River Outfitters, Kern Valley Chamber of Commerce, Kern Valley Community Consensus Council, and Sierra Club Kern-Kaweah Chapter; Southern Sierra Fat Tire Association; Edison; San Joaquin Valley Unified Air Pollution Control District; County of Kern Planning Department; Kern River Watermaster; Kern River Alliance; and 63 individuals. Staff addressed these comments in the final EA (specific responses to these comments are included in Appendix B and C of the EA). The final EA was issued on March 19, 1998, and is incorporated by reference in this order. Background information,

5 / 18 C.F.R. § 385.214 (1996).

6 / The Forest Service, Sequoia National Forest, is a cooperating agency on the EA.

Project No. 1930-014

-3-

analysis of impacts, and the basis for a finding of no significant impact on the environment are contained in the final EA.

By letters dated April 22, 1998, and April 30, 1998, Edison and FOR, respectively, filed unsolicited comments on the final EA.

All comments received from interested agencies, organizations, and individuals on both the draft and final EAs have been fully considered in determining whether, or under what conditions, to issue this license.

II. PROJECT DESCRIPTION

The Kern River No. 1 Project consists of: (1) a 29-foot- high, 204-foot-long, concrete overflow diversion dam (Democrat dam) with crest elevation at 1,912.7 feet mean sea level, impounding a 27-acre pond; (2) a gated intake structure with trash racks at the left abutment; (3) a water conduit consisting of 42,884 feet of tunnel; a 104-foot-long, 20-foot-wide, concrete sandbox at the tunnel exit; 390 feet of rectangular flume; 904 feet of Lennon flume on steel structure; and 612 feet of arched- concrete conduit; (4) a 45-foot-long, 33-foot-wide, 11-foot-deep forebay; (5) a 1,693-foot-long buried penstock, varying in diameter from 108 inches at the intake to 27 inches at the end of the header at the powerhouse; (6) a 170-foot-long, 71-foot-wide, reinforced concrete powerhouse containing four Pelton-type generating units with a total installed capacity of 26.3 MW; (7) a rectangular tailrace that discharges flows over a weir section into the Kern River; (8) a 1.9-mile-long, 66-kilovolt transmission line tying into Edison's transmission system; and (9) appurtenant facilities. There is about a 10.2-mile-long bypassed reach of the Kern River between Democrat Dam and the project tailrace. The applicant proposes to continue to operate the project in a run-of-river mode.

III. APPLICANT'S PLANS AND CAPABILITIES

In accordance with Sections 10(a)(2)(C) and 15(a) of the FPA,⁷ staff evaluated Edison's record as a licensee with respect to the following: (A) consumption improvement program; (B) compliance history and ability to comply with the new license; (C) safe management, operation, and maintenance of the project; (D) ability to provide efficient and reliable electric service; (E) need for power; (F) transmission services; (G) cost effectiveness of plans; and (H) actions affecting the public. I accept the staff's conclusion in each of these areas.

7 / 16 U.S.C. §§ 803 and 808.

Project No. 1930-014

-4-

Here are staff's findings:

A. Consumption Improvement Program

Edison's conservation programs⁸ demonstrate progress in implementing energy management measures for both non-residential and residential customers, including low-income, senior citizens, disabled, and non-English speaking customers.

Edison has filed two documents with the Public Utilities Commission of California: Demand-Side Management Annual Program Summary Report (March 1992) and Energy Management Programs (April 1991). These reports document Edison's efforts and progress made to conserve electricity and promote energy conservation by its customers.

Staff concluded that Edison's efforts have brought about significant improvements in electricity consumption efficiency and that Edison has in place an adequate electricity consumption improvement program.

B. Compliance History and Ability to Comply with the New License

Staff reviewed Edison's compliance with the terms and conditions of the existing license. Staff found that Edison's overall record of making timely filings and compliance with its license is satisfactory and conclude that Edison has the ability to comply with the conditions of a new license and of orders issued thereunder.

C. Safe Management, Operation, and Maintenance of the Project

Staff reviewed Edison's record of management, operation and maintenance of the Kern River No. 1 Project pursuant to project safety. Staff found that the dam and other project works are safe and that the licensee's record of managing, operating, and maintaining these facilities supports the decision to issue a license.

D. Ability to Provide Efficient and Reliable Service

To increase project equipment reliability, Edison has either replaced or plans to replace in the near future the stator iron

⁸ / See Exhibit H(a)-6 in Edison's license application, April 1994.

Project No. 1930-014

-5-

and windings in all four project generators. Edison has no plans to further increase capacity or generation at the project.

Edison coordinates all of its generation facilities through an operations center to maximize production at minimal economic and environmental cost. The Kern River No. 1 powerhouse is operated semi-automatically, with alarms connected to the Kern River No. 3 powerhouse which is attended 24 hours a day. Because the Kern River No. 1 Project operates in a run-of-river mode on irrigation flow releases made from Lake Isabella, Edison does not need to coordinate its operation with any upstream or downstream water resources projects other than to notify downstream water resource projects when an emergency shut down becomes necessary.

Over the five-year period, 1989 to 1994, the project lost 2,437 MWh of energy due to unscheduled outages. Over half of this loss occurred over a 5-day period of project shut down caused by a wall collapse in one of the project tunnels. The average annual energy production for this project is 178,585 MWh based on the 15-year period, 1977 through 1992.

Staff found that Edison has operated the project in an efficient manner within the constraints of the existing license and can continue to provide efficient and reliable electric service in the future.

E. Need for Power

Edison is a public utility serving about 4.2 million customers in an area of about 50,000 square miles in southern California, excluding the city of Los Angeles. This area includes some 800 cities and communities and a population of about 11 million people. Edison has owned and operated the Kern River No. 1 Project since 1907. The project has been serving a portion of the power requirements of Edison's customers for a continuous period of nearly 90 years. The project accounts for 24.8 MW of Edison's total hydroelectric resources of 1,153.3 MW.

If a new license is not issued for the project, Edison would need to replace the project's capacity and average annual generation of 179 gigawatthours (GWh). Over the short term (up to 5 years), generation from existing gas-fired units or power purchases could be an alternative to the project's dependable capacity and energy production. If generation from Edison's oil-fired and gas-fired units currently held in standby reserve were to provide needed replacement energy and capacity, the schedule for returning these units to service would have to be advanced, requiring significant capital investments.

Project No. 1930-014

-6-

The Kern River No. 1 Project displaces oil-fired and gas-fired energy, providing an average annual savings equivalent to nearly 300,000 barrels of oil. Replacement of the project by fossil-fired generation would increase air pollutant emissions in the South Coast Air Basin, where most of Edison's oil and gas units are located. By offsetting the need to produce 179 GWh of energy annually from such generation, the Kern River No. 1 Project reduces direct air emissions in the Los Angeles area.

In addition to the need for project power to serve Edison's customer load, the Kern River No. 1 Project and its associated transmission facilities is needed to provide voltage support when transmission line outages occur on Edison's Cummings or Gorman lines. Without the project, Edison would need to construct additional transmission facilities.

Besides looking at Edison's need, staff also looked at the regional need for power. The electricity generated from the project would benefit the region by providing a portion of the needed regional power. In its 1996 report, the Western Systems Coordinating Council shows that the utilities in the California- Southern Nevada area plan to add over 2,500 MW of capacity to the system over the 10-year planning period (1995-2005).

As licensed, the project will continue to meet part of Edison's needs and a small part of the region's needs. In addition the project will continue to displace fossil-fueled electric power generation the regional utilities now use, and thereby conserve nonrenewable fossil fuels and reduce the emission of noxious byproducts caused by the combustion of fossil fuels.

F. Transmission Services

Project generation provides voltage support for local loads of about 30 MW when line outages occur in a 100-mile-long transmission line serving the Cummings and Gorman areas. Removal of project generation would require Edison to construct new transmission lines or other facilities to avoid interruption of service to these areas. Edison estimates the cost of these facilities would exceed \$20 million.

There are no other transmission lines associated with the project in the area and Edison proposes no modifications to the transmission system.

Staff concluded that Edison's transmission service is sufficient for the project and that no changes are necessary at this time.

Project No. 1930-014

-7-

G. Cost Effectiveness of Plans

Edison has no plans for additional facilities or project modifications, other than operational improvements, and wildlife, recreational, aesthetic, and cultural resource enhancements. Staff found that the project, as presently configured and as operated according to this order consistent with environmental considerations, fully develops the economical hydropower potential of the site in a cost-effective manner.

H. Actions Affecting the Public

Environmental enhancement measures and recreation improvements included in the license will generally improve environmental quality, particularly for aquatic and wildlife resources, and will have a beneficial affect on public use of project facilities for recreational purposes.

Project No. 1930-014

-8-

IV. WATER QUALITY CERTIFICATION

Under Section 401(a)(1) of the Clean Water Act,⁹ the Commission may not issue a license for a hydropower project unless the relevant state agency has either issued a water quality certification for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year.¹⁰¹⁰

On April 26, 1994, Edison applied to the California State Water Resources Control Board (Cal. Water Board) for water quality certification. The Cal. Water Board received the certification request on May 2, 1994. On May 1, 1995, the Cal. Water Board issued certification for the project. On December 2, 1997, Edison submitted a petition for reconsideration of the certification. The Cal. Water Board issued a revised Section 401 certification on January 12, 1998.¹¹¹¹

The certification contains conditions that require Edison to implement a five-year water quality monitoring program in order to ensure that water temperature objectives for the Tulare Lake Basin Water Quality Control Plan continue to be met, to prevent pollutants and other nuisance materials from entering the surface waters, and to coordinate with the California Fish and Game and take reasonable protection measures during any project-related dewatering activities. Article 408 requires Edison to file a schedule for conducting the water temperature study plan and reserving the Commission's authority to modify project operation to achieve the state's **temperature objective for protection of the COLD water**

9 / 33 U.S.C. § 1341(a)(1).

10 / Section 401(a)(1) requires an applicant for a federal license or permit to conduct any activity that may result in any discharge into navigable waters to obtain from the state in which the discharge originates certification that any such discharge will comply with applicable water quality standards.

10 / Section 401(a)(1) requires an applicant for a federal license or permit to conduct any activity that may result in any discharge into navigable waters to obtain from the state in which the discharge originates certification that any such discharge will comply with applicable water quality standards.

11 / See Appendix A to this order.

11 / See Appendix A to this order.

Project No. 1930-014

-9-

beneficial use of the project's bypassed reach. ¹²¹²¹²

V. SECTION 4(e) CONDITIONS

Section 4(e) of the FPA ¹³ requires that Commission licenses for projects located within United States reservations must include all conditions that the Secretary of the department under whose supervision the reservation falls shall deem necessary for

12 / In their April 22, 1998, letter, Edison states that the final EA focuses exclusively on cold water fish habitat and that a specific numeric water temperature criterion would be both inappropriate and incompatible with the Tulare Lake Basin Water Quality Control Plan and the 401 Certification. The final EA (see EA at 11-13) explicitly states the January 12, 1998, water quality certification conditions. The final EA also describes both the cold and warm water fishery in the bypassed reach (see EA at 23-24) and the frequency that cold water conditions are met (see EA at 21-22). Further staff does not recommend in the final EA, nor does this order require, that a specific temperature be maintained.

12 In their April 22, 1998, letter, Edison states that the final EA focuses exclusively on cold water fish habitat and that a specific numeric water temperature criterion would be both inappropriate and incompatible with the Tulare Lake Basin Water Quality Control Plan and the 401 Certification. The final EA (see EA at 11-13) explicitly states the January 12, 1998, water quality certification conditions. The final EA also describes both the cold and warm water fishery in the bypassed reach (see EA at 23-24) and the frequency that cold water conditions are met (see EA at 21-22). Further staff does not recommend in the final EA, nor does this order require, that a specific temperature be maintained.

12 In their April 22, 1998, letter, Edison states that the final EA focuses exclusively on cold water fish habitat and that a specific numeric water temperature criterion would be both inappropriate and incompatible with the Tulare Lake Basin Water Quality Control Plan and the 401 Certification. The final EA (see EA at 11-13) explicitly states the January 12, 1998, water quality certification conditions. The final EA also describes both the cold and warm water fishery in the bypassed reach (see EA at 23-24) and the frequency that cold water conditions are met (see EA at 21-22). Further staff does not recommend in the final EA, nor does this order require, that a specific temperature be maintained.

13 / 16 U.S.C. § 797(e).

Project No. 1930-014

-10-

the adequate protection and utilization of such reservation. A portion of the Kern River No. 1 Project is located in the Sequoia National Forest, which is under the supervision of the Forest Service.

By letter dated April 29, 1998, the Forest Service provided its final Section 4(e) conditions.¹⁴ These conditions are included in the license pursuant to ordering paragraph (D) and Appendix B of this order.¹⁵

14 / Forest Service Condition 28 would prohibit a variety of discriminatory employment practices by Edison under Title VI of the Civil Rights Act of 1964. I question whether this condition bears any relationship to the adequate protection and utilization of the reservation, nor does the Commission have the authority to enforce that law. See NAACP v. FPC, 425 U.S. 662 (1975). However, the Supreme Court, in Escondido Mutual Water Co. v. LaJolla Band of Mission Indians, 466 U.S. 765, 777-78, n.21 (1984), held that when the Secretary proposes conditions which the Commission believes to be unreasonable, the Commission may either decline to issue the license or issue the license with the conditions and explain its objections, thereby leaving the court of appeals the final determination of reasonableness.

15 / In their April 22, 1998, letter, Edison requested the Forest Service eliminate the additional enhancement measures at the Upper Richbar Day Use Area (a second accessible, double unit, sweet smelling toilet) not agreed to by Edison (see Forest Service Condition No. 5), because the Forest Service failed to show why this extra enhancement is necessary to protect and use the Forest and that any affect is not project induced. Absent this, Edison requested the Commission license acknowledge the lack of evidence to support the need for the extra facility.

The condition is included in this license in accordance with the Supreme Court decision, in Escondido Mutual Water Co. v. LaJolla Band of Mission Indians, 466 U.S. 765, 777-78, n.21 (1984) (see footnote 14). Regarding the support for this facility, the final EA, jointly supported by Commission and Forest Service staff, adequately describes the reasons for requiring the additional facility: project operations can directly affect the recreational experience at these facilities which are at or exceeding capacity; the recommended facilities would substantially improve public use of the area and they would improve access for

Project No. 1930-014

-11-

The Forest Service's Decision Notice on the Section 4(e) conditions is subject to appeal under its own administrative decision making process.¹⁶ This license is being issued before the Forest Service appeals process is completed. Consequently, any valid revisions to the Section 4(e) conditions included in this license that result from the administrative appeals that may come before the Forest Service will be incorporated in the license. Upon the submittal of such provisions by the Forest Service, the Commission will issue an order amending the license.¹⁷ The licensee will then have the opportunity to request rehearing, and thereafter file for court review, of such revisions.¹⁸

VI. THREATENED AND ENDANGERED SPECIES

Section 7(a) of the Endangered Species Act of 1973 (ESA)¹⁹ requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of designated critical habitat. Based on distribution, habitat requirements, and site survey results, staff determined that the endangered Bakersfield cactus, endangered peregrine falcon, threatened bald eagle, and threatened valley elderberry longhorn beetle are federally-listed species that may find suitable habitat in the vicinity of the Kern River No. 1 Project. The staff's EA concluded that continued project operation and maintenance, with staff's recommended mitigation measures, including the requirement to prepare a biological evaluation prior to any land-disturbing activities (Forest Service Condition 11), would not affect these species.²⁰ By letter dated October 1, 1997, FWS determined that the project is not likely to adversely affect any federally listed species and that no further action pursuant to the Endangered Species Act of 1973, as amended, is necessary. I concur.

VII. RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE

individuals with disabilities; they would help attain Forest Service recreation management objectives; and they would ensure continued benefit of the recreational facilities throughout the license term (see EA at 52 and 74).

16 / 36 CFR 215.

17 / See Ordering Paragraph (D) below.

18 / See Escondido Mutual Water Co. v. LaJolla Band of Mission Indians, 466 U.S. 765 (1984).

19 / 16 U.S.C. § 1536(a).

20 / See EA section V.C.4.

Project No. 1930-014

-12-

AGENCIES

Section 10(j)(1) of the FPA²¹ requires the Commission, when issuing a license, to include license conditions, based on recommendations of federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act,²² to "adequately and equitably protect, mitigate damages to, and enhance, fish and wildlife (including related spawning grounds and habitat)" affected by the project. **No agency submitted conditions pursuant to Section 10(j) of the FPA.**

VIII. WILD AND SCENIC RIVER SYSTEM

The Wild and Scenic Rivers Act²³ prohibits the Commission from licensing any hydroelectric project that is on or directly affects rivers Congress has designated for either inclusion in the Wild and Scenic Rivers System or study for potential inclusion in the System (study rivers). The Forest Service has determined that the lower Kern River, from Isabella dam to the canyon mouth above Bakersfield, meets Wild and Scenic eligibility requirements and, if found suitable, would be an appropriate addition to the National River System. The reach between Democrat dam and the National Forest boundary (Segment 3), where the project is located, was determined to be eligible as a *Recreation River* because of its remarkable wildlife, scenic, and recreation values.

The criteria for *Recreation River* classification includes existing impoundments and diversions, as long as the waterway remains generally natural and riverine in appearance. Staff concluded that none of the alternatives analyzed in this EA include proposals, such as constructing new impoundments or reducing flows in the bypassed reach, that would detract from the current condition and the outstanding remarkable values on which the Forest Service determined the eligibility of the lower Kern River. Thus, issuing a new license for the project would not affect the river's eligibility for Wild and Scenic River status, nor, would additional measures be necessary to mitigate effects on outstanding remarkable values. I concur.

IX. INTERVENOR'S ISSUES

A. Whitewater Recreation

-
- | | | |
|----|---|--------------------------------|
| 21 | / | 16 U.S.C. § 803(j)(1). |
| 22 | / | 16 U.S.C. § 661 <u>et seq.</u> |
| 23 | / | 16 U.S.C. §§ 1271-87. |

Project No. 1930-014

-13-

The record in this proceeding contains extensive information, comments, analysis, and discussion of whitewater recreation, specifically whitewater boating flows, access improvements, and flow information concerns.²⁴ As stated in the EA, the Kern River is a regionally important recreation resource because it provides high quality whitewater opportunities for residents of Southern California and the San Joaquin Valley. It is also important to the local economy because of the tourist spending and jobs associated with boating opportunities.

Friends of the River and American Whitewater Affiliation (Friends) recommend that Edison provide a set schedule of 14 days of augmented flows of 1,250 to 2,350 cfs on weekends, holidays, and special recreation dates from June through August during the hours of 10 a.m. to 7 p.m. The Forest Service doesn't recommend any whitewater flow augmentation. No other agency has recommended whitewater boating flows or access improvements. In their comments on the draft EA, the North Kern Water Storage District (Kern Water Storage District) strongly opposed any re-regulation of flows to accommodate recreationists (letter from C.H. Williams, Engineer-Manager, North Kern Water Storage District, Bakersfield, California, August 21, 1997).

Edison doesn't propose any additional flow for whitewater boating. Edison believes that sufficient flows are available. Edison also contends that because it has control over a relatively small amount of water compared to the large releases from Lake Isabella, the resulting unpredictability of releases from Lake Isabella would mean that augmented flows would be set on a very short time scale, and would not be useful for boaters planning a trip.

In the EA, staff concluded from its review of 20 years of flow records and the results of a whitewater boating study that was conducted with the participation and review of Friends and others, that ample flows for whitewater boating are available for much of the boating season, that present use of the project bypassed reach is low even when ample flows for whitewater boating are available, and that increasing flows for whitewater boating could reduce the recreational experiences for other activities such as swimming, fishing, and recreational mining.²⁵

24 / See, EA at 52-60, 68, 69, 74-76, and attached letters of comment and responses thereto in Appendices B and C.

25 / As stated by staff in the EA at 55-57:

We believe that the available data indicates that current flow conditions allow for a reasonable balance for all the recreation users. On average, "*suitable*" and "*optimum*" whitewater boating

Project No. 1930-014

-14-

In their April 30, 1998, comments on the FEA, FOR says it recognizes that the Kern River No. 1 license cannot mandate Lake Isabella releases, then goes on to reiterate its recommendation of adding days of "scheduled augmented optimum flows". As staff acknowledge in the final EA, the licensee can only augment flows by 412 cfs to reach a desired flow level when available from Lake Isabella releases.²⁶ If the licensee cannot control the releases that produce the desired flows at the project diversion, it has a very limited ability to "schedule" optimum flows in the project bypassed reach. Even if Edison scheduled specific days when it would shut down the Project and direct the entire 412 cfs project flow to the bypassed reach, this would not insure the occurrence of optimum whitewater flows in the range of 700 to 1,250 cfs. The licensee has no way to predict in advance what the flow released from Isabella will be and, therefore, cannot be required to "schedule" specific flows in advance. FOR says that if additional flows are not provided, whitewater boating cannot develop further on the bypassed reach. From the analysis in the EA, it is apparent that, despite the frequent occurrence of suitable whitewater boating flows under existing conditions, whitewater boating use is minimal and not presently constrained by insufficient flows.

Based on my review of the facts in this case, I agree with staff that changes in operation to provide additional whitewater boating flows are not warranted at this time.

Staff, however, also acknowledge that whitewater boating use may increase in the future as knowledge of the resource becomes more widely known and as access is improved.²⁷ Article 410 requires Edison to provide a mechanism to inform the public of

conditions are available 64 (59 days) and 55 (51 days) percent of the time between June and August, respectively; and 48 (73 days) and 41 (62 days) percent of the time between June and October, respectively. Flows of 1,250 cfs, are available, on average, 11 of the 14 days recommended by FOR/AWA, or about 45 percent of all weekend days during June through August. In contrast, flows (100-300 cfs) that might be desired by other recreational users are present about 9 percent (8 days) and 10 percent (15 days) of the time between June and August and June and October, respectively. Given the existing annual use of about 25 to 100 visits and the availability of about 120 usable days a year (WRC-Environmental 1996), it appears that existing whitewater boating use is not significantly limited or constrained by the project's present operation.

26 / See EA, Appendix B at B-10 and B-11.

27 / The whitewater boating study attributed the low use to the previous belief by boaters that the Forest Service closed this portion of the river to boating, to the level of expertise

Project No. 1930-014

-15-

flow levels in the bypassed reach. This will help all users plan their activities in the area.

To further improve recreation in the project reach and to help offset project effects on available flows, Article 411 requires Edison to prepare an access improvement plan that would assess and implement, where feasible, safe access improvements in the project bypassed reach. I agree with staff that specific recommendations for access improvements cannot be made at this time because of various unknown factors that would influence such a decision, including traffic and pedestrian safety, protected species, competing interests of various users, Forest Service land management objectives, and cost. Developing the access improvement plan will provide a means to base a more informed decision on safe and effective access improvements that will benefit the various users and the resources.

In their April 22, 1998, letter, Edison argues that access improvements are not appropriate as a flow-related mitigation measure because no evidence has been provided regarding the severity of project effects on recreation experiences. Edison also argues that to consider access improvements as an enhancement measure is inappropriate in the context of electric utility deregulation in California because such measures may make the project uneconomic and uncompetitive.

The Commission must fully evaluate the recreational resources of all projects under federal license and the ultimate development of these resources, consistent with the needs of the area. The Commission expects licensees to develop suitable public recreational facilities upon project lands and waters and to make provisions for adequate public access to such project facilities and waters.²⁸ A desire for better access has been expressed by numerous whitewater boating enthusiasts.²⁹ Staff found that access improvements would have definite value in meeting recreation needs in the project reach, if such facilities can be provided in a manner that ensures public safety and appropriate land stewardship. Staff determined that access problems created by topography and the sinuosity of Highway 178, which parallels the project bypassed reach, may be limiting use of the project bypassed reach by whitewater boaters, that other recreational users would also benefit from such access improvements, and that

needed to run many of the rapids, and to limited access.
Friends

believe that as the word of this resource continues to spread and as the river becomes easier to use (permits, access and river descriptions), its usage will likewise increase (letter from Richard Bowers, AWA, August 30, 1996).

28 / 18 CFR Section 2.7.

29 / Several non-governmental organizations (FOR, American Whitewater Affiliation, and others) and over 53 individual commented on the need for access improvements (See EA, Appendices A and B).

Project No. 1930-014

-16-

such improvements would help offset effects of project altered flows.³⁰ I believe there is

sufficient reason to examine how access might be improved to enhance recreational opportunities in the bypassed reach. Article 411 requires Edison to evaluate potential opportunities to improve access. The Commission will carefully consider the costs of any future enhancements that may be recommended from the study before requiring their implementation. However, the specific cost to the project cannot be determined until we know what measures, if any, may be recommended and what options for cost sharing might be recommended.³¹

Article 409 requires Edison to file a plan to monitor recreation use in the project bypassed reach for five years to determine if future demands for river recreation warrant operational modifications to protect and enhance recreational values. The article also requires Edison to evaluate the effects of any recommended changes in operation that may result from the study on other recreation uses, irrigation, and energy generation. Other provisions in the article require Edison to coordinate this study, to the extent practicable, with the relicensing efforts for Edison's Borel Project (FERC No. 382) and Pacific Gas and Electric Company's (PG&E) Kern Canyon Project (FERC NO. 178).³² With this information and any bypassed reach access improvements, staff will be in a much better position to determine the long-term need and effects of whitewater boating in much of the Kern Canyon below Lake Isabella. Moreover staff will be able to provide, if needed, a coordinated recommendation for changes in operation at all three projects that would have greater benefits for the resources throughout much of the canyon.

Edison also recommends that access improvements be considered, if at all, after the recreation use monitoring study is completed because the study should provide a

30 / See EA at 58 and 59.

31 / In their April 30, 1998, letter commenting on the FEA, FOR says an "implementing mechanism" is needed for any new environmental measures that might be recommended as a result of post-licensing studies. We believe a suitable implementing mechanism is available through the license amendment process and through the specific reservation of authority in Articles 403 (smallmouth bass monitoring study), 409 (recreation monitoring study), and 411 (access improvement study) to require implementation of any recommended measures, as appropriate, that are developed from the above referenced studies.

32 / Edison requested in their April 22, 1998, letter, that the license reflect that Edison cannot compel PG&E to either conduct their own or participate in the required recreation monitoring. I agree and article 409 requires Edison to coordinate to the extent practicable. A concerted effort, however, would likely be prudent for both parties in terms of cost savings and efficiency in conducting the studies and gathering relevant information affecting both licensee's projects.

Project No. 1930-014

-17-

better indication of whether or not access enhancements are justified and for what purposes. As discussed earlier, sufficient information exists to warrant looking at access improvements now. Moreover, such improvements may influence the recreational use that would be monitored. Therefore, I am requiring that the access improvement plan be filed within one year of license issuance.

In summary, I disagree with the Friends' proposed whitewater augmentation flows because these flows would maximize benefits to whitewater boating at the expense of all other developmental (e.g., power generation) and non-developmental (e.g., other recreation uses) values. Our mandate under the FPA is to balance all competing interests. I believe the new license by requiring the recreation monitoring study, access improvement plan, and flow information service does so. Finally, I reject the Intervenor's argument that the EA is inadequate because staff failed to quantify the monetary benefits of whitewater boating. In their April 30, 1998, comments on the final EA, FOR reiterate their concern that the final EA underestimates the value of whitewater recreation and overestimates the value of lost generation. FOR suggest that a midpoint value between FOR and WRC-Environmental estimates of an incremental annual value of a whitewater boating from augmented flows (\$67,425 when flows of 750 cfs are met and \$49,155 when flows of 950 cfs are met) should be used in the Commission's summary calculation of economic costs and benefits of continued operation of the project, rather than ignoring the benefit estimates. Staff didn't ignore the economic value of boating. However, the Commission is not required to assign dollar values to each benefit and impact, and I do not believe that it is necessary to do so in this case because it would not change my decision.³³

33 / As stated by the Commission staff in response to comments on the draft EA at page B-38 of the EA:

...The Commission's goal is not to maximize one single aspect of the resource to the detriment of all others, but to balance all uses in the most comprehensive fashion, consistent with our mandate in Section 10(a)(1) of the FPA.

See also staff response to comments at page B-13.

Environmental valuation is a controversial and difficult analysis to conduct. Our analysis is not based on assigning dollar values to all uses

Project No. 1930-014

-18-

B. Minimum Flow

Edison proposes to continue to release a minimum instream flow of 50 cubic feet per second (cfs) or inflow, whichever is less, in the bypassed reach between June 1 and September 30 of each year, and a minimum instream flow of 15 cfs or inflow from October 1 through May 31 of each year.³⁴ Forest Service Condition No. 4 requires releasing the proposed minimum instream flows for the protection of fishery resources. Article 401 requires that the above minimum flows be provided unless temporary modifications are required by operational emergencies.

of the waterway, nor do we agree that such an approach is feasible and appropriate (see discussion in section V.C.8 of the EA). The monetary worth of a resource use is only one measure of value and should not be the singular determinant in balancing competing uses in the public interest.

We further note that the Commission has determined that it cannot estimate future cost or price trends for the value of energy with any certainty over the 30- to 50-year term of a license. Thus, the economic analyses are based on a current cost approach to comparing the costs and values of various alternatives. Our ability to forecast recreation demands and potential associated economic benefits is similarly constrained. In the face of this uncertainty, we have made what we think is a reasonable balance of competing interests.

In any case, we didn't not recommend augmenting flows for whitewater based solely on the cost of lost power. As we explain in section VII, Comprehensive Development and Recommended Alternative, the available data indicates that current flow conditions allow for a reasonable balance of all recreation uses and that whitewater boating use is not significantly constrained by the project's present operation. Augmenting flows could conflict with other recreation uses.

34 / By Order Requiring Minimum Flow Release, dated February 14, 1991, Edison was required to release the above minimum flows (54 FERC ¶ 62,105).

Project No. 1930-014

-19-

In their August 27, 1997, comments on the draft EA, FOR³⁵ argue that no studies have been conducted to determine whether the recommended flows are sufficient to support the smallmouth bass fishery and that such a study should be required of any new license issued. Similar comments were provided by various individuals commenting on the draft EA.³⁶

The required flows are based on the results of an Instream Flow Incremental Methodology (IFIM) study conducted in consultation with California Department of Fish and Game.³⁷ The IFIM study showed that 83 percent-of-maximum habitat (expressed as weighted useable area or WUA) for adult rainbow trout is available at 50 cfs, and a minimum of 94 percent-of-maximum WUA for the adult, juvenile, and fry life stages of smallmouth bass is available at 15 cfs. Commission staff believe that these flows should be adequate to protect fishery resources in the bypassed reach, but recognize that the relationship between WUA and fish production is theoretical.³⁸ Staff,

35 / These were joint comments of American Whitewater, FOR, Kern River Outfitters, Kern Valley Chamber of Commerce, Kern Valley Community Consensus Council, Sierra Club Kern-Kaweah Chapter. See EA, Appendix B at B-12.

36 / See EA, Appendix C.

37 / Neither the California Department of Fish and Game nor the United States Fish and Wildlife Service recommended any minimum flows in response to the Commission's Notice of Ready for Environmental Analysis, issued September 11, 1996. The California Department of Fish and Game, in a letter to Edison dated October 5, 1990, stated that 50 cfs from June through September would maintain adequate spatial habitat for adult trout, and that 15 cfs during October through May would maintain adequate habitat for all life stages of smallmouth bass.

37 / Neither the California Department of Fish and Game nor the United States Fish and Wildlife Service recommended any minimum flows in response to the Commission's Notice of Ready for Environmental Analysis, issued September 11, 1996. The California Department of Fish and Game, in a letter to Edison dated October 5, 1990, stated that 50 cfs from June through September would maintain adequate spatial habitat for adult trout, and that 15 cfs during October through May would maintain adequate habitat for all life stages of smallmouth bass.

Project No. 1930-014

-20-

therefore, recommend that Edison develop a plan to study the adequacy of the minimum flows for protecting and enhancing the smallmouth bass fishery in the project's bypassed reach. Article 403 so requires.

In their April 22, 1998, comments on the final EA, Edison states that the recommended smallmouth bass study is inappropriate because the study would not be meaningful unless the population of smallmouth bass is controlled by habitat-limited factors that are in turn controlled by Edison's required instream flows. Edison believes that large flow fluctuations released from Lake Isabella to meet irrigation demands is the most likely factor, among many recognized in the final EA, affecting smallmouth populations. Edison believes it is unreasonable and unduly burdensome to require it to monitor impacts outside of its control and for which it could not take any action to remedy the problems stemming from the management actions of other parties.

Staff recognize that there are factors affecting the smallmouth population that are not directly attributable to project operation.³⁹ However, minimum instream flows are a contributing factor. Staff believe that a monitoring plan to evaluate the effectiveness of the required minimum instream flows in meeting its desired goal of protecting the fishery in the bypassed reach is reasonable and prudent. Such an effort, the level of which would be determined in consultation with the relevant resource management agencies and Edison, would also provide the Commission, the licensee, and the resource agencies a means to adapt the license to changing conditions and needs of the resource and of energy generation. I concur.

Friends also contend that to be consistent with the Sequoia National Forest Land and Resource Management Plan (Forest Plan) no more than 50 percent of the flow in the project bypassed reach should be diverted in order to protect the Kern's fishery, riparian habitat, and endangered species. I reject Friends' argument because such minimum flows are not necessary for protecting these resources, and information provided by the Forest Service indicates that this guideline applies to other activities such as diversions for drafting water for dust abatement. Moreover, the Kern River No. 1 Project was a

38 / See Section V.2.b of the EA.

39 / See Section V.2.b of the EA.

Project No. 1930-014

-21-

recognized and accepted use when the Forest Plan was drafted.

C. Lower Kern Trust Fund

Friends recommend that Edison be required to establish a mitigation fund based on a percentage of Edison's projected revenues over the life of the license, to account for its "free" use of this public waterway over the last 89 years. The fund would be initially funded by Edison at a level of \$500,000, with annual supplements provided by Edison and public subscription. The fund would be managed by a Lower Kern Advisory Board made up of various stakeholders on the Lower Kern including Edison, Forest Service, AWA, FOR, the Kernville and Lake Isabella Chamber of Commerce, KRA, the Kern River Flyfishers, the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the Bureau of Land Management. The funds would be dedicated to the acquisition of riparian land and water rights, improving public access, and recreational use of the Lower Kern.

The Commission disagrees with the idea that there must be mitigation for impacts of original project construction, but will consider alternatives for enhancing resources and mitigating ongoing impacts. ⁴⁰ Staff concluded in the EA that project operation has little effect on riparian vegetation. ⁴¹ Staff recommends and this order requires measures to protect and enhance the fishery resources (minimum flows, Article 401; smallmouth bass study, Article 403), recreation access (access improvement study, Article 411), and recreation use (recreation monitoring, Article 409; flow information service, Article 410; and developed recreation enhancements, Forest Service Condition No. 5) in the Lower Kern River. The stakeholders that would be included in Friends' Advisory Board are to be consulted in developing the studies and any recommended measures. I, therefore, reject the need for a mitigation fund.

D. Decommissioning and Retirement

40 / The Commission's policy on baseline is found in the two following orders for the Cushman Project (FERC No. 460): (1) Declaratory order on nature of proceeding on application for a subsequent license after a minor part license expires, 67 FERC ¶61,152 (May 4, 1994); and (2) Order granting intervention and denying rehearing, 71 FERC ¶61,381 (June 22, 1995).

41 / See EA at page 33.

Project No. 1930-014

-22-

Friends recommend that the Commission fully investigate the potential benefits of decommissioning the Kern River No. 1 Project because "Edison needs neither the capacity nor energy generated" and because it would benefit the fishery, riparian habitat, and whitewater recreation. Staff evaluated the decommissioning alternative in the EA.⁴² The record shows there is a need for the project, and that the minimum instream flows and monitoring studies will protect the fishery resources affected by the project.⁴³ Staff believe that the incremental environmental improvement associated with decommissioning is small for most resources,⁴⁴ and may even be negative for some uses and resources (angling and wading, for example) when compared to continued operation with staff-recommended mitigation and enhancement measures.⁴⁵ No resource agency has recommended decommissioning the project. I do not believe that decommissioning the Kern River No. 1 Project would be in the public interest at this time.

Friends also recommended that a decommissioning fund be established. They believe that such a burden on Edison would be

42 / Staff evaluated the alternative of decommissioning without removal of project structures for each resource throughout the EA. Staff considered but eliminated from detailed study the alternative of decommissioning with dam removal because no participant suggested that this alternative would be appropriate and because the potential benefits would also be obtained without dam removal, except for unobstructed fish movement and whitewater boating. See EA at 8-9.

43 / See Section III.E, and IX.B, *infra*.

44 / Edison believes that final EA failed to recognize the fact that water rights issues complicate the perceived benefits of decommissioning because water not released by the Watermaster to fulfill Edison's senior water rights might not be released from Lake Isabella. Consequently, decommissioning would not necessarily result in the restoration of 412 cfs of flow to the diverted stretch of the river. Edison's opinion is noted. The final EA provides an analysis of the benefits that would result from not diverting a maximum of 412 cfs (see EA at 9); staff did not intend to suggest that decommissioning would return a maximum of 412 cfs to the diverted reach.

45 / See Response to Comments at B-15.

Project No. 1930-014

-23-

modest and would be fairer than a system that arbitrarily imposes the costs of decommissioning on future rate payers.

The Commission has discussed this issue recently in a number of cases and in our December 14, 1994 Policy Statement on Project Decommissioning at Relicensing.⁴⁶ The record does not reveal any reasons to question either the project's future viability or usefulness at the end of the license term, or Edison's ability to finance decommissioning at a future time. Therefore, a decommissioning fund is not warranted.

X. OTHER ISSUES

A. Sediment Monitoring Program

In 1996, Edison began a two-year study to monitor sediment deposition in pools in the project bypassed reach to address sediment management concerns raised by California Department of Fish and Game during scoping. Article 402 requires Edison to file the results of the monitoring study and to adjust their sediment releasing operations, if necessary, based on the monitoring results and consultation with state and federal resource agencies.

B. Monitoring Leaking Flumes to Protect Wildlife Habitat

Water leaking from and splashing over the sides of the project flumes enhances small pockets of riparian vegetation and wildlife habitat. Edison proposes to annually monitor these leaking flumes and to consult with the Forest Service before taking measures that would reduce the leakage. Article 405 requires Edison to consult with the Forest Service to determine what measures might be taken to sustain these habitats if repairs to the flumes are required and to implement the agreed upon measures.

C. Cultural Resources

Edison proposes to implement protective measures outlined in

46 / See, 60 Fed. Reg. 339, 346 (Jan 4, 1995); III FERC Stats. & Regs., Regs. Preambles, 31,011 at pp. 31,232-33 (Dec. 14, 1994). Cf. Wisconsin Electric Power Company, 73 FERC 61,346 (1995); Menominee Company, et al., 74 FERC 61,023 (1996); Southern California Edison, 77 FERC 61,313 (1996).

Project No. 1930-014

-24-

its cultural resources management plan to avoid and mitigate impacts to the historical integrity of the Kern River No. 1 Historic District. Article 407 requires Edison to implement the cultural resources management plan. If additional archeological or historic sites are discovered during project operation, Article 408 requires preparation of a site-specific plan to avoid or mitigate impacts to these sites.

Project No. 1930-014

-25-

D. Use and Occupancy of Project Lands and Waters

Requiring a licensee to obtain prior Commission approval for every use or occupancy of project land would be unduly burdensome. Article 412 allows Edison to grant permission, without prior Commission approval, for the use and occupancy of project lands for such minor activities as landscape plantings. Such uses must be consistent with the purpose of protecting and enhancing the scenic, recreational, and environmental values of the project. To further protect the visual quality of the canyon, Article 406 requires Edison to consult with the Forest Service prior to painting project facilities and to select colors that reduce the contrast of the project facilities with the surrounding environment.

E. Administrative Conditions

The Commission collects annual charges from licensees for the administration of the FPA and for recompensing the United States for the use, occupancy and enjoyment of its lands. Article 201 provides for the collection of such funds. Article 202 requires the filing of aperture cards for project drawings. Article 203 requires the establishment and maintenance of amortization reserve account. Article 204 requires Edison to reimburse the owner of a storage reservoir or other headwater improvement project that directly benefits the licensee's project. The benefits will be assessed in accordance with Subpart B of the Commission's regulations.

XI. COMPREHENSIVE PLANS

Section 10(a)(2)(A) of the FPA⁴⁷ requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving waterways affected by the project. Pursuant to this section, federal and state agencies filed 35 comprehensive plans that address various resources in California. Of these, staff⁴⁸ identified five plans that have comprehensive riparian and project.

47 / 16 U.S.C. § 803(a)(2)(A).

48 / (1) Forest Service. 1988. Sequoia National Forest Land and Resource Management Plan, Department of Agriculture, Porterville, California. March 1988, as amended by the Sequoia National Forest Mediated and Management Plan 1990 Settlement Agreement. July 1990. (2) California Department of Water Resources. 1983.

Project No. 1930-014

-26-

this project.

Two other plans, which are not designated as qualifying comprehensive plans, address water quality resource concerns for the area.⁴⁹ No conflicts with these two plans were found for this project.

XII. COMPREHENSIVE DEVELOPMENT

Sections 4(e) and 10(a)(1) of the FPA⁵⁰ require the Commission, in acting on applications for license, to give equal consideration to the power development purposes and to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of fish and wildlife, the protection of recreational opportunities, and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgement will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for beneficial public uses. The decision to license this project, and the conditions included herein, reflects such consideration.

The EA analyzed the effects associated with the issuance of a new license for the Kern River No. 1 Project, and the EA recommends a variety of measures to protect and enhance the environmental resources, which, as discussed above, I adopt. I conclude that issuance of a new license for the Kern River No. 1 Project will not constitute a major federal action significantly affecting the quality of the human environment.

The California water plan: projected use and available water supplies to 2010. Bulletin

160-83. Sacramento, California. December 1983. 268 pp. and attachments. (3) California Department of Water Resources. 1994. California water plan update. Bulletin 160-93. Sacramento, California. October 1994. (4) California State Water Resources Control Board. 1975. Water quality control plan report. Sacramento, California. (5) California - The Resources Agency. Department of Parks and Recreation. 1983. Recreation needs in California. Sacramento, California. March 1983. 39 pp. and appendices.

49 / (1) California Regional Water Quality Control Board, Central Valley Region (CRWQCB). 1995. Water quality control plan for the Tulare Lake Basin. Second Edition - 1995. (2) State Water Resources Control Board (SWRCB). 1993. California inland surface waters plan. 93-4 WQ. May 1993.

50 / 16 U.S.C. §§ 797(e) and 803(a)(1), respectively.

Project No. 1930-014

-27-

In determining whether a proposed project will be best adapted to a comprehensive plan for developing a waterway for beneficial public purposes, pursuant to Section 10(a)(1) of the FPA, the Commission considers a number of public interest factors, including the economic benefits of project power.

Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in Mead Corp.,⁵¹ the Commission employs an analysis that uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

In making these determinations, the Commission considers the project power benefits both with the applicant's mitigative proposals and with the Commission's mitigative proposals. Based on current economic conditions, without future escalation or inflation, the Kern River No. 1 Project, if licensed as Edison proposes, would provide a dependable capacity of 4.2 MW and produce an average of about 179,000 MWh of energy annually, at an annual cost of about \$1,310,000 (7.32 mills/kWh).⁵² This is about \$30,000 more than the current annual cost of providing power under the No-Action alternative, which is estimated to be about \$1,279,000 (7.14 mills/kWh), for the same dependable capacity and annual generation. If licensed with the mandatory Forest Service and 401 water quality conditions and staff modifications adopted herein, the proposed project would provide the same capacity and generation at an annual cost of about \$1,369,000 (7.65 mills/kWh), or about \$90,000 more than the No-

51 / 72 FERC ¶ 61,027 (1995).

52 / In their April 22, 1998, letter, Edison says that the cost estimate include in Section VII.3 of the final EA (page 75) does not include the \$18,000 cost of preparing the recreation monitoring plan. Staff did include this cost and refers Edison to page 74 of the EA: "We believe the cost of the monitoring plan, estimated to be \$20,000 a year for a period of 5 years plus \$18,000 at the end of the five years for a report..."

Project No. 1930-014

-28-

Action alternative.

The current annual value of the project's power would be \$3,945,000 (22.04 mills/kWh) for all of the above alternatives, since they all provide the same amount of capacity and energy.⁵³ To determine whether the project is currently economically beneficial, the project's cost is subtracted from the value of the project's power. I find the project as licensed by the Commission would be economically beneficial, costing about \$2,577,000 (14.39 mills/kWh) less than the current cost of alternative power.

Based upon my review of the agency and public comments filed on this project, including my review of staff's evaluation of the environmental and economic effects of the proposed project and its alternatives, and my independent analysis pursuant to Sections 4(e) and 10(a) of the FPA, I find that the Kern River No. 1 Project, with the mitigative and enhancement measures included herein, will be best adapted to the comprehensive development of the North Fork Kern River for beneficial public uses.

XIII. LICENSE TERM

Section 15(e) of the FPA⁵⁴ specifies that any license issued shall be for a term that the Commission determines to be

53 / Staff estimated the energy and capacity values based on the cost of combined cycle combustion turbines and regional natural gas fuel cost and alternative capacity cost using a heat rate of 10,000 Btu/kWh.

In their April 30, 1998, comments, FOR says that the power value used for the EA is too high and should be revised to reflect spot market prices and a much lower capacity value. We acknowledge FOR's comments, but do not believe that spot market prices which vary widely over short time periods is a good basis for appraising the replacement value of a constructed hydropower project. Staff's method of appraisal, which is based on replacement value using combined cycle combustion turbine technology, is a valid basis for our decision-making purposes on this project. Using a somewhat lower power value would not change our decision, since other equally important considerations, as discussed in the final EA and elsewhere in this order, contribute to our decision not to require the licensee to augment flows in the bypassed reach for whitewater boating purposes at this time.

54 / 16 U.S.C. § 808(e).

Project No. 1930-014

-29-

in the public interest, but not less than 30 years, nor more than 50 years from the date on which the license is issued.

Commission policy is to grant 30-year terms for projects with little or no redevelopment, new construction, new capacity, or environmental mitigative and enhancement measures, 40-year terms for projects with a moderate amount thereof, and 50-year terms for projects with an extensive amount thereof. The environmental mitigation and enhancement costs of the new license for the Kern River No. 1 Project warrant a term of 30 years, effective the first day of the month in which this license is issued.

XIV. SUMMARY

Background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment are contained in the EA.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if operated and maintained in accordance with the requirements of this license.

The Commission orders:

(A) This license is issued to Southern California Edison Company (Licensee), for a period of 30 years, effective the first day of the month in which this order is issued, to operate and maintain the Kern River No. 1 Hydroelectric Project. This license is subject to the terms and conditions of the FPA, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Federal Power Act.

(B) The project consists of:

(1) All lands, to the extent of the Licensee's interests in those lands, enclosed by the project boundary shown by exhibit G:

<u>Exhibit G Drawing</u>	<u>FERC No. 1930-</u>	<u>Showing</u>
5233859	47	Diversion Dam
Reservoir		
5233860	48	Diversion Dam Access
Road and Water Conduit		

Project No. 1930-014

-30-

5233861	49	Water Conduit
5233862	50	Water Conduit
5233863	51	Water Conduit
5233864	52	Water Conduit
5233865	53	Water Conduit
5233866	54	Powerhouse and
Appurtenances		
5234617	55	Transmission Line
5234618	56	Overhead Profile
Along Conduit		

(2) Project works consisting of: (1) a 29-foot-high, 204-foot-long, concrete overflow diversion dam (Democrat dam) with crest elevation at 1912.7 feet mean sea level, impounding a 27-acre pond; (2) a gated intake structure with trash racks at the left abutment; (3) a water conduit consisting of 42,884 feet of tunnel; a 104-foot-long, 20-foot-wide, concrete sandbox at the tunnel exit; 390 feet of rectangular flume; 904 feet of Lennon flume on steel structure; and 612 feet of arched-concrete conduit; (4) a 45-foot-long, 33-foot-wide, 11-foot-deep forebay; (5) a 1,693-foot-long buried penstock, varying in diameter from 108 inches at the intake to 27 inches at the end of the header at the powerhouse; (6) a 170-foot-long, 71-foot-wide, reinforced concrete powerhouse containing four Pelton-type generating units with a total installed capacity of 26.3 MW; (7) a rectangular tailrace that discharges flows over a weir section into the Kern River; (8) a 1.9-mile-long, 66-kilovolt transmission line tying into Edison's transmission system; and (9) appurtenant facilities

The project works generally described above are more specifically shown and described by the following exhibits that also form a part of the application for license and that are designed and described as:

Exhibit A: Description of the Project

<u>Section</u>	<u>Title</u>
A(1)	<u>General Configuration</u>
A(2)	<u>Storage Capacity</u>
A(3)	<u>Turbines and Generators</u>
A(4)	<u>Transmission Lines</u>
A(5)	<u>Mechanical, Electrical, and Transmission Equipment</u>
A(6)	<u>Lands of the United States within Project Boundary</u>

Exhibit F: Project Drawings

<u>Exhibit F Drawing</u>	<u>FERC No. 2290-</u>	<u>Showing</u>
--------------------------	-----------------------	----------------

Project No. 1930-014

-31-

5232260	57	Diversion Dam
5232261	58	Intake Trash Racks
5232262	59	Intake Gates
5232263	60	Intake and Drainage
Tunnel Inlets		
5232264	61	Gate at Lower End of
Drainage Tunnel		
5232265	62	Sand Box at Head of Flume
No. 1		
5232266	63	Concrete Transition for
Ends of Flume No. 1		
5232267	64	Profile of Flume No. 1
5232268	65	Standard Steel Bents for
Flume No. 1		
5232269	66	Covered Concrete Conduit
No. 3		
5232270	67	Flume No. 2 Cow Creek
5232271	68	Flume No. 2 Cow Creek
Gaging Station		
5232272	69	Typical Flume Details
5232274	70	Flume No. 4 Lucas Creek
5232275	71	Flume No. 5 Dougherty
Creek		
5232276	72	Flume No. 6 Starks Creek
5232277	73	Forebay and Tunnel
Sections		
5232278	74	Penstock
5232279	75	Steel Pipe Spillway from
Forebay		
5232280	76	Plan of Powerhouse and
66-kV rack		
5232281	77	Section of Powerhouse

(3) All of the structures, fixtures, equipment, or facilities used to operate or maintain the project and located within the project boundary, all portable property that may be employed in connection with the project, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) Exhibits A, F, and G as designated in ordering paragraph (B) above are approved and made part of the license.

Project No. 1930-014

-32-

(D) This license is subject to the conditions submitted by the Forest Service under Section 4(e) of the FPA, as those conditions are set forth in Appendix B to this order. The Commission reserves the right to amend this ordering paragraph and Appendix B to this order as appropriate in light of the Forest Service's ultimate disposition of any appeals of the Section 4(e) conditions that might arise, and to make whatever additional conforming changes in the license may be necessitated by any such amendment.

(E) This license is subject to the articles set forth in Form L-1 (October 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting Lands of the United States," 54 FPC 1792, 1799 (October 1975), and the following additional articles:

Article 201. The licensee shall pay the United States the following annual charges as determined by the Commission, effective the first day of the month in which this license is issued for the purposes of:

(1) Reimbursing the United States for the costs of administering Part I of the FPA. The authorized installed capacity for that purpose is 26,300 kilowatts.

(2) Recompensing the United States for the use, occupancy, and enjoyment of 116.69 acres of its lands.

(3) Recompensing the United States for the use, occupancy, and enjoyment of 23.03 acres of its lands for transmission line right-of-way.

Article 202. Within 45 days of the issuance of the license, the licensee shall file three complete original sets of aperture cards of all the approved drawings, and a fourth, partial original set of aperture cards showing only the Exhibit G drawings. The sets must be reproduced on silver or gelatin 35 mm microfilm. All microfilm must be mounted on type D (3-1/4" x 7-3/8") aperture cards. The licensee shall submit two copies of Form FERC-587 with the aperture cards.

Prior to microfilming, the FERC Drawing Number shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number must be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (e.g., F-1, G-1, etc.), Drawing

Project No. 1930-014

-33-

Title, and date of issuance of this license must be typed on the upper left corner of each aperture card.

Two complete original sets of aperture cards, and one copy of the Form FERC-587, must be filed with the Secretary of the Commission, ATTN.: Division of Licensing and Compliance/ERB. A third complete set of aperture cards shall be filed with the Commission's San Francisco Regional Office. The fourth partial set of aperture cards (Exhibit G only) and the remaining copy of Form FERC-587 shall be filed with the Bureau of Land Management Office at the following address:

State Director
California State Office
Bureau of Land Management
Branch of Adjudication and Records (CA-943.5)
ATTN.: FERC Withdrawal Recordation
2135 Butano Drive
Sacramento, CA 95825-0451

Article 203. Pursuant to Section 10(d) of the FPA, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The licensee shall set aside in a project amortization reserve account at the end of each fiscal year one half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the licensee shall deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensee shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensee shall maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves shall be calculated annually based on current capital ratios developed from an average of thirteen monthly balances of amounts properly includible in the licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rate for such ratios shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall

Project No. 1930-014

-34-

be the interest rate on ten-year government bonds (reported as the Treasury Department's ten-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 204. If the licensee's project was directly benefitted by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the licensee shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license.

Article 401. The licensee shall release from the Democrat dam into the Kern River the continuous minimum flow required by United States Forest Service Condition No. 4 in Appendix B, or inflow to the project, whichever is less, for the protection of fishery resources in the bypassed reach of the Kern River.

This flow may be temporarily modified if required by operation emergencies beyond the control of the licensee, and for short periods upon agreement among the licensee, the Forest Service, and the California Department of Fish and Game. If the flow is so modified, the licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

Article 402. Within six months of license issuance, the licensee shall file for Commission approval the results of the 2-year sediment monitoring program that it began in 1996. The filing also shall contain a sediment management plan for implementing any necessary adjustments to the licensee's sediment releasing operations based on the monitoring results.

The sediment management plan shall include a schedule for: implementation of any additional monitoring; implementation of any changes in operation to manage sediment releases in the bypassed reach; consultation with the appropriate federal and state agencies; and filing the results, agency comments, and licensee's response to agency comments with the Commission.

The licensee shall prepare the plan after consultation with the California Department of Fish and Game, Forest Service, and

Project No. 1930-014

-35-

State Water Resources Control Board. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed sediment management plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 403. Within 6 months from the date of issuance of this license, the licensee shall file for Commission approval a plan to study the adequacy of the minimum flows, required by Forest Service Condition No. 4, for protecting and enhancing the smallmouth bass fishery in the project bypassed reach.

The plan shall include a schedule for: implementation of the study plan; consultation with the appropriate federal and state agencies; and filing the results, agency comments, and licensee's response to agency comments with the Commission.

The licensee shall prepare the plan after consultation with the California Department of Fish and Game and the Forest Service. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed study plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Authority is reserved to the Commission to modify the minimum flows required by

Project No. 1930-014

-36-

article 404 if the study results show that flow modifications are warranted.

Article 404. Within 3 months from the date of issuance of this license, the licensee shall file for Commission approval a schedule for conducting the "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan", submitted by the licensee on December 2, 1997, and required as a condition of the water quality certification.

If the results of the temperature study indicate that changes in project structures or operations, including alternative flow releases, are necessary to achieve the state's temperature objective for protection of the COLD water beneficial use for the project section of the Kern River, the Commission may direct the licensee to modify project structures or operations.

Article 405. The licensee shall inspect the project flumes at least once each year to monitor the structural integrity of the leaking flumes. Prior to making any repairs that would reduce the existing leakage, which is providing micro-riparian habitats important to vegetation and wildlife, the licensee shall consult with the Forest Service and the Commission to determine what measures may be possible to continue to sustain the micro-riparian habitats created by the leaking flumes. The licensee shall implement the agreed to measures upon Commission approval.

The licensee may take whatever measures are necessary in an emergency to prevent a catastrophic failure of the flowline. If such emergency measures become necessary, the licensee shall notify the Forest Service and the Commission as soon as possible, but no later than 24 hours after each such incident.

Article 406. Prior to painting project facilities, the licensee shall consult with the United States Forest Service on the colors necessary to reduce the contrast of the project facilities with the surrounding environment.

Article 407. The licensee shall implement its cultural resources management plan contained in appendix E-9 of its license application for the Kern River No. 1 Water Power Project, FERC No. 1930, filed with the Commission on May 2, 1994, to avoid and mitigate impacts to the historical integrity of the Kern River No. 1 Historic District (District).

Project No. 1930-014

-37-

If modifications are proposed that will alter the historical integrity of the District, the licensee shall file a plan for mitigating impacts based on consultation with the California State Historic Preservation Officer and the Forest Service, for Commission approval. The Commission may require additional work and changes to the plan based on this filing. The licensee shall not proceed with modifications until a plan for mitigation has been approved by the Commission and implemented.

Article 408. If archeological or historic sites are discovered during project construction or operation, the licensee shall: (1) consult with the California State Historic Preservation Officer (SHPO) and the Forest Service (FS) about the discovered sites; (2) prepare a site-specific plan, including a schedule, to evaluate the significance of the sites and to avoid or mitigate any impacts to sites found eligible for inclusion in the National Register of Historic Places; (3) base the site-specific plan on recommendations of the SHPO and the FS, and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; (4) file the site-specific plan for Commission approval, together with the written comments of the SHPO and the FS; and (5) take the necessary steps to protect the discovered archeological or historic sites from further impact until notified by the Commission that all of these requirements have been satisfied.

The Commission may require cultural resources surveys and changes to the site-specific plans based on the filings. The licensee shall not implement a cultural resources management plan or begin any land-clearing or land-disturbing activities in the vicinity of any discovered sites until informed by the Commission that the requirements of this article have been fulfilled.

Article 409. Within 9 months from the date of issuance of this license, the licensee shall file for Commission approval a plan to monitor recreation use in the project's bypassed reach for the purpose of determining whether future demands for river recreation in the project's bypassed reach warrant modifications to the project's operating scheme to protect and enhance recreational values of the Kern River. Recreational activities to be monitored, at a minimum, should include those activities directly influenced by river flows--whitewater boating, swimming, fishing, wading, recreational mining, etc. Monitoring should document, at a minimum, the numbers of people participating in each activity, flow levels during the survey, and the recreation

Project No. 1930-014

-38-

experience achieved at those flow levels and the factors affecting that experience. The licensee shall coordinate, to the extent practicable, the monitoring study with the relicensing studies that will be conducted for the Borel (FERC Project No. 382) and Kern Canyon Projects (FERC Project No. 178) in order to provide a coordinated recommendation for all three projects that would benefit much of the lower Kern River affected by the three projects.

The monitoring plan shall include a description of the methods to be employed, the objectives of the monitoring study, the parameters to be measured, and a monitoring schedule.

Monitoring shall be conducted every year for 5 years and at the end of the 5-year period the licensee shall file a report with the Commission that includes, at a minimum, the monitoring results, an evaluation of the need for revisions to the flow regime to accommodate recreation interests, and recommendations for any future monitoring efforts. Any recommendations for flow modifications should assess the effects on any conflicting recreation, irrigation, and power uses and needs of the waterway.

The licensee shall prepare the monitoring plan after consultation with the Forest Service, California Department of Fish and Game, Fish and Wildlife Service, CALTRANS, Kern River Watermaster, North Kern Water Storage District, Kern County Search and Rescue, Friends of the River, American Whitewater Affiliation, Kern River Alliance, Kern River Outfitters, Kernville and Lake Isabella Chambers of Commerce, Sierra Club Kern-Kaweah Chapter, Kern Valley Community Consensus Council, Pacific Gas and Electric Company, and other interested recreation advocacy groups. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and other interested parties, and specific descriptions of how the agencies' and other interested parties comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies and other interested parties to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission. The

Project No. 1930-014

-39-

Commission also reserves the right to require changes to the project's operational scheme if the study results show that flow modifications are warranted to protect and enhance recreation values in the project bypassed reach.

Article 410. Within 1 year from the date of issuance of this license, the licensee shall file for Commission approval a plan to implement a mechanism to provide flow information to the public. The plan may complement the existing services provided by the Forest Service, Kern River Watermaster, Bureau of Land Management, and the local Chambers of Commerce, as long as the information is readily available to the public (such as a 1-800 telephone number) and provides, at a minimum, information specific to the daily flows in the Kern River No. 1 bypassed reach.

The licensee shall prepare the plan after consultation with the Forest Service, Bureau of Land Management, Kern River Watermaster, Friends Of the River, American Whitewater Affiliation, Kern River Alliance, Kern River Outfitters, Kernville and Lake Isabella Chambers of Commerce, Sierra Club Kern-Kaweah Chapter, Kern Valley Community Consensus Council, and other interested recreation advocacy groups. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and other interested parties, and specific descriptions of how the agencies' and other interested parties comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies and other interested parties to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 411. Within 1 year from the date of issuance of this license, the licensee shall file for Commission approval an access improvement plan that, as a minimum, assesses the feasibility of providing safe access improvements within the project's bypassed reach. The plan should evaluate, at a minimum, the feasibility of providing safe access at the following locations in the project bypassed reach: (1) access for kayakers at the start of the Upper Study section; (2) access for kayakers and rafters at the start of the Lucas Study Section; (3) a portage around Lucas Falls for both kayaks and small rafts; (4) access

Project No. 1930-014

-40-

just upstream of the Cataracts Study Section; and (5) access to, or just upstream of the Kern River No. 1 powerhouse.

The plan shall include a construction plan and an implementation schedule for any recommended portage, trail, trail head, or parking area construction, improvement, or modification of existing areas in the project's bypassed reach. For any recommended improvement, the plan shall also address, as a minimum, the following factors: vehicle and pedestrian safety, traffic congestion and other conflicts, Forest Service management objectives, effects on other resources, including threatened and endangered and Forest Service sensitive species and their habitat, and the cost and the entity responsible for constructing and maintaining the recommended improvements.

The licensee shall prepare the plan after consultation with the Forest Service, California Department of Fish and Game, Fish and Wildlife Service, CALTRANS, Kern River Watermaster, North Kern Water Storage District, Kern County Search and Rescue, Friends Of the River, American Whitewater Affiliation, Kern River Alliance, Kern River Outfitters, Kernville and Lake Isabella Chambers of Commerce, Sierra Club Kern-Kaweah Chapter, Kern Valley Community Consensus Council, Southern Fat Tire Association, and other interested recreation advocacy groups. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and other interested parties, and specific descriptions of how the agencies' and other interested parties comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies and other interested parties to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan and to implement the recommended improvements. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 412. (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational,

Project No. 1930-014

-41-

and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement.

To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the

Project No. 1930-014

-42-

permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir.

No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than ten watercraft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved exhibit R or approved report on recreational resources of an exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least seventy-five feet, measured

Project No. 1930-014

-43-

horizontally, from project waters at normal surface elevation; and (iii) no more than fifty total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year.

At least sixty days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within forty-five days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (I) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to insure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee shall not unduly restrict public access to project waters.

Project No. 1930-014

-44-

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(I) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(J) This order is final unless a request for rehearing is filed within 30 days from the date of its issuance, as provided in Section 313(a) of the FPA. The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order, except as specifically ordered by the Commission. The licensee's failure to file a request for rehearing shall constitute acceptance of this license.

Project No. 1930-014

-45-

Carol L. Sampson
Director
Office of Hydropower Licensing

Project No. 1930-014

-46-

APPENDIX A

WATER QUALITY CERTIFICATION CONDITIONS

Accordingly, the State Water Resources Control Board certifies that the Kern No. 1 Project will comply with Sections 301, 302, 303, 306, and 307 of the Clean Water Act, and with applicable provisions of state law provided SCE complies with the following terms and conditions:

1) Natural temperature waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.

Elevated temperature wastes shall not cause the temperature of waters designated COLD or WARM to increase by more than 5°F above natural receiving water temperature.

In order to demonstrate the attainment of the COLD beneficial use and compliance with the Basin Plan temperature objective for the Kern River, as defined in the Tulare Lake Basin Water Quality Control Plan (5D), from the SCE Kern River No. 1 powerhouse upstream to Democrat Dam, SCE shall:

a) Conduct the temperature monitoring and modeling study (for a period not to exceed five years) as described in the "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan" (Plan) submitted by SCE to the SWRCB on December 2, 1997 (Attachment 2). The specific conditions of the Plan are hereby incorporated into this modification to the water quality certification by reference.

b) An annual progress report shall be prepared and submitted to the Chief of the Division of Water Rights of the SWRCB and the Director of the California Department of Fish and Game by the following March 1 after each year of temperature monitoring. The progress report will summarize data collected, initial analyses, if any, and results of model calibration, when appropriate. The progress report will include any recommendations for changes to the monitoring program, and when appropriate will recommend conclusion of monitoring. Cessation of monitoring before the completion of five years of monitoring shall occur only upon approval of the Executive Director of the SWRCB.

c) A final summary report shall be prepared within six months of the conclusion of temperature monitoring. The summary report will provide the results of model calibration, validation, and simulations. This will include an accurate description of the model, the data used for calibration and validation,

Project No. 1930-014

-47-

and the measured performance of the model. The results of the temperature simulation model will be tables and plots of simulated longitudinal temperatures, which can be interpolated to estimate stream temperatures for project release flows. The report will summarize the effect of natural warming, the effect of project-related warming, and the likelihood that the project will maintain the COLD beneficial use and the thermal objective of the Basin Plan.

d) If, based on modeling and as determined by the Executive Director of the SWRCB, the results suggest that project operations may not maintain the COLD beneficial use and/or the thermal objective for the conditions evaluated, SCE shall prepare an operations plan for approval by the Executive Director of the SWRCB. The operations plan will indicate what controllable water quality factor actions need to be taken to achieve the temperature objective for protection of the COLD water beneficial use for that section of the Kern River. Upon review of the final report of the temperature monitoring and modeling study described in "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan", the SWRCB will utilize the operations plan to determine what additional terms and conditions may be necessary, if any, to maintain the COLD beneficial use. SCE shall implement any additional terms and conditions established by the SWRCB.

2) In order to protect the beneficial use designations identified in the Basin Plan, operation of the project shall not add the following substances to surface waters:

a) Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses;

b) Perceptible floating material including, but not limited to, solids, liquids, foams or scums which could result in degradation of water quality;

c) Suspended or settleable material in concentrations that cause a nuisance or adversely affect beneficial uses;

d) Oil, greases, waxes or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water;

e) Toxic pollutants present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health; and,

f) Coliform organisms attributable to human wastes.

3) If the permittee or licensee initiates any activities requiring installation of concrete or grout, fresh concrete or grout shall not be allowed to contact or enter surface water.

Project No. 1930-014

-48-

- 4) Any project dewatering activities shall be coordinated with the California Department of Fish and Game, and all reasonable measures taken to protect the beneficial uses of water.
- 5) Only water used for power generation is authorized for discharge. Discharge of any other materials is prohibited.

Project No. 1930-014

-49-

APPENDIX B

FOREST SERVICE SECTION 4(E) CONDITIONS

I. GENERAL

As a co-operating agency, the Forest Service provides the following FINAL 4(e) conditions for inclusion in the license for FERC project No. 1930-014, Kern River No. 1. These FINAL 4(e) conditions are being provided within 45 days of completion of the final environmental assessment.

License articles contained in the Commission's Standard Form L-1 (revised October 1975) issued by Order No. 540, dated October 31, 1975, cover general requirements that the Secretary of Agriculture, acting by and through the Forest Service, considers necessary for adequate protection and utilization of the land and resources of the Sequoia National Forest. For the purposes of section 4(e) of the Federal Power Act (16 U.S.C. 797(e)), the purposes for which National Forest System lands were created or acquired shall be the protection and utilization of those resources enumerated in the Organic Administration Act of 1897 (30 Stat. 11), the Multiple-Use Sustained Yield Act of 1960 (74 Stat. 215), the National Forest Management Act of 1976 (90 Stat. 2949), and any other law specifically establishing a unit of the National Forest system or prescribing the management thereof (such as the Wilderness Act or Wild and Scenic Rivers Act), as such laws may be amended from time to time, and as implemented by regulations and approved Forest Plans prepared in accordance with the National Forest Management Act.

Pursuant to said section 4(e) of the Federal Power Act, the following conditions covering specific requirements for protection and utilization of National Forest System lands shall also be included in any license issued.

II. STANDARD FOREST SERVICE PROVISIONSCondition No. 1 - Forest Service Approval of Final Design

Before any construction of the project occurs on national Forest System land, the Licensee shall obtain the prior written approval of the Forest Service for all final design plans for project components which the Forest Service deems as affecting or

Project No. 1930-014

-50-

potentially affecting National Forest system resources. The Licensee shall follow the schedules and procedures for design review and approval specified in the conditions included herein. As part of such prior written approval, the Forest Service may require adjustments in final plans and facility locations to preclude or mitigate impacts and to assure that the project is compatible with on-the-ground conditions. Should such necessary adjustments be deemed by the Forest Service, the Commission, or the Licensee to be a substantial change, the Licensee shall follow the procedures of Article 2 of the license. Any changes to the license made for any reason pursuant to Article 2 or Article 3 shall be made subject to any new terms and conditions of the Secretary of Agriculture made pursuant to section 4(e) of the Federal Power Act.

Condition No. 2 - Approval of Changes After Initial Construction

Notwithstanding any Commission approval or license provisions to make changes to the project, the Licensee shall get written approval from the Forest Service prior to making any changes in the location of any constructed project features or facilities, or in the uses of project lands and waters, or any departure from the requirements of any approved exhibits filed with the Commission. Following receipt of such approval from the Forest Service, and at least 60 days prior to initiating any such changes or departure, the Licensee shall file a report with the Commission describing the changes, the reasons for the changes, and showing the approval of the Forest Service for such changes. The Licensee shall file an exact copy of this report with the Forest Service at the same time it is filed with the Commission. This article does not relieve the Licensee from the amendment or other requirements of Article 2 or Article 3 of this License.

Condition No. 3 - Consultation

Each year during the 60 days preceding the anniversary date of the license, the Licensee shall consult with the Forest Service with regard to measures needed to ensure protection and development of the natural resource values of the project area. Within 60 days following such consultation, the Licensee shall file with the Commission evidence of the consultation with any recommendations made by the Forest Service. The Commission reserves the right, after notice and opportunity for hearing, to require changes in the project and its operation that may be

Project No. 1930-014 -51-

necessary to accomplish natural resource protection.

III. FOREST SERVICE PROVISIONS

A. FISH AND WILDLIFE RESOURCE MANAGEMENT

Condition No. 4 - Minimum Streamflow Requirements

The minimum instream flow for fisheries in the existing license is to be required for the new license.

The Licensee shall release the minimum instream flow of 50 CFS or inflow, whichever is less, from June 1 through September 30 of each year.

The Licensee shall release the minimum instream flow of 15 CFS or inflow, whichever is less, from October 1 through May 31 of each year.

These instream flow releases shall be continuously monitored by the Licensee at the existing USGS gage Station No. 11192500. If monitoring of streamflows in the bypassed reach of the Kern River No. 1 Project identifies a violation of the minimum flow requirements, the Licensee shall file a report with the Commission within 30 days from the date that the data becomes available indicating the violation. The Licensee shall file a report that identifies the cause, duration, and severity of the violation, any environmental impacts resulting from the violation, and the measures that were implemented to correct the violation. Based on this report, the Commission reserves the right to require modifications to the projects facilities and operations to ensure future compliance.

B. RECREATION RESOURCE MANAGEMENT

Condition No. 5 - Project Recreation Plan

Within 1 year following the date of issuance of this license and before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for accommodation of project-induced recreation.

Project No. 1930-014

-52-

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule.

The following new construction and enhancements to existing facilities are needed for the protection and utilization of NFS lands. These improvements shall be designed and constructed to be accessible to people of all abilities. These facility improvements are further described in the estimates of construction costs for developed recreation facilities, submitted by Southern California Edison on November 7, 1994 to the FERC.

a. The Live Oak Day Use Area shall have two accessible picnic tables and Bar-B-Que's installed. One double unit pre-fabricated accessible SST (Sweet Smelling Toilet) vault toilet shall be installed. One existing toilet will be removed. Parking sites for persons with disabilities shall be identified. The parking area and paths shall be surfaced with a compacted water bound macadam type material and striped. Accessibility signs shall be installed. Container trees shall be installed. Estimated cost is \$60,000.

b. The Upper Richbar Day Use Area shall have one accessible picnic table and Bar-B-Que installed. The existing vault toilet shall be removed. Two double unit pre-fabricated accessible SST vault toilets shall be installed. Parking sites for persons with disabilities shall be identified. The parking area and paths shall be surfaced with a compacted water bound macadam type material and striped. Accessibility signs shall be installed. Estimated cost is \$134,000.

c. The Lower Richbar Day Use Area shall have one accessible picnic table and Bar-B-Que installed. One double unit pre-fabricated accessible SST vault toilet shall be installed. Parking sites for persons with disabilities shall be identified. The parking area and paths shall be surfaced with compacted water bound macadam type material and striped. Accessibility signs shall be installed. Estimated cost is \$50,000.

d. Democrat Raft Take-Out shall have one accessible picnic table and Bar-B-Que installed. One double unit pre-fabricated accessible SST vault toilet shall be installed. The existing toilet shall be removed. Parking sites for persons with

Project No. 1930-014

-53-

disabilities shall be identified. Paths and a portion of the parking area shall be surfaced with a compacted water bound macadam type material and striped. Accessibility signs shall be installed. Estimated cost is \$49,500.

C. SOIL CONSERVATION AND PROTECTION OF WATER QUALITY

Condition No. 6 - Erosion Control Plan

Before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for the control of erosion, stream sedimentation, dust, and soil mass movement.

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribed a different commencement schedule.

Condition No. 7 - Solid Waste and Waste Water Plan

Before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan, approved by the Forest Service, for the treatment and disposal of solid waste and waste water generated during construction and operation of the project. At a minimum, the plan must address the estimated quantity of solid waste and waste water generated each day; the location of disposal sites and methods of treatment; implementation schedule; areas available for disposal of wastes; design of facilities; comparisons between on and offsite disposal; and maintenance programs.

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule.

Condition No. 8 - Hazardous Substances Plan

Project No. 1930-014

-54-

Within 1 year following the date of issuance of this license and at least 60 days before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for oil and hazardous substances storage and spill prevention and cleanup.

At a minimum, the plan must require the Licensee to (1) maintain in the project area, a cache of spill cleanup equipment suitable to contain any spill from the project; (2) to periodically inform the Forest Service of the location of the spill cleanup equipment on National Forest system lands and of the location, type, and quantity of oil and hazardous substances stored in the project area; and (3) to inform the Forest Service immediately of the nature, time, date, location, and action taken for any spill.

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule.

Condition No. 9 - Spoil Disposal

Before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for the storage and/or disposal of excess construction/tunnel spoils and slide material. At a minimum, the plan must address contouring of any storage piles to conform to adjacent land forms and slopes, stabilization and rehabilitation of all spoil sites and borrow pits, and prevention of water contamination by leachate and runoff. The plan also must include an implementation schedule and maintenance program.

The licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule.

Project No. 1930-014

-55-

E. AESTHETICSCondition No. 10 - Visual Resource Protection

Before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for the design and construction of the project facilities in order to preserve or enhance its visual character. The plan must consider facility configurations and alignments, building materials, color, conservation of vegetation, landscaping, and screening. Project facilities of concern to this plan include, among other things, clearings, diversion structures, penstocks, pipes, ditches, powerhouses, other buildings, transmission lines and corridors, and access roads.

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule.

F. ENDANGERED SPECIESCondition No. 11 - Protection of Sensitive and T&E Species

Before starting any activities the Forest Service determines to be of a land-disturbing nature on Forest Service land, the Licensee shall prepare a Biological Evaluation evaluating the potential impact of the action on the species or its habitat and submit it to the Forest Service for approval. In consultation with the Commission, the Forest Service may require mitigation measures for the protection of the sensitive species proposed for listing or listed under the Federal Endangered Species Act, or that may affect that species' critical habitat, the Licensee shall prepare a Biological Assessment evaluating the potential impact of the action on the species or its critical habitat and submit it to the Forest Service for review prior to submission to the commission and the relevant Service agency (United States Fish and Wildlife Service or National Marine Fisheries Service) for consultation pursuant to the Endangered Species Act of 1973.

G. OTHER CONDITIONS

Project No. 1930-014

-56-

Condition No. 12 - Development Plans

Development plans; layout plans; construction, reconstruction, or alteration of improvements plans; or revision of layout or construction plans for this area must be approved in advance and in writing by the Forest Supervisor. Trees or shrubbery on the licensed area may be removed or destroyed only after the authorized officer has approved, and has marked or otherwise designated that which may be removed or destroyed. Timber cut or destroyed will be paid for by the Licensee as follows: Merchantable timber at appraised value and young growth timber below merchantable size at current damage appraisal value; provided, that the Forest Service reserves the right to dispose of the merchantable timber to others than the Licensee at no stumpage cost to the Licensee. Trees, shrubs, and other plants may be planted in such manner and in such places about the premises as may be approved by the authorized officer. Removal of hazards shall be done after securing approval from the authorized officer.

Condition No. 13 - Maintaining Improvements

The Licensee shall maintain the improvements and premises to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the authorized officer. For example, trash, debris unusable machinery, and so forth, will be disposed of separately; other materials will be stacked, stored neatly, or within buildings. Disposal will be at an approved existing location, except as otherwise agreed to by the authorized officer.

Condition No. 14 - Existing Claims

This Licensee is subject to all valid claims and existing rights.

Condition No. 15 - Regulation Compliance

The Licensee, in exercising the privileges granted by this license, shall comply with the regulations of the Department of Agriculture and all Federal, State, county, and municipal laws, ordinances, or regulations that are applicable to the area or operations covered by this license.

Project No. 1930-014

-57-

Condition No. 16 - Protection United States Property

The Licensee shall exercise diligence in protecting from damage the land and property of the United States covered by and used in connection with this license.

Condition No. 17 - Surrender of License

Prior to any surrender of this license, the Licensee shall submit a restoration plan for approval by the Forest Supervisor, and shall restore National Forest System resources to a condition satisfactory to the Forest Supervisor.

Condition No. 18 - Indemnification

The Licensee shall indemnify, defend, and hold the United States harmless for any costs, damages, claims, liabilities, and judgements arising from past, present, and future acts or omissions of the Licensee in connection with the use and/or occupancy authorized by this license. This indemnification and hold harmless provision includes but is not limited to acts and omissions of the Licensee or the Licensee's heirs, assigns, agents, employees, contractors or lessees in connection with the use and or occupancy authorized by this license which results in: (1) violations of any laws and regulations which are now or which may in the future become applicable, and including but not limited to environmental laws; (2) judgements, claims, demands, penalties, or fees assessed against the United States; (3) costs, expenses, and damages incurred by the United States; or (4) the release or threatened release of any solid waste, hazardous substances, pollutant, contaminant, or oil in any form in the environment.

Condition No. 19 - License is Not Exclusive

This license is not exclusive. The Forest Service reserves the right to use or permit others to use any part of the licensed area under Forest Service jurisdiction, for any purpose, provided such use does not interfere with the rights and privileges hereby authorized, or authorized under the Federal Power Act. The Licensee shall allow officers of the United States free and unrestricted access to the project lands and project works in the performance of their official duties.

Project No. 1930-014

-58-

Condition No. 20 - Construction Approval

All construction, reconstruction, substantial change, or alteration shall be submitted for approval by the authorized officer issuing this license; the proposed action may commence only upon approval by said authorized officer of plans, specifications, and written construction stipulations; such construction stipulations shall become part of this license during the term of the proposed action as long as deemed necessary by said authorized officer.

Condition No. 21 - Project Safety

The Licensee shall carry out all operations in a skillful manner, having due regard for the safety of employees and the public, and shall safeguard unsafe areas. The Licensee shall regularly inspect its facilities and provide further effective safety measures as needed for safety protection.

Condition No. 22 - Water Pollution

The Licensee shall discharge no waste or by-product if it contains any substances in concentrations that would result in violation of water quality standards set forth by the State; would impair present or future beneficial uses of water; would cause pollution, nuisance, or contamination; or would unreasonably degrade the quality of any waters. During the construction and operation of the project, the Licensee shall protect project water quality by using the existing Best Management Practices mutually agreed to by the Forest Service and the State.

Condition No. 23 - Damage - High Hazard Clause

The Licensee is hereby made liable for all injury, loss, or damage to the United States land and property, including but not limited to, fire suppression costs, directly or indirectly resulting from or caused by the Licensee's powerlines covered by this license or other high risk use and occupancy of the area covered by the license, regardless of whether the Licensee is negligent or otherwise at fault, provided that the maximum liability without fault shall not exceed \$1,000,000 for any one occurrence and provided further that the Licensee shall not be

Project No. 1930-014

-59-

liable when such injury, loss, or damage results wholly, or in part, from a negligent act of the United States, or from an act of a third party not involving the facilities of the Licensee. Determination of liability for injury, loss, or damage, including fire suppression costs, in excess of the specified maximum, shall be according to the laws governing ordinary negligence.

Condition No. 24 - Risk and Hazards

The Licensee is responsible for inspecting National Forest System lands covered by this license for dangerous trees, hanging limbs, and other evidence of hazardous conditions and, after securing permission from the Forest Service is responsible for removing such hazards.

Condition No. 25 - Signs

The Licensee shall consult with the Forest Service prior to erecting signs related to safety issues on the area covered by this license. Prior to erecting any other signs or advertising devices on the area covered by this license the Licensee must obtain approval of the Forest Service as to location, design, size, color, and message.

Condition No. 26 - Pesticide-Use Restrictions

Pesticides may not be used to control undesirable woody and herbaceous vegetation, aquatic plants, insects, rodents, trash fish, and so forth, without the prior written approval of the Forest Service. The Licensee shall submit a request for approval of planned uses of pesticides. The report must cover annual planned use and be updated as required by the Forest Service. The Licensee shall provide information essential for review in the form specified. Exceptions to this schedule may be allowed only when unexpected outbreaks of pests require control measures that were not anticipated at the time the report was submitted. In such an instance, an emergency request and approval may be made.

On National Forest System lands the Licensee shall use only materials registered by the U.S. Environmental Protection Agency for the specific purpose planned. The Licensee must strictly follow label instructions in the preparation and application of pesticides and disposal of excess materials and containers.

Project No. 1930-014

-60-

Condition No. 27 - Area Access

The United States shall have unrestricted use of any road constructed within the project area for all purposes deemed necessary or desirable in connection with the protection, administration, management, and utilization of Federal lands or resources and alone shall have the right to extend rights and privileges for use of the road to States and local subdivisions thereof, as well as to other users, including members of the public, except contractors, agents and employees of the Licensee; provided, that the agency having jurisdiction shall control such use so as not unreasonably to interfere with use of the road by the Licensee, particularly as to safety or security uses, or cause the Licensee to bear a share of the costs of maintenance greater than the Licensee's use bears to all use of the road.

Condition No. 28 - Nondiscrimination in Employment & Services

During the duration of this license, the Licensee agrees that:

a. In connection with the performance of work under this license, including, maintenance, and operation of the facilities, the Licensee shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, age or handicap. (Ref. Title VII of the Civil Rights Act of 1964 as amended).

b. The Licensee and its employees shall not discriminate by segregation or otherwise against any person on the basis of race, color, religion, sex, national origin, age, or handicap by curtailing or refusing to furnish accommodations, facilities, services, or use privileges offered to the public generally. (Ref. Title VI of the Civil Rights Act of 1964 as amended, Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendments, and the Age Discrimination Act of 1975).

c. Title VI of the Civil Rights Act of 1964, as amended, attaches coverage to the Licensee's employment practices if discrimination in employment impeded the delivery of services and benefits to people on the basis of their race, color or national origin.

Project No. 1930-014

-61-

d. The Licensee shall include and require compliance with the above nondiscrimination provisions in any contract made with respect to the operations, maintenance and constructions under this license.

e. Signs setting forth this policy of nondiscrimination to be furnished by the Forest Service will be conspicuously displayed by the Licensee at the public entrance to the premises, and at other exterior or interior locations as directed by the Forest Service.

f. The Forest Service shall have the right to enforce the forgoing nondiscrimination provisions through the FERC by suit for specific performance or by any other available remedy under the laws of the United States or the State in which the breach or violation occurs.

Condition No. 29 - Construction Stipulations

a. Plans, Part of Approval

The Licensee shall prepare the following plans in consultation with Forest Service and other appropriate agencies.

A. Revegetation/rehabilitation

B. Fire

C. Spill Prevention

D. Construction

The Licensee shall submit these plans for Forest Service approval six months prior to commencement of construction activities. Said plans shall be attached hereto and marked as Exhibits A through D, respectively.

b. Fire Plan Part of Approval

A project fire plan describing the Licensee's responsibilities for prevention and suppression of fires, developed by the Licensee, and subject to Forest Service approval, shall become part of this approval, as Exhibit B to be attached hereto. The Licensee shall obtain Forest Service approval for said plan before beginning any on-the-ground construction and shall strictly follow its terms.

Project No. 1930-014

-62-

c. Designation of Construction Manager

The Licensee shall designate a construction manager for the project construction. This individual shall be qualified to represent the Licensee and shall be present or have a qualified acting representative present at all times while project construction activities are taking place. This individual shall be the person who receives the on-the-ground approvals and directions from the designated Forest Service representative(s).

d. Construction Inspections by Licensee

The Licensee shall perform daily (or on a schedule otherwise agreed to by the Forest Service in writing) inspections of Licensee's operations while they are proceeding. The Licensee shall document these inspections (informal writing sufficient) and shall deliver such documentation to the Forest Service on a weekly basis. The inspections must specifically include fire plan compliance, public safety, and environmental protection. The Licensee shall act immediately to correct any items found to need correction.

e. Site Development Schedule

As a part of this authorization, the Licensee shall, in consultation with the Forest Service, prepare a schedule for the progressive development of the licensed site and installation of facilities. Such a schedule shall be prepared six months prior to commencement of construction activities, and shall set forth an itemized priority list of planned improvements and the planned date for completion. This schedule shall be made a part of this authorization. The Licensee may accelerate the scheduled date for installation of any improvement authorized, provided the Licensee has met other scheduled priorities; and provided further, that the Licensee has completed all priority installations authorized to the satisfaction of the Forest Service prior to the scheduled due date.

The Licensee shall submit all construction plans to the Forest Service for approval a minimum of 45 days before anticipated start of construction. All plans for construction of facilities must have the approval with signature of a registered professional engineer of the appropriate specialty, and must have

Project No. 1930-014

-63-

the approval of the Forest Service prior to the use of these plans in constructing this project. These plans shall then become part of this authorization as Exhibit E, to be attached hereto.

The Licensee shall ensure that construction bid invitations are in compliance with this authorization and with all applicable environmental protection standards.

In the actual layout on-the-ground, the Licensee shall use accurate mapping based on an adequate survey of the land, including the location of special areas such as water courses.

The Licensee shall furnish to officers of the United States such information as may be required concerning the construction, operation, and maintenance of the project, and any alteration thereof.

When asked by the Forest Service, the Licensee shall provide for an on-the-ground review with the Forest Service of the plans for any area of concern to the Forest Service at least 7 days prior to beginning construction on that area.

f. Use of Explosives

1. The Licensee shall use only electronic detonators for blasting, except near high-voltage powerlines. The Forest Service may allow specific exceptions when in the public interest.

2. In the use of explosives, the Licensee shall exercise the utmost care not to endanger life or property and shall comply with the requirements of the Forest Service. The Licensee shall be responsible for any and all damages resulting from the use of explosives and shall adopt precautions to prevent damage to surrounding objects. The Licensee shall furnish and erect special signs to warn the public of the Licensee's blasting operations. The Licensee shall place and maintain such signs so they are clearly evident to the public during all critical periods of the blasting operations, and shall ensure that they include a warning statement to have radio transmitters turned off.

3. The Licensee shall store all explosives in a secure

Project No. 1930-014

-64-

manner, in compliance with State and local laws and ordinance, and shall mark all such storage places "DANGEROUS - EXPLOSIVES." Where no local laws or ordinances apply, the Licensee shall provide storage that is satisfactory to the authorized officer and in general not closer than 1,000 feet from the road or from any building or camping area.

4. When using explosives, the Licensee shall adopt precautions to prevent damage to landscape features and other surrounding objects. When directed by the authorized officer, the Licensee shall leave trees within an area designated to be cleared as a protective screen for surrounding vegetation during blasting operations. The Licensee shall remove and dispose of trees so left when blasting is complete. When necessary, and at any point of special danger, the Licensee shall use suitable mats or some other approved methods to smother blasts.

g. Unattended Construction Equipment

The Licensee shall not place construction equipment on National Forest Land prior to actual use or allow it to remain on National Forest land subsequent to actual use. The Licensee shall remove equipment from National Forest System land unless a permit is issued for equipment storage.

h. Protection of Wildlife and Plant Species

If threatened, endangered, or sensitive (as defined in the Forest Service manual) wildlife and plant species are found during use under this authorization, the Licensee shall notify the Forest Service and shall take immediate measures to protect said species as directed by the Forest Service.

i. Traffic Safety

When construction is in progress adjacent to or on Forest Service controlled roads open to public travel, the Licensee shall furnish, install, and maintain temporary traffic controls to provide the public with adequate warning and protection from hazardous or potentially hazardous conditions associated with the Licensee's operations. Devices must be appropriate to current conditions and must be covered or removed when not needed. Except as otherwise agreed, flagmen and devices must be as specified in the "Manual or Uniform Traffic Control Devices for

Project No. 1930-014 -65-

Streets and Highways" (MUTCD).

j. Surveys, Land Corners

The Licensee shall protect, in place, all public land survey monuments, private property corners, and forest boundary markers. In the event that any such land markers or monuments are destroyed in the exercise of the privileges authorized by this authorization, depending on the type of monument destroyed, the Licensee shall reestablish or reference same in accordance with (1) the procedures outlined in the "Manual of Instructions for the Survey of the Public Land of the United States," (2) the specifications of the County Survey, or (3) the specifications of the Forest Service.

Further, the Licensee shall ensure that any official survey records affected are amended as provided by law.

k. Cultural Resource Discoveries

If, prior to or during excavation work, items of potential cultural, historical, archeological, or paleontological value are reported or discovered, or a known deposit of such items is disturbed, the Licensee shall immediately cease excavation in the area so affected. The Licensee shall then notify the Forest Service and shall not resume excavation until it receives written approval from the authorized officer.

If it deems it necessary or desirable, the Forest Service may require the Licensee to have performed recovery, excavation, and preservation of the site and its artifacts at the Licensee's expense. At the option of the Forest Service, this authorization may be terminated at no liability by the United States when such revocation is deemed necessary or desirable to preserve or protect archaeological, paleontological, or historic sites and artifacts.

Project No. 1930-014

-60-

FINAL ENVIRONMENTAL ASSESSMENT FOR HYDROPOWER LICENSE

Kern River No. 1 Hydroelectric Project

FERC Project No. 1930-014

California

Federal Energy Regulatory Commission
Office of Hydropower Licensing
Division of Licensing and Compliance
888 First Street, NE
Washington, D.C. 20426

and

USDA Forest Service
Sequoia National Forest

Project No. 1930-014

-61-

900 West Grand Avenue
Porterville, California 93257-2035

Project No. 1930-014

-62-

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
SUMMARY.....	i
I. APPLICATION.....	1
II. PURPOSE OF ACTION AND NEED FOR POWER.....	1
A. PURPOSE OF ACTION.....	1
B. NEED FOR POWER.....	1
III. PROPOSED ACTION AND ALTERNATIVES.....	4
A. EDISON'S PROPOSAL.....	4
1. Project Facilities and Operation.....	4
2. Proposed Environmental Measures.....	5
3. Federal Land Management Conditions.....	6
B. STAFF'S PREFERRED ALTERNATIVE.....	7
C. DECOMMISSIONING WITHOUT REMOVAL OF PROJECT STRUCTURES	7
D. NO-ACTION ALTERNATIVE.....	8
E. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED	
STUDY.....	8
1. Federal Takeover.....	8
2. Nonpower License.....	8
3. Decommissioning With Removal of All Project	
Structures.....	8
IV. CONSULTATION AND COMPLIANCE.....	9
A. AGENCY CONSULTATION.....	9
B. INTERVENTIONS.....	10
C. SCOPING.....	10
D. WATER QUALITY CERTIFICATION.....	11
V. ENVIRONMENTAL ANALYSIS.....	14
A. GENERAL DESCRIPTION OF THE KERN RIVER BASIN.....	14
1. Kern River Basin.....	14
2. Existing Hydropower Development and the Corp's	
Lake Isabella.....	14
B. SCOPE OF CUMULATIVE IMPACT ANALYSIS.....	16
1. Geographic Scope.....	17
2. Temporal Scope.....	17
C. PROPOSED ACTION AND ACTION ALTERNATIVES.....	17
1. Geological Resources.....	17
2. Aquatic Resources.....	19

Project No. 1930-014

-63-

3.	Terrestrial Resources.....	31
4.	Threatened and Endangered Species.....	34
5.	Aesthetic Resources.....	45
6.	Cultural Resources.....	47
7.	Recreation.....	48
8.	Socioeconomic Considerations.....	61
D.	NO-ACTION ALTERNATIVE.....	63
VI.	DEVELOPMENTAL ANALYSIS.....	63
A.	POWER AND ECONOMIC BENEFITS OF THE PROJECT.....	64
B.	COST OF ENVIRONMENTAL ENHANCEMENT MEASURES.....	65
1.	Bypassed Reach Water Temperature Monitoring....	66
2.	Recreational Facilities Improvements.....	66
3.	Supplemental Whitewater Boating Flows.....	67
4.	Flow Information, Recreation Monitoring, and Access Improvement Plan.....	68
5.	Adequacy of the FS-required minimum flows for protecting and enhancing the smallmouth bass fishery in the project bypassed reach.....	69
C.	DECOMMISSIONING.....	69
D.	NO-ACTION ALTERNATIVE.....	70
VII.	COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE....	71
A.	RECOMMENDED ALTERNATIVE.....	72
1.	Water Temperature Model.....	73
2.	Recreation Facility Improvements.....	73
3.	Supplemental Whitewater Boating Flows, Recreation Use Monitoring Plan, Flow Information, and Access Improvement Plan.....	74
4.	Mitigation Fund.....	76
5.	Smallmouth Bass Fishery Study.....	77
B.	DECOMMISSIONING.....	77
C.	CONCLUSION.....	78
VIII.	CONSISTENCY WITH COMPREHENSIVE PLANS.....	78
IX.	RECOMMENDATIONS OF FISH AND WILDLIFE AGENCIES.....	81
X.	FINDING OF NO SIGNIFICANT IMPACT.....	81
XI.	LITERATURE CITED.....	82
XII.	LIST OF PREPARERS.....	86

Project No. 1930-014

-64-

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
Figure 1. Location of Kern River No. 1 Project and other FERC-licensed hydroelectric developments in the Kern River Basin....	2
Figure 2. Kern River No. 1 facilities, developed recreation sites, and USGS gaging stations.....	4
Figure 3. Average (1973) and dry (1977) water year hydrographs for the Kern River No. 1 Project, with a minimum flow of 15 cfs (October 1 through May 31) and 50 cfs (June through September)	20
Figure 4. Wet (1983) water year hydrograph for the Kern River No. 1 Project, with a minimum flow of 15 cfs (October through May) and 50 cfs (June through September)	21
Figure 5. Catchable-sized rainbow trout stocked in the Kern River No. 1 Project bypassed reach and between the upstream Borel powerhouse and Democrat dam (1986-1996).....	24
Figure 6. Instream flow study results for rainbow trout and smallmouth bass in the Kern River bypassed reach.....	28
Figure 7. Kern River bypassed reach flows for the months of June-October, augmented to 700 cfs (top) and 950 cfs (bottom) with power flows when possible.....	56
Figure 8. Kern River bypassed reach flows for the months of June-October, augmented to 1,250 cfs with power flow when possible.	57

LIST OF TABLES

<u>Table</u>	<u>Page</u>
Table 1. Locations of diversion dams (river miles below Lake Isabella), reach lengths, and minimum flow requirements between Lake Isabella and the Rio Bravo Hydroelectric Project's tailrace.	16
Table 2. Species and fork lengths (mm) of fish collected from the project diversion pool.....	26
Table 3. Federal listed species that may occur in the project area with their corresponding state and Forest Service status.	34
Table 4. Proposed enhancements at the developed recreation sites.....	51
Table 5. Comparison of the average number of days flow in the Kern River No. 1 bypassed reach equals or exceeds 700 cfs, 950 cfs, and 1250 cfs under "existing" and "augmented" flow	

Project No. 1930-014

-65-

conditions.....	54
Table 6. Comparison of the average number of days flows in the Kern River No. 1 bypassed reach equal or exceed 700 cfs, 950, and 1,250 cfs under "existing" and "augmented" flow conditions during the weekend period only.....	54
Table 7. Estimated cost of recreation enhancements required by the Forest Service	67
Table 8. Average annual reduction in generation and associated revenue loss for alternative flow augmentation levels.	67
Table 9. Summary of the developmental costs, benefits and net benefits for all alternatives.....	71

APPENDICES

A. THREATENED AND ENDANGERED SPECIES NOT LIKELY TO OCCUR IN THE PROJECT AREA.....	A-1
B. COMMENTS FROM AGENCIES, GOVERNMENTS, AND NON-GOVERNMENTAL ORGANIZATIONS ON THE DRAFT EA AND STAFF RESPONSES.....	B-1
C. PUBLIC COMMENTS ON THE DRAFT EA AND STAFF RESPONSES.....	C-1

Project No. 1930-014

-65-

SUMMARY

The Kern River No. 1 Project is an existing, operating hydroelectric facility, located on the lower Kern River, about 17 miles northeast of Bakersfield, California. The 26.3-megawatt project is located on lands within the Sequoia National Forest. The project diverts water from 10.2 miles of stream. Southern California Edison Company (Edison), the current licensee, proposes to continue operating the project with environmental enhancements.

The environmental analysis documented in this final environmental assessment (EA) is a cooperative effort between the U.S. Forest Service (FS) and the Federal Energy Regulatory Commission (Commission). Reference in this document to "we" should be understood to be the two agencies' collective statements or conclusions, unless otherwise stated.

We analyze the effects of various alternatives, both for continued project operation and for project decommissioning with project structures left in place. Our analysis shows that the best alternative for the Kern River No. 1 Project would be for Edison to continue to operate the project while providing the following environmental protection and enhancement measures: (1) preparing a site-specific soil erosion and sedimentation control plan, a solid waste and wastewater control plan, and a spoil disposal plan before land-disturbing activities, including the recommended recreation enhancement measures (installing vault toilets and constructing parking areas and paths); (2) preparing a hazardous substance storage and spill prevention plan; (3) preparing a visual resources protection plan before soil-disturbing activities and consulting with the Forest Service before painting project facilities; (4) continuing to release minimum instream flows required by the existing license; (5) studying the adequacy of the minimum flows for protecting and enhancing the smallmouth bass fishery in the project bypassed reach; (6) developing a water temperature model for the project bypassed reach, as required by the water quality certification; (7) monitoring leaking flumes annually and postponing repairs that would diminish leakage until they threaten the flume's structural integrity to maintain localized pools important to wildlife; (8) implementing Edison's cultural resource management plan; (9) preparing a plan to implement improvements to Live Oak, Upper Richbar, Lower Richbar Day Use Areas and Democrat Raft Take-out; and (10) providing flow information to the public and preparing an access improvement plan to enhance recreational use in the bypassed reach.

Project No. 1930-014

-66-

We don't recommend any flow releases for whitewater boating enhancement because of potential conflicts with other recreational uses and because the existing whitewater boating use in the Kern River No. 1 bypassed reach is low compared to other recreational activities in the project area, despite the fact that flows are frequently available for either the "*suitable*" or "*optimum*" boating conditions. We believe that the available data indicates that current flow conditions allow for a reasonable balance of all recreation uses and that existing whitewater boating use is not significantly limited or constrained by the project's present operation. We do, however, recommend that Edison work with the FS and other interested groups to develop a plan to monitor recreation patterns in the bypassed reach for 5 years to evaluate the need for future flow augmentation. We also recommend that this monitoring study be coordinated with the relicensing studies for Edison's Borel Project (FERC No. 382) and Pacific Gas & Electric's Kern Canyon Project (FERC No. 178). This would ensure that any future recommended change in project operations to accommodate recreational interests are done in a coordinated fashion to improve recreation in much of the lower Kern River.

We conclude that issuing a new license for the project, with our recommended environmental enhancements, wouldn't constitute a major federal action significantly affecting the quality of the human environment.

Project No. 1930-014

-66-

FINAL ENVIRONMENTAL ASSESSMENT

FEDERAL ENERGY REGULATORY COMMISSION
OFFICE OF HYDROPOWER LICENSING

and

USDA FOREST SERVICE
SEQUOIA NATIONAL FOREST

Kern River No. 1 Hydroelectric Project
FERC No. 1930-014, California

I. APPLICATION

On May 2, 1994, Southern California Edison Company (Edison) filed an application for new license for continued operation and maintenance of the existing 26.3-megawatt (MW)¹¹ Kern River No. 1 Project (FERC No. 1930-014). The project is located on the Kern River, about 17 miles northeast of Bakersfield and 16 miles southwest of Bodfish, in Kern County, California (figure 1). The project is located on about 117 acres within the Sequoia National Forest.

II. PURPOSE OF ACTION AND NEED FOR POWER

A. PURPOSE OF ACTION

The Federal Energy Regulatory Commission (Commission) must decide whether

1 The maximum hydraulic capacity of the project flowline is 412 cfs, which is less than the combined capacity of the four project turbines operating at full design capacity. The operating capacity of the project is, therefore, limited by flow to 24.8 MW.

1 The maximum hydraulic capacity of the project flowline is 412 cfs, which is less than the combined capacity of the four project turbines operating at full design capacity. The operating capacity of the project is, therefore, limited by flow to 24.8 MW.

1 / The maximum hydraulic capacity of the project flowline is 412 cfs, which is less than the combined capacity of the four project turbines operating at full design capacity. The operating capacity of the project is, therefore, limited by flow to 24.8 MW.

Project No. 1930-014

-67-

to relicense the project, and what, if any, conditions should be placed on any license issued. The Forest Service (FS) must decide what license conditions are needed for adequate protection and utilization of National Forest System lands if the Commission grants a new license.

In this final environmental assessment (EA), we assess the environmental and economic effects of: (1) operating the project as proposed by Edison, (2) operating the project as proposed by Edison with alternative enhancement measures, and (3) decommissioning the project without removing project structures. We also consider a no-action alternative.

B. NEED FOR POWER

Edison is a public utility serving about 4.2 million

Pr61aphiNoca1936-714 and on hard-copy in public file.

customers in an area of about 50,000 square miles in southern California, excluding the city of Los Angeles. This area includes some 800 cities and communities and a

Project No. 1930-014

-69-

population of about 11 million people. Edison has owned and operated the Kern River No. 1 Project since 1907. The project has been serving a portion of the power requirements of Edison's customers for a continuous period of nearly 90 years. The project accounts for 24.8 MW of Edison's total hydroelectric resources of 1,153.3 MW.

If a new license is not issued for the project, Edison would need to replace the project's capacity and average annual generation of 179 gigawatthours (GWh). Over the short term (up to 5 years), generation from existing gas-fired units or power purchases could be an alternative to the project's dependable capacity and energy production. If generation from Edison's oil-fired and gas-fired units currently held in standby reserve were to provide needed replacement energy and capacity, the schedule for returning these units to service would have to be advanced, requiring significant capital investments.

The Kern River No. 1 Project displaces oil-fired and gas-fired energy, providing an average annual savings equivalent to nearly 300,000 barrels of oil. Replacement of the project by fossil-fired generation would increase air pollutant emissions in the South Coast Air Basin, where most of Edison's oil and gas units are located. By offsetting the need to produce 179 GWh of energy annually from such generation, the Kern River No. 1 Project reduces direct air emissions in the Los Angeles area.

In addition to the need for project power to serve Edison's customer load, the Kern River No. 1 Project and its associated transmission facilities is needed to provide voltage support when transmission line outages occur on Edison's Cummings or Gorman lines. Without the project, Edison would need to construct additional transmission facilities.

Besides looking at Edison's need, staff also looked at the regional need for power. The electricity generated from the project would benefit the region by providing a portion of the needed regional power. In its 1996 report, the Western Systems Coordinating Council shows that the utilities in the California-Southern Nevada area plan to add over 2,500 MW of capacity to the system over the 10-year planning period (1995-2005).

If relicensed, the project would continue to meet part of Edison's needs and a small part of the region's needs. In addition the project would continue to displace fossil-fueled electric power generation the regional utilities now use, and thereby conserve nonrenewable fossil fuels and reduce the emission of noxious byproducts caused by the combustion of fossil fuels.

Project No. 1930-014

-70-

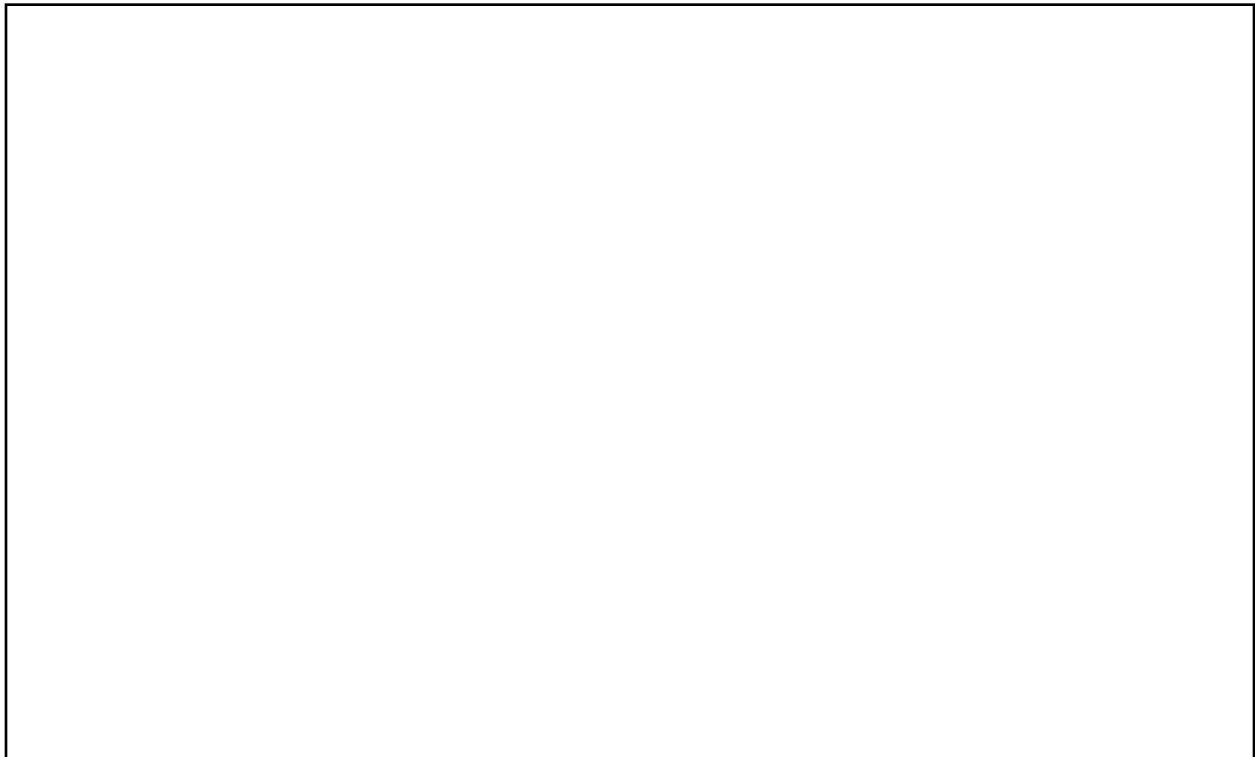
III. PROPOSED ACTION AND ALTERNATIVES

A. EDISON'S PROPOSAL

1. Project Facilities and Operation

The Kern River No. 1 Project consists of: (1) a 29-foot- high, 204-foot-long concrete overflow diversion dam (Democrat dam) impounding a 27-acre pond at crest elevation 1,913 feet above mean sea level; (2) a gated intake structure at the left abutment with trash racks; (3) a 104-foot-long, 20-foot-wide sand box and a water conduit consisting of 42,884 feet of tunnel, 390 feet of rectangular flume, 904 feet of Lennon flume on steel structure, and 612 feet of arched-concrete conduit; (4) a 45-foot-long, 33-foot-wide, 11-foot-deep forebay; (5) a 1,693-foot- long buried penstock, varying in diameter from 108 inches at the intake to 27 inches; (6) a 170-foot-long, 71-foot-wide, reinforced concrete powerhouse containing four generating units with a total installed capacity of 26.3 MW; (7) a rectangular tailrace that discharges flows over a weir section into the Kern River; (8) a 1.9-mile-long, 66-kilovolt transmission line tying into Edison's transmission system; and (9) appurtenant facilities (figure 2).

The pool behind Democrat dam holds about 247 acre-feet of non-usable storage.



Project No. 1930-014

-71-

The project operates in a run-of-river mode, diverting flows around a 10.2-mile-long bypassed reach. Minimum flows are normally released from as many as two slide gates located at the sand box, depending on the season's minimum flow requirement. An additional release site is located closer to the intake, which can be used when maintenance requires the other two release sites to be closed. The powerhouse return flows are immediately impounded by the Pacific Gas & Electric's Kern Canyon Hydroelectric Project (FERC No. 178). Edison proposes to continue to operate the project to provide a continuous minimum flow in the bypassed reach of 50 cfs from June 1 through September 30 and a continuous minimum flow of 15 cfs from October 1 through May 31, or inflow to the reservoir, whichever is less, as required by the existing license.

The project requires a minimum of 5 cfs to operate, and is limited to 412 cfs by the capacity of the flowline to the powerhouse. The powerhouse has four Pelton impulse-type turbines, equipped with governors that direct flows under the turbines during sudden shutdowns to maintain water supplies to the downstream users. The Kern River No. 1 Project is operated remotely from Edison's Kern River No. 3 Project (FERC No. 2290), which is attended 24 hours a day.

2. Proposed Environmental Measures

Edison proposes to continue to operate the project as described above, with the additional protection and enhancement measures summarized below.

- Monitor leaking flumes annually and postpone repairs that would reduce leakage until it becomes threatening to the flumes' structural integrity to maintain localized pools important to wildlife.
- Provide raptor protection along an 0.8-mile-long distribution line at the project.²
- Provide the following recreational site enhancements:

2 In 1995, Edison reconfigured those poles along the distribution line that were considered to be hazardous. Edison says it will install additional protective devices as necessary if monitoring of raptor mortality indicates that a significant hazard still exists (letter from C.E. Miller, Edison, Rosemead, California, April 10, 1995). The distribution line is not within the Commission's jurisdiction because it is not a primary line [18 CFR §4.70]; consequently, while we approve of Edison's proposed avian protection measures, they wouldn't be made a requirement of any new license.

Project No. 1930-014

-72-

install and/or replace existing toilets with accessible vault toilets at Live Oak, Upper Richbar, and Lower Richbar Day Use Areas and Democrat Raft Take-out;

provide accessible picnic tables and barbeques at the day use areas; and

improve parking and pathways for disabled persons at the day use areas, and provide hard pack surface for pathways at Democrat Raft Take-out.

- Consult with FS on mutually agreeable colors when facilities require repainting to reduce contrast of the project facilities with the surrounding natural environment.
- Implement a cultural resources management plan to protect the historic project facilities.

3. Federal Land Management Conditions

Because the project occupies lands of the Sequoia National Forest, the FS has authority, under Section 4(e) of the Federal Power Act (FPA), to impose mandatory conditions on any hydropower license the Commission would issue. Preliminary conditions filed on November 13, 1996, and modified by letter dated June 3, 1997, are summarized below.³

- (1) Receive FS approval for all final design plans for project components the FS deems as affecting or potentially affecting National Forest System resources.
- (2) Receive FS approval for making any changes in the location of project features or facilities or in the use of project land or waters or any departure from the requirements of any approved exhibits filed with the Commission.
- (3) Consult with the FS each year with regard to measures needed to ensure protection and development of the natural resource values of the project area.
- (4) Release a minimum flow in the project bypassed reach of 50 cubic feet per second (cfs) from June 1 through September 30, and 15 cfs from October 1 through May 31, and monitor flows at FS designated locations and dates.
- (5) Develop a recreation plan that includes, in addition to Edison's proposal, installing a second double unit accessible SST (sweet-smelling) vault toilet at the Upper

3 FS will provide final 4(e) conditions within 45 days of issuance of the final EA.

Project No. 1930-014

-73-

Richbar Day Use Area; and installing of one accessible picnic table and barbeque, painting parking stripes, and providing accessible parking and a pathway to the comfort station at Democrat Raft Take-out.

(6) Prepare erosion control, solid waste and waste water, hazardous substance, spoil disposal, and visual resources protection plans before soil-disturbing activities.

(7) Implement measures to protect FS sensitive species and threatened and endangered species, before taking any actions that may affect these species.

(8) Implement or follow other conditions pertaining to development plans, maintaining improvements, existing claims, regulation compliance, protection of U.S. property, surrender of license, indemnification, construction approval, project safety, water pollution, liability, hazardous condition identification, signage, pesticide use restrictions, FS access, nondiscrimination in employment and services, and construction stipulations.

B. STAFF'S PREFERRED ALTERNATIVE

In addition to Edison's proposed measures and the required 4(e) conditions, the Commission staff recommends that Edison be required to (1) implement a mechanism to provide information on flow in the bypassed reach to the public, (2) prepare a recreation access improvement plan, (3) study the adequacy of the FS required minimum flows for protecting and enhancing the smallmouth bass fishery in the project bypassed reach, (4) implement the Water Temperature Study Plan filed with the Commission on December 2, 1997, and (5) monitor recreation use, by activity, in the bypassed reach for 5 years and coordinate this study with the relicensing studies for the Borel and Kern Canyon Projects.

C. DECOMMISSIONING WITHOUT REMOVAL OF PROJECT STRUCTURES

The Kern River No. 1 Project could be decommissioned keeping all facilities intact or removing all or part of the project structures. Either alternative would involve denial of the relicense application and surrender or termination of the existing license with appropriate conditions.

In a joint letter filed November 8, 1996, Friends of the River (FOR) and American Whitewater Affiliation (AWA), hereafter referred to as FOR/AWA, recommend that the project could be decommissioned and abandoned in place, after appropriate measures are taken to make the project safe.

This decommissioning alternative would involve retaining and securing from access the project structures (dam, powerhouse, tunnels, flumes, and transmission lines), salvaging or removing the generating equipment, and passing all flows over the dam. Modification to Edison's transmission line system would be required to provide the

Project No. 1930-014

-74-

backup electric service capability now provided by the project.

D. NO-ACTION ALTERNATIVE

Under the no-action alternative, the project would continue to operate under the terms and conditions of the existing license, and no new environmental protection, mitigation, or enhancement measures would be implemented. We use this alternative as the baseline environmental condition for comparison with other alternatives.

E. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

We considered the following alternatives to Edison's proposal but eliminated them from detailed study because they are not reasonable in the circumstances of this case.

1. Federal Takeover

We don't consider federal takeover and operation of the project to be a reasonable alternative. Federal takeover and operation of the project would require Congressional approval. While this fact alone does not eliminate this alternative from further analysis, there is no evidence to indicate that federal takeover should be recommended to Congress. No party has suggested federal takeover would be appropriate, and no federal agency has expressed an interest in operating the project.

2. Nonpower License

Issuing a nonpower license would not provide a long-term resolution of the issues. A nonpower license is a temporary license the Commission would terminate whenever it determines that another governmental agency would assume regulatory authority and supervision over the lands and facilities covered by the nonpower license. In this case, no government agency has suggested its willingness or ability to do so. No party has sought a nonpower license, and we have no basis for concluding that the project should no longer be used to produce power. Issuing a nonpower license, therefore, is not a realistic alternative in these circumstances.

3. Decommissioning With Removal of All Project Structures

No participant has suggested that removal of all project structures (dam, powerhouse, flumes, penstock) would be appropriate, and we have no basis for recommending it. The benefits from decommissioning with removal of all project structures, which includes restoring diverted flows (maximum of 412 cfs) to 10.2 miles of the Kern River, eliminating any fish entrainment mortality that might be occurring, and providing additional flow for whitewater boating, would also be obtained with decommissioning without removal of project structures. The only advantage of dam

Project No. 1930-014

-75-

removal would be unobstructed fish movement and whitewater boating.

While we recognize these potential benefits, we don't regard this alternative as reasonable because it would result in possible significant adverse environmental impacts, lost project recreation benefits, and lost electric power generation. For example, dam removal would cause (1) short-term noise, dust, and land disturbance that may temporarily affect visitor recreational experiences and displace wildlife in the area; (2) erosion and stream sedimentation, which could adversely affect water quality and fish habitat; (3) the loss of a small, but much used reservoir fishery resource; (4) the loss of historically significant cultural resources; and (5) the loss of the boat take-out at Democrat dam. Proposed enhancements at the day use areas and Democrat dam wouldn't be provided. Because the project power is needed, some or all of the power would be replaced by fossil-fueled power plants, adding to air pollution. In addition to the direct costs of removing the dam, intake structures, above ground water conduits, and powerhouse, which we estimate to cost \$2.5 million, Edison says it would need to spend about \$1.7 million to modify its transmission line system to provide the backup electric service capability now provided by the project. Because of the high cost relative to the environmental benefits, removal of all project structures is not a reasonable alternative compared to the other alternatives considered herein.

IV. CONSULTATION AND COMPLIANCE

A. AGENCY CONSULTATION

The Commission's regulations require applicants to consult with the appropriate resource agencies before filing an application for a license. This consultation is the first step in complying with the Fish and Wildlife Coordination Act, the Endangered Species Act, the National Historic Preservation Act, and other federal statutes. Pre-filing consultation must be complete and documented according to the Commission's regulations.

After the Commission issued a public notice on September 11, 1996, stating the application was ready for environmental analysis, the following entities commented: (1) FOR/AWA by letter dated November 8, 1996, and (2) FS by letter dated November 13, 1996. On February 10, 1997, Edison filed an untimely response to FOR/AWA's November 8, 1996, comments. FS filed revised preliminary 4(e) conditions by letter dated June 3, 1997.

B. INTERVENTIONS

In addition to filing comments, organizations and individuals may petition to intervene and become a party to the licensing proceedings. The following entities filed for and were granted intervenor status.

Project No. 1930-014

-76-

INTERVENOR	DATE OF MOTION TO INTERVENE
Kern River Outfitters and American Whitewater Affiliation	August 29, 1994
Cities of Anaheim, Riverside, Banning, Colton, and Azusa, California	March 6, 1995
Friends of the River	August 24, 1995
Kern River Alliance	December 30, 1995

C. SCOPING

Scoping Document I, which asked for written comments on issues to be addressed in the EA, was issued on January 23, 1995, and was noticed in the *Federal Register* on January 27, 1995, and in the *Bakersfield Californian* on February 15 and March 1, 1995. In addition to comments provided at the scoping meetings on March 7 and 8, 1995, written comments were received from the following entities.⁴

COMMENTING ENTITIES	DATE OF LETTER
California Department of Boating and Waterways	March 16, 1995
San Joaquin Valley Unified Air Pollution Control District	April 4, 1995
Southern California Edison Company	April 10, 1995
American Whitewater Affiliation	April 12, 1995

Scoping Document II, addressing these comments, was issued May 26, 1995.

D. WATER QUALITY CERTIFICATION

On April 26, 1994, Edison applied to the State Water Resources Control Board (SWRCB) for a water quality certificate (WQC) for the project, as required by Section 401 of the Clean Water Act. The SWRCB received the request on May 2, 1994 (letter from C. E. Miller, Manager of Hydro Generation, Edison, Rosemead,

⁴ Additional public input was solicited by Edison at collaborative meetings held between November 1996 and August 1997. The issues discussed at these meetings, whitewater recreation flows, access, minimum instream flows, fish habitat improvements, recreation improvements, and recreation use by the public in the project area, are the same as those discussed throughout this EA.

Project No. 1930-014 -77-

California, May 16, 1994).

On May 1, 1995, the SWRCB granted certification to the project (letter from Walt Pettit, Executive Director, State Water Resources Control Board, Sacramento, California, May 1, 1995). On December 2, 1997, Edison filed a "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan" with the SWRCB. On January 12, 1998, the SWRCB amended Edison's certification to reflect the current Tulare Lake Basin Plan water quality objective for temperature (letter from Walt Pettit, Executive Director, State Water Resources Control Board, Sacramento, California, January 12, 1998). Under the requirements of section 401(d) of the Clean Water Act, the following water quality certificate conditions are to be included in any new license for the project.

1) Natural temperature waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Control Board that such alteration in temperature does not adversely affect beneficial uses.

Elevated temperature wastes shall not cause the temperature of waters designated COLD⁵ or WARM to increase by more than 5°F (2.8°C) above natural receiving water temperature.

In order to demonstrate the attainment of the COLD beneficial use and compliance with the Basin Plan temperature objective for the Kern River, as defined in the Tulare Lake Basin Water Quality Control Plan (CRWQCD 1995), from the Edison Kern River No. 1 powerhouse upstream to Democrat Dam, Edison shall:

a) Conduct the temperature monitoring and modeling study (for a period not to exceed five years) as described in the "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan" submitted by Edison to the SWRCB on December 2, 1997.

b) An annual progress report shall be prepared and submitted to the Chief of the Division of Water Rights of

5 Cold Freshwater Habitat (COLD) - Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Project No. 1930-014

-78-

the SWRCB and the Director of the CDFG by the following March 1 after each year of temperature monitoring. The progress report will summarize data collected, initial analyses, if any, and results of model calibration, when appropriate. The progress report will include any recommendations for changes to the monitoring program, and when appropriate will recommend conclusion of monitoring. Cessation of monitoring before the completion of five years of monitoring shall occur only upon approval of the Executive Director of the SWRCB.

c) A final summary report shall be prepared within six months of the conclusion of temperature monitoring. The summary report will provide the results of model calibration, validation, and simulations. This will include an accurate description of the model, the data used for calibration and validation, and the measured performance of the model. The results of the temperature simulation model will be tables and plots of simulated longitudinal temperatures, which can be interpolated to estimate stream temperatures for project release flows. The report will summarize the effect of natural warming, the effect of project- related warming, and the likelihood that the project will maintain the COLD beneficial use and the thermal objective of the Basin Plan.

d) If, based on modeling and as determined by the Executive Director of the SWRCB, the results suggest that project operations may not maintain the COLD beneficial use and/or the thermal objective for the conditions evaluated, Edison shall prepare an operations plan for approval by the Executive Director of the SWRCB. The operations plan will indicate what controllable water quality factor actions need to be taken to achieve the temperature objective for protection of the COLD water beneficial use for that section of the Kern River. Upon review of the final report of the temperature monitoring and modeling study described in "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan", the SWRCB will utilize the operations plan to determine what additional terms and conditions may be necessary, if any, to maintain the COLD beneficial use. Edison shall implement any additional terms and conditions established by the SWRCB.

2) In order to protect the beneficial use designations

Project No. 1930-014

-79-

identified in the Basin Plan, operation of the project shall not add the following substances to surface waters:

- a) Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses;
 - b) Perceptible floating material including, but not limited to, solids, liquids, foams or scums which could result in degradation of water quality;
 - c) Suspended or settleable material in concentrations that cause a nuisance or adversely affect beneficial uses;
 - d) Oil, greases, waxes or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water;
 - e) Toxic pollutants present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health; and,
 - f) Coliform organisms attributable to human wastes.
- 3) If the licensee initiates any activities requiring installation of concrete or grout, fresh concrete or grout shall not be allowed to contact or enter surface water.
- 4) Any project dewatering activities shall be coordinated with the CDFG, and all reasonable measures taken to protect the beneficial uses of water.
- 5) Only water used for power generation is authorized for discharge. Discharge of any other materials is prohibited.

Project No. 1930-014

-80-

V. ENVIRONMENTAL ANALYSIS⁶

In this section, we first describe the general environmental setting of the project area. We then discuss the site-specific and cumulative effects of the resources affected by the project, including the effects of the proposed action, action alternatives, and no action.

A. GENERAL DESCRIPTION OF THE KERN RIVER BASIN

1. Kern River Basin

The Kern River originates as the North Fork Kern River in the Sierra Nevada Mountain range at an elevation of 14,495 feet near Mt. Whitney. It then flows 80 miles south to Lake Isabella (elevation 2,065 feet) where it is joined by the South Fork Kern River. From Lake Isabella, the Kern River flows west through the Kern Canyon and then across the southern San Joaquin Valley to Buena Vista Lake Bed, where it ends because of consumptive uses, evaporation, and infiltration. For analyses purposes, we define the reach from Lake Isabella to the mouth of the Kern Canyon, located about 34 miles west of Lake Isabella near the Sequoia National Forest boundary, as the lower Kern River. Streamflow in the lower Kern River is largely regulated by releases from the U.S. Army Corps of Engineers (Corps) Lake Isabella for irrigation, flood control, and hydroelectric power.

As the lower Kern River descends through the Kern Canyon, the canyon changes from the broad and gentle valley surrounding Lake Isabella to a rugged, very narrow, steep-sided gorge until it opens into the San Joaquin Valley. State Highway 178 follows the canyon, mostly paralleling and occasionally crossing the river. The highway is immediately adjacent to the river in several places, including in the project bypassed reach.

Recreation opportunities along the lower Kern River and within the surrounding Sequoia National Forest are varied, but water-oriented recreation is a major attraction. The Kern River is a major regional whitewater boating attraction, and summer irrigation flow releases from Lake Isabella provide relatively high flows in the lower Kern River for boating when other

⁶ Unless otherwise indicated, the source of our information is Edison's May 2, 1994, application for new license and supplemental filings.

Project No. 1930-014

-81-

comparable resources in southern California have limited water.

2. Existing Hydropower Development and the Corp's Lake Isabella

Lake Isabella, a 570,000 acre-foot reservoir constructed in 1953 by the Corps, is managed primarily for flood control and other purposes such as recreation, but reservoir releases are also scheduled by the Watermaster to meet the water rights of downstream agricultural interests and energy companies. During the summer months, nearly all of the water released from the reservoir is used to irrigate approximately one million acres of cultivated land in the San Joaquin Valley. Flows released from Lake Isabella are highest in the summer when agricultural releases are made, and lowest in the winter when the dam stores water.

Six FERC-licensed hydroelectric projects are located on the mainstem of the Kern River. No other projects are proposed for licensing or exemption from licensing on the Kern River. Edison's Kern River No. 3 Project (FERC NO. 2290), relicensed on December 24, 1996, is located on the North Fork of the Kern River. The other five projects, which are up for relicensing between now and 2033, are located on the 34-mile-long reach of the lower Kern River downstream of Lake Isabella and affect flows in 61 percent of this reach (table 1).

Water from Lake Isabella is diverted to Edison's Borel Project powerhouse (FERC No. 382), located 7 miles downstream of the lake. Also, the Isabella Partners Project (FERC No. 8377) powerhouse is located at the base of Isabella dam. The Borel Project has a capacity of 605 cfs, and the Isabella Partners Project generates from reservoir releases greater than the Borel Project's capacity. Historically, a minimum flow of 5 cfs has been provided in the 7-mile-long bypassed reach below Isabella dam and the Borel Project tailrace. On September 29, 1997, the Commission issued an Order Establishing A Minimum Flow Release for the Borel Project⁷ of 50 cfs from June through September and 15 cfs from October through May.⁸

⁷ 80 FERC ¶62,289

⁸ Edison filed a timely request for rehearing on this order on October 29, 1997. The Commission has not acted on the rehearing request.

Project No. 1930-014

-82-

Below the Borel Project tailrace the river is not diverted for 13 miles until it reaches Edison's Kern River No. 1 Project (FERC No. 1930) at Democrat dam. Flows are diverted from Democrat dam for 10.2 miles to the Kern River No. 1 powerhouse. Minimum flows in the diverted reach are 50 cfs (June-September) and 15 cfs (October-May). Flows from the Kern River No. 1 tailrace are immediately diverted by Pacific Gas and Electric Company's (PG&E) Kern Canyon Project (FERC No. 178). Minimum flows in Kern Canyon's 1.6-mile-long bypassed reach are 25 cfs during wet years and 12.5 cfs during dry years. Releases from the Kern Canyon Project tailrace flow 0.1 mile, then are diverted by the Independent Hydro Producer's Rio Bravo Project (FERC No. 4129). The minimum flow in this project's 2.0-mile-long bypassed reach is 50 cfs year-long. The two Edison projects and the PG&E project were constructed, and operated on unregulated flows, before the construction of the Lake Isabella dam in 1953.

Table 1. Locations of diversion dams (river miles below Lake Isabella), reach lengths, and minimum flow requirements between Lake Isabella and the Rio Bravo Hydroelectric Project's tailrace.

Project- License Expiration	Location of Diversion dams (capacity - cfs)	Reach length (miles)	Minimum flow requirements
Isabella (FERC 8377) - 4/30/2038	Mile 0.0 (flows > 605 cfs)	0	0 cfs (5 cfs in practice)
Borel (FERC 382) - 2/28/2005	Mile 0.0 (605 cfs)	7.0	15 cfs (Oct - May) 50 cfs (Jun - Sep)
Free-flowing section	Mile 7.0	13.0	5 cfs + Borel Project outflows
Kern No. 1 (FERC 1930) - 4/30/1996	Mile 20.0 (412 cfs)	10.2	15 cfs (Oct - May) 50 cfs (Jun - Sep)
Kern Canyon (FERC 178)- 4/30/2005	Mile 30.2 (720 cfs)	1.6	25 cfs (normal & wet year) 12.5 cfs (dry year)
Free-flowing section	Mile 31.8	0.1	Kern Canyon Project

Project No. 1930-014

-83-

			outflows + min. flow
Rio Bravo (FERC 4129) - 8/31/2033	Mile 31.9 (1,600 cfs)	2.0	50 cfs (yearlong)
Rio Bravo (tailrace)	Mile 33.9	---	Rio Bravo Project outflows

Source: Staff, as modified from Edison (1994a).

B. SCOPE OF CUMULATIVE IMPACT ANALYSIS

According to the Council on Environmental Quality's Regulations for implementing NEPA (§1508.7), an action may cause cumulative impacts on the environment if its impacts overlap in space and/or time with the impacts of other past, present and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

Based on our review of Edison's license application and agency and public comments, we have identified aesthetic character and whitewater boating opportunities as the resources that have the potential to be cumulatively affected by the Kern River No. 1 Project in combination with other past, present, and future activities. We chose these resources because the succession of dams and reduced flows in the bypassed reaches of the existing hydropower developments on the Kern River and the operations of Lake Isabella have cumulatively altered the aesthetic character of the Kern River Basin and altered whitewater boating opportunities.

1. Geographic Scope

Our geographic scope of analysis for cumulatively affected resources is defined by the physical limits or boundaries of (1) the proposed action's effect on the aesthetic character of the lower Kern River and whitewater boating in the lower Kern River, and (2) contributing effects from other hydropower activities and operation of Lake Isabella for irrigation, recreation and other purposes. The geographic scope of our analysis is the lower Kern River from Lake Isabella to the tailrace of the Rio Bravo Hydroelectric Project. We chose to restrict our cumulative

Project No. 1930-014

-84-

resource evaluations to the lower Kern River because (1) streamflows in the lower Kern River are controlled by the Corps at Lake Isabella--consequently, any changes made in the operation of the Kern River No. 1 Project would not affect the Kern River above Lake Isabella; and (2) available resources and demands on these resources in the lower Kern River where the project is located are sufficiently different from the resources and demands in the high Sierra Mountains of the upper basin. Recreational demands on the upper Kern have been addressed in *Final EA for the Kern River No. 3 Project 2290* (FERC and FS 1996).

2. Temporal Scope

The temporal scope of our cumulative analysis will include past, present, and future actions and their effects on each resource that could be cumulatively affected. For purposes of our analysis, the temporal scope will look 30 years into the future (expected term of new license), concentrating on the effect on the resources from reasonably foreseeable future actions. The historical discussion will, by necessity, be limited to the amount of available information.

C. PROPOSED ACTION AND ACTION ALTERNATIVES

In this section we discuss the effects of project alternatives on environmental resources. For each resource we first describe the affected environment--the existing condition and baseline against which we measure effects, and then discuss the specific environmental issues.

1. Geological Resources

a. Affected Environment

The project is located in a canyon formed by numerous episodes of uplift, deformation, erosion, deposition, and intrusion of igneous rocks. The canyon has steep rock walls, cluttered with bedrock outcrops and large boulders. Alluvial fans have formed along the base of the canyon walls. Soils consisting of fine well-sorted sandy loams have developed from the alluvial fans. Coarse sandy loams have developed from weathering of the bedrock, boulders, and steep canyon walls.

The steep rock walls and bedrock outcrops result in the

Project No. 1930-014

-85-

watershed having rapid runoff rates with concentrated flows. The soils are highly erodible.

b. Environmental Impacts and Recommendations

Erosion Control

Edison does not propose any new construction, modifications, or changes to the project itself, that would cause land-disturbing activities. However, Edison does propose recreation enhancement measures (constructing parking lots and foot paths and installing vault toilets) that would involve minor land-disturbing activities (see *Recreational Resources* section) that could cause erosion and sedimentation.

The FS preliminary 4(e) conditions require Edison to develop, before starting any land-disturbing activities, (1) an erosion and sediment control plan, (2) a solid waste and waste water plan, and (3) a spoil disposal plan.

Implementation of the preliminary 4(e) conditions would protect water quality and other environmental resources during land-disturbing activities. Therefore, we recommend Edison develop a site-specific erosion and sediment control, solid waste and waste water, and spoil disposal plans before any land-disturbing activities, including the proposed recreational enhancements.

Decommissioning

Decommissioning the project would put more flow (see *Aquatic Resources* section) into the mainstream that under most circumstances could cause bank erosion with an increase in sedimentation. However, because the Kern River already experiences large flow fluctuations (50 to 10,000 cfs), the banks and streambed can accommodate the slightly higher flow normally diverted by the project (a maximum of 412 cfs) without causing significant bank erosion or scouring.

c. Unavoidable Adverse Impacts

None.

Project No. 1930-014

-86-

2. Aquatic Resources

a. Affected Environment

Water Quantity

The Kern River Basin has mild, dry, summers and wet winters, characteristic of Mediterranean subtropical climates. The annual precipitation in the basin is between 10 and 30 inches.

Streamflow at the project is recorded at three U.S. Geological Survey (USGS) stations: USGS gage number 11192500, located in the bypassed reach 0.4 mile downstream of Democrat dam; USGS gage number 11192000, located on the flowline 2.3 miles below the diversion; and USGS computational station number 11192501, which combines the flow data from the stations in the flowline and the bypassed reach to calculate the total inflow to the project. The projects' minimum flow requirement is recorded at USGS gage number 11192500.

The total annual flows (1969 through 1990) for the USGS computational station were used to determine representative average, wet, and dry water years. The volume of water that flowed through the system in 1973 was nearest to the calculated mean, and is considered an average water year. The lowest and highest volumes were in 1977 and 1983, respectively, and are considered dry and wet water years.

Figure 3 shows the mean monthly computed project inflows, flowline flows, and what the bypassed reach flows would have been with the current minimum flow requirements, during average (1973) and dry (1977) water years, respectively. Figure 4 shows the same flow records for a wet (1983) water year.

The highest recorded spill over Democrat dam was 40,000 cfs occurring on November 19, 1950. Since Lake Isabella was constructed in 1953, the highest recorded spill over Democrat dam was 10,000 cfs on December 6, 1966. The combined flow of the North Fork Kern River (USGS gage number 11186001) and South Fork Kern River (USGS gage number 11189500) on December 6, 1966, upstream of Lake Isabella, was 88,700 cfs. Flow in the bypassed reach during November through January 1977, before a minimum flow was required, was often less than 1 cfs.

Project No. 1930-014-87
Graphic can be found on hard copy in public file.

**Water
Quality**

The
California
Regional
Water Quality
Control Board
(CRWQCB)

identified
the
beneficial
uses of the
Kern River
from Lake
Isabella to
the Kern
River No. 1
powerhouse
as:
hydropower
generation,
water contact
and non-

Graphic can be found on hard copy in public file.

contact recreation, freshwater fish habitat (warm and cold), and rare and endangered species habitat (CRWQCB 1995). Beneficial uses downstream of the powerhouse-- in addition to all those uses above the powerhouse-- include municipal and domestic supply, agricultural supply, industrial service and process supply, and as a source for ground water recharge. Cold freshwater fish habitat is not a designated beneficial use below the Kern River No. 1 powerhouse.

Edison analyzed water quality samples collected upstream of Democrat dam, within the bypassed reach, and downstream of the powerhouse on March 31 and September 23, 1992. The study results found project waters characteristic of the Kern River Basin: calcium sodium bicarbonate water, soft, relatively low in dissolved solids, and slightly alkaline. Ammonia and pH did not meet water quality objectives defined by CRWQCB (1995) or SWRCB (1993) at a few sample sites, but project operation does not appear to affect the levels of these or any other water quality parameters. The following describes Edison's water quality study results that didn't meet the state's water quality objectives, and possible reasons for why the readings didn't meet these objectives. We also discuss water temperature to

Project No. 1930-014

-88-

provide insight to the water quality certificate condition that requires Edison to not allow an increase in water temperature more than 2.8°C throughout the bypassed reach (see section IV. D.).

Water temperature: Uses of water that support cold water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates, are designated by the state as "cold" freshwater habitat. The state's inland surface waters objective for waters designated as "cold" freshwater fish habitat is to not allow an increase in water temperature more than 2.8°C above the natural receiving water temperature (CRWQCB 1995)

Studies conducted by Edison in 1992 showed that water temperatures measured at Democrat dam did not increase more than 2.8°C in the bypassed reach. On March 31, 1992, when the bypassed reach flow averaged 29 cfs, water temperature measured above the diversion dam was 12.6°C. In the bypassed reach the water temperature was 14.5°C to 15.2°C, and below the powerhouse the water temperature was 14.3°C. On September 29, 1992, when bypassed reach flow averaged 62 cfs, the temperature measured 1 mile above, and immediately above, Democrat dam was 21.5°C. The water temperature in the bypassed reach was 21.5°C to 22.0°C, and below the powerhouse the water temperature was 21.0°C.

In 1987 Edison conducted a temperature modeling study in the Kern River between Lake Isabella and above the Kern River No. 1 powerhouse (Flow Science 1988). Water temperature profiles were collected from Lake Isabella on October 9-10, 1987, and stream temperatures were collected at five stations below the Isabella dam between August and October. The study indicated that the thermal response of Lake Isabella, with its large surface area, to changes in local atmospheric conditions was the dominant factor in defining the water temperature in the river below the lake. However, since the diurnal variations in Lake Isabella were confined to the upper 5 meters of the water column, withdrawal of water from below this elevation would maintain a relatively stable base temperature in the upper reaches of the river. Passing water through the Borel and Kern River No. 1 Projects' power canals helps reduce the total heat added to the river below Lake Isabella, although it can increase the diurnal water temperature fluctuations when the Borel Project draws water from the surface of Lake Isabella. The average daily water temperatures at Democrat dam ranged from 18°C to 24.5°C during the 3-month study. Between September 7-30, 1987, when the average daily flow in the bypassed reach was a constant 65 cfs, the range of the average daily water temperature at Democrat dam was between 24.3°C and 20.5°C. During this period there was less than a 1°C increase in the daily average water temperature upstream of the Kern River No. 1 powerhouse.

Dissolved oxygen: The state's water quality objectives require that dissolved oxygen (DO) concentrations not fall below 8 milligrams per liter (mg/l) between Lake Isabella and Kern River No. 1 powerhouse, and not below 7 mg/l below the powerhouse.

Project No. 1930-014

-89-

All DO concentrations measured by Edison in the bypassed reach met the state's minimum objective. The DO concentration above Democrat dam was 7.4 mg/l on September 23, 1992, lower than the state's 8 mg/l minimum objective. This lower concentration was attributed to the impacts of cattle grazing, septic tank discharges, or fertilizer runoff. The DO concentration below the powerhouse was 6.5 mg/l on September 23, 1992, lower than the state's 7 mg/l minimum objective. Edison attributed this lower concentration to degradation of plant material near the sample site, and no comments were filed with the Commission disagreeing with this conclusion.

pH: The state's water quality objective for pH is in the range of 6.5 to 8.3 units, and isn't allowed to change at any time more than 0.3 units from normal ambient pH levels.

A single field measurement of 8.6 units was recorded by Edison in the bypassed reach during the water quality study. Slightly high readings were also recorded above Democrat dam (8.4 units) and in Lucas Creek (8.5 units), a tributary to the bypassed reach. These data indicate that relatively high alkalinity is a characteristic of the Kern River in general, and is not attributed to the project or its operations.

Ammonia: The state's water quality objective for unionized ammonia states that discharges of wastes shall not cause concentrations to exceed 0.025 mg/l in receiving waters. Two samples collected by Edison in September 1992, one upstream of the project (0.45 mg/l) and one 600 feet upstream of the powerhouse (0.04 mg/l), contained ammonia concentrations above the Basin Plan objectives. High ammonia levels are likely caused by upstream land use practices such as animal grazing, septic system discharges, or application of fertilizers. The presence of ammonia concentrations upstream of the project at least ten times greater than that measured in the bypassed reach indicates that ammonia is not project-related.

Water Rights

Edison's water rights for the project are for hydroelectric generation and incidental domestic use, and are based on pre-1914 appropriation of 412 cfs. This water right has allowed Edison to divert water at Democrat dam since before the construction of Lake Isabella in 1953.

To fulfill the water right of the project from Isabella Reservoir upstream, the Corps releases through the Isabella dam outlets during October through May, the preproject flow of the Kern River (including the South Fork) up to 412 cfs (the plant capacity); and during June through September, the first 74 cfs of flow of the river, the next 50 cfs to bypass the plant for recreational purposes, and the next 338 cfs to be diverted for

Project No. 1930-014

-90-

power (U.S. Corps of Engineers 1953, amended January 1978).

No changes to the existing project facilities or operations are proposed that would require additional water rights over the term of the new license.

Fisheries Resources

The Kern River between Democrat dam and the Kern River No. 1 powerhouse is a moderately steep stream dominated by boulders and bedrock. Habitat is dominated by broad runs (39.6 percent), pools (27 percent), and cascades (14.8 percent). Narrow and wide riffles, braided low-gradient cascades, and runs make up the remaining habitat types (EA 1986).

From 1850 through the 1970's the lower reaches of the Kern River were characterized as being abundant in suckers and squawfish (Christenson 1975). These species were abundant well upstream of the Kern River No. 1 Project. The abundance of rainbow trout in the vicinity of the project was sparse, even in 1850. The rainbow trout populations declined over time due to numerous causes.

Edison conducted fish population studies at three stations within the diversion pool upstream of Democrat dam during the week of March 21, 1994. Fish were sampled using beach seines, gill nets, minnow traps, and electrofishing equipment. A total of 39 fish and eight species were collected during this sampling effort. The fish species collected were mosquitofish, white crappie, common carp, largemouth bass, smallmouth bass, brown bullhead, channel catfish, and hitch. None of these fish species are stocked on a regular basis, and are therefore considered self-sustaining populations.

CDFG manages the project bypassed reach for its self-sustaining smallmouth bass fishery, and stocks it with catchable-sized rainbow trout. The fishing season is year-round with a no-size, 5 fish per day limit. Fish are stocked in the diverted reach area about 30 weeks per year during the spring-early summer and fall--when water temperature is cool enough. Fish are stocked year-round in the 13-mile reach between Democrat dam and the Borel powerhouse--every week from Memorial Day weekend through Labor Day weekend and every other week for the remainder of the year. The programmed stocking allotment for 1996 in the bypassed reach and the section upstream of Democrat dam was 8,400 and 18,000 fish, respectively. Slightly fewer fish were stocked in 1996 than scheduled (figure 5).

Project No. 1930-014

-91-

Trout are stocked at about eight locations throughout the diverted reach at increments of 100 pounds each (150 to 260 fish). Since 1990 the average

catchable- sized trout stocked in the Kern River is about one-half pound, and ranging from 8 to 14 inches in length. Before 1990 more fish were stocked at a smaller size-- about one- third pound each. Trout are stocked at one pound each in the reach upstream of Democrat dam.

Edison conducted a creel census in the project bypassed reach of the Kern River, where State Highway 178 parallels the river, from late April to the end of September 1992. The average catch rate for all fish caught during the census period was 0.537 fish per hour.⁹ Smallmouth bass accounted for 75.6 percent of the total catch (0.406 fish per hour) and 19.4 percent of the fish caught were rainbow trout (0.104 fish per hour). All other species combined accounted for 5 percent of the catch. Although a large percentage of the fish caught were smallmouth bass, few were kept (13 percent) because of their small size. Because the rainbow trout are raised to a catchable size, a larger percentage of them were kept by anglers (74 percent). Most anglers rated the fishing as poor (66 percent), and only 2 percent rated it as excellent.

b. Environmental Impacts and Recommendations

Fish Entrainment

Fish moving downstream can be entrained into intake structures and suffer injury or death when passing through turbines at hydroelectric plants (Eicher Associates 1987).

Flows from the diversion pool pass through two trash screens. One is located adjacent to the dam and oriented parallel to the river flow. The other is 40 feet upstream and oriented perpendicular to the flow. The two screens are constructed of bar material on 2-inch centers, with widths of 36 feet and 30 feet, respectively. Edison is not proposing any mitigation measures to reduce the potential impacts of fish entering the project intake structure. Neither the FS nor the fish and wildlife agencies have recommended any entrainment- related measures. To analyze the project's entrainment-related impacts, we reviewed Edison's fish sampling studies at the

⁹ A total of 2,790 rainbow trout were stocked that year between May 5 and July 24 on a weekly basis.

Project No. 1930-014

-92-

diversion pool above Democrat dam and the water velocity measurement taken at the project's intake screens.

A total of 39 fish were collected using beach seines, gill nets, and electrofishing equipment. The fork lengths¹⁰ in millimeters (mm) of these fish are shown in table 2.

¹⁰ Distance from the tip of the snout to the fork of the caudal fin.

Project No. 1930-014

-93-

Table 2. Species and fork lengths (mm) of fish collected from the project diversion pool (Source: Staff, as modified from Edison, 1994a)

Species	Range of fork lengths (mm) and (number)		
	Beach seine	Gill net	Electrofishing
Largemouth bass	44 - 61 (3)	490 (1)	345 - 466 (2)
Smallmouth bass			130 - 155 (2)
White crappie	125 - 185 (4)	150 (1)	176 - 192 (3)
Mosquitofish	17 - 28 (13)		
Hitch	50 - 76 (3)		
Carp		430 (1)	
Channel catfish			125 (1)
Brown bullhead			222 - 273 (5)
Total number = 39	23	3	13

Velocity measurements were collected in the channel upstream of the two screens and along the screens' surfaces when project intake was 397 cfs (96.4 percent of maximum capacity). The approach velocities--the component of the measured velocity that carries fish toward the intake--at the two screens averaged about 0.25 feet per second (fps) (0.13 fps to 0.41 fps) and 0.86 fps (0.74 fps to 1.09 fps). The bypass velocities--the component of the measured velocity that tends to carry objects past the screens--averaged 0.44 fps and 0.41 fps for each screen, respectively.

The only gamefish sampled from the diversion pool that would have difficulty avoiding the screens' approach velocities is the smallest largemouth bass (44 to 61 mm). The swimming speed of largemouth bass, with an average length of 82 mm, has been measured at 0.5 fps (Dahlberg et al. 1968). Beamish (1978) measured the swimming speed of 81 mm to 224 mm

Project No. 1930-014

-94-

largemouth bass at 1.1 fps to 1.9 fps. All of the other gamefish sampled from the diversion pool (table 2) have swimming speeds greater than the screens' approach velocities. In addition, the warmwater fish habitat in the immediate vicinity of the intake is not as suitable as the area upstream that contains vegetative cover.

The studies that Edison conducted showed that few fish would be entrained at the project's intake. Because the project turbines are Pelton units, all of the fish that travel through the flowline and turbines would be killed. The agencies have not recommended any entrainment-related mitigation measures, and we concur that none are necessary.

Minimum Instream Flows

Providing a minimum flow at Democrat dam is necessary to protect the fishery resources in the project bypassed reach of the Kern River.

In the Order Requiring Minimum Flow Release, dated February 14, 1991,¹¹ Edison was required to release minimum flows of 50 cfs from June 1 through September 30, or inflow, whichever is less, to protect rainbow trout habitat, and 15 cfs from October 1 through May 31, or inflow, whichever is less, to protect smallmouth bass habitat. Flows greater than the minimum flow requirements--up to the project's capacity of 412 cfs--can be diverted for power purposes. Flows greater than the combined minimum flow and

Project No. 1930-014

-95-

the project's capacity are spilled into the bypassed reach.

Edison proposes to continue to release its current minimum flow requirements.

FS preliminary 4(e) conditions require that the existing minimum flow requirements be maintained during the new license term. We didn't receive any flow-related 10(j) recommendations from the fish and wildlife agencies.

Edison conducted an instream flow study in the bypassed reach in 1986. The study showed that 83 percent-of-maximum weighted useable habitat (WUA) for adult rainbow trout is available at 50 cfs, and a minimum of 94 percent-of-maximum WUA for the adult, juvenile, and fry life stages of smallmouth bass is available at 15 cfs (figure 6). The CDFG, in a letter to Edison dated October 5, 1990, stated that 50 cfs from June through September would maintain adequate spatial habitat for adult trout, and that 15 cfs during October through May would maintain adequate habitat for all life stages of smallmouth bass.

We concur with the CDFG's conclusion and believe that the existing minimum flows provide adequate protection for the fishery resources in the bypassed reach.

The relationship between WUA and fish production is theoretical, however. In

Project No. 1930-014

-96-

addition,
other
factors
such as
excessive
fishing
pressure,
available
food
supplies,
water

Graphic can be found on hard copy in public file.

temperature, large flow fluctuations, and natural channel structure affect a stream's fish productivity. Therefore, we recommend that Edison develop and implement a plan to study the adequacy of the FS-required minimum flows for protecting and enhancing the smallmouth bass fishery in the project bypassed reach.

Edison operates four gages to monitor (1) water flow through the powerhouse, (2) spill flows over the diversion dam, (3) instream flows in the channel below the diversion dam, and (4) minimum instream flows as released through a pipe in the sandbox at the top of the flowline (letter from Ronald Schroeder, Manager, Licensing and Compliance, Edison, Rosemead, California to Arthur Gaffrey, Forest Supervisor, Sequoia National Forest, July 1, 1997). Compliance with minimum instream flow release requirements is currently being recorded continuously by an acoustic velocity meter installed on the release pipe at the sandbox. The record for this gage (Station No. 11192500) is reviewed, approved, and published annually by the USGS in "Water Resources Data: California." Edison proposes to continue to

Project No. 1930-014

-97-

operate and maintain Station No. 11192500 to monitor compliance with the instream flow requirements. FS 4(e) conditions require monitoring of instream flows.¹² We believe that compliance monitoring is necessary and that the existing system would be sufficient to ensure compliance. We recommend that Edison continue to operate and maintain USGS Station No. 11192500 in order to monitor the minimum instream flows.

Water Quality

Temperature: Rainbow trout prefer water temperatures less than 20°C, and have a 7-day upper lethal temperature limit of 25°C (Cherry et. al 1977). CDFG does not stock catchable-sized trout in streams when water temperature reaches 24°C and it appears that such temperatures would continue to occur regularly, or when stream flows drop below 10 cfs.

Suitable streams with flow between 2 and 10 cfs may be planted if water temperatures don't exceed 21°C and other conditions are suitable. Stocking is discontinued if conditions are unsuitable because of shallow water, lack of pools, growth of algae, poor water quality, or other reasons (CDFG 1987).

The SWRCB is requiring Edison to develop a water temperature model for the area between the diversion dam and the powerhouse. The study results would be used to determine if the project can meet the state's cold freshwater habitat objective and if any operation changes would be necessary. If necessary, Edison would develop a project temperature operations plan for how the project would operate to meet the water temperature objective (see section IV.D).

The water temperature studies conducted at the project indicate that water temperature at Democrat dam is usually =20°C during August, September, and the first half of October, and water temperature does not increase more than 1°C between Democrat dam and the project powerhouse. Flows from Lake Isabella are normally high during the early warm summer months, and taper off in September and October (figures 3 and 4). To meet SWRCB's cold freshwater habitat temperature objective, additional flow releases may be necessary to guarantee that the water temperature in the bypassed reach doesn't increase by more than 2.8°C above the natural receiving water temperature.

We don't know exactly how much additional flow would be necessary to meet SWRCB's requirement, but the available information indicates that additional flow may only be necessary during the first half of October. Monitoring the flows and water

12 FS plans to revise its 4(e) conditions to indicate that the current monitoring protocol is adequate.

Project No. 1930-014

-98-

temperatures for a 5-year period would help determine if, or how much, additional flow is needed to maintain the state's cold freshwater fish habitat temperature objective. We defer our final recommendation on this issue to the *Comprehensive Development and Recommended Alternative* section (section VII).

Sediments released during dam work in 1988: Increased volumes of fine sediments can reduce fish spawning success rates (Macgee et. al 1996) and influence benthic composition and micro- distribution in streams (Brusven 1974).

An undetermined volume of stored sediment was released into the bypassed reach during dam construction activities in 1988. CDFG was concerned that these sediments may have filled in important pool and riffle habitats. To determine if these sediments affected aquatic resources, Edison conducted a sediment grain size analysis, a two-day field measurement survey of selected pool habitats, and a reconnaissance of the bypassed reach in 1995. In addition, sediment bars observed during a November 1991 sediment study were compared to 1984 aerial photographs--before the 1988 sediment releases.

No specific instream sediment aggradation attributable to the 1988 release was observed. The sediment bars and islands observed during the 1991 sediment study were also evident in the 1984 aerial photographs. Edison estimated that sediment contribution in the bypassed reach from side channels and erosion resulting from road construction and maintenance may be as great as the sediment released from Democrat dam. Fine sediment was not observed filling interstitial spaces between and underneath large particle types such as cobble and boulder in cascade and riffle habitats at the time of the survey.

Edison calculated that coarse sand and finer sediment would be transported by the river under half bankfull conditions (about 800 cfs). Flows exceeding 1,000 cfs were common in the bypassed reach during 1993 and 1995, and were likely sufficient to have removed any lingering sediment from the 1988 release. Because Edison releases sediment only when flows exceed 1,000 cfs, future released sediments should not accumulate in the bypassed reach.

In addition to conducting the sediment-related studies, Edison is monitoring sediment deposition at pools in the bypassed reach for two years beginning in 1996. Monitoring would allow Edison to qualitatively predict the relationship between streamflow and sediment transport capacity. Measurement of any sediment accumulation during the monitoring period would help quantify sediment volume and calibrate what flows are necessary for transport. We recommend that Edison complete this monitoring and adjust their sediment releasing operations, if necessary, based on the monitoring results.

Hazardous Substances: FS preliminary 4(e) conditions would require Edison to file a plan for oil and hazardous substance storage and spill prevention and cleanup

Project No. 1930-014

-99-

within 1 year of license issuance or before soil disturbing activities. While Edison has an aggressive spill prevention program, including appropriate containment structures and onsite clean-up materials, a hazardous substances control plan is reasonable for the protection of natural resources, and we recommend that Edison prepare the plan.

Project No. 1930-014

-100-

Decommissioning

Under the decommissioning alternative, flows in the bypassed reach would be up to 412 cfs more than they are currently. Because the bypassed reach is stocked with catchable-sized rainbow trout, trout production in the bypassed reach is not an issue. CDFG manages the bypassed reach for natural production of smallmouth bass.

In wet water years, not diverting water at Democrat dam would cause relatively minor year-round flow increases in the bypassed reach. In average water years, bypassed reach flow would not be significantly increased except during October through February, when flow would increase from 15 cfs (October) and 73 cfs (February) to 152 cfs and 450 cfs, respectively.

In general, bypassed reach flow increases would have a negative impact on smallmouth bass habitat and production. Because the percent-of-maximum WUA for fry, juvenile, and adult smallmouth bass peaks between 20 and 35 cfs, flow increases to about 50 to 200 cfs would significantly decrease the amount of smallmouth bass habitat and productivity. If the project was decommissioned, reductions in smallmouth bass habitat would be even more significant during dry water years.

Smallmouth bass prefer warmer water temperatures than trout. Any increases in water temperature would be beneficial for smallmouth bass. Water temperatures in the bypassed reach currently exceed 20°C during the high-flow summer months. The magnitude of flow increase that would result from decommissioning the project would not significantly change water temperature. No change in smallmouth bass productivity--related to temperature-- would occur.

c. Unavoidable Adverse Impacts

A minor portion of the smaller game and nongame fish species would continue to be entrained into the project flowline. Because the project turbines are Pelton units, all of the fish that travel through the flowline and turbines would be killed.

3. Terrestrial Resources

a. Affected Environment

Vegetation

Uplands immediately surrounding the project's diversion dam, flowline, and powerhouse consist of a mixture of open blue oak woodland and annual grassland. The oak woodland, adapted to the hot, dry climate and poor soils, is common throughout the lower interior foothills and forms a wide elevational vegetation zone along the western base of the Sierra Nevada (Kuchler 1977). Blue oak is the dominant tree species, with

Project No. 1930-014

-101-

digger pine, interior live oak, canyon live oak, and California buckeye being present on north-facing slopes above about 2,500 feet. Annual grassland is the most common vegetative component in the area. Historical grazing practices have greatly influenced grassland species composition, which includes mostly common introduced grasses, such as wild oats, bromes, annual fescue and Italian ryegrass. Native annual and perennial wildflowers and herbs are intermixed in the grasslands.

The riparian community within the project reach is confined to a relatively narrow band along the banks of the Kern River floodplain. Edison estimates that about 58 acres of riparian vegetation occur within the project area. Similar to many western Sierra streams, riparian development in the bypassed reach is limited by the narrow and incised floodplain, steep canyon slopes, low rainfall, rapid runoff, high stream gradient, and large boulder and bedrock dominated substrates (Harris 1988). Riparian development is slightly greater in some reach segments with more braided channels and slightly wider floodplains. Recreation use has influenced vegetation in these areas. Riparian species composition exhibits an elevational gradient, with the upper portion of the river near the diversion dam supporting narrow, broken strips of vegetation dominated by Fremont cottonwood, interior live oak, sycamore, willows and occasionally digger pine. Scattered pockets of mugwort, horsetails, nettle, Mexican rush and other opportunistic herbs are also present. The riparian community becomes less diverse and considerably less luxuriant farther downstream, consisting predominantly of an open and highly broken sycamore woodland. Associated species include cottonwood, willow, and an occasional buttonbush. Leaking flumes and water splashed over the flume edges form small pools beneath the flumes, which enhance vegetative diversity in these localized areas.

The project transmission line right-of-way (ROW) from the Kern River No. 1 powerhouse to the Edison intertie near the PG&E Kern Canyon powerhouse (about 1.9 miles) passes through annual grassland along the steep canyon slopes above Highway 178. Extensive bedrock outcrops are also present.

Wildlife

The habitats surrounding the project support a diverse assemblage of wildlife species. Site surveys documented the occurrence of 2 amphibian, 7 reptile, 40 bird, and 15 mammal species. The project vicinity is not considered to be an important waterfowl area. Several species of raptors, including red-tailed hawk, golden eagle, prairie falcon, and spotted owl, find suitable foraging and nesting habitats near the project.

The region's arid character makes water resources very important. Wildlife diversity and abundance was greater during the site surveys near the Kern River and in the wooded drainages south of the river and Highway 178 (such as Dougherty and Stark Canyons) than along the canyon walls. Water from leaking flumes provides a

Project No. 1930-014

-102-

convenient and much used water source for wildlife.

b. Environmental Impacts and Recommendations

Leaking Flumes

Small puddles form under the project's flumes from both leaks and splashing over the edge. These puddles form micro- riparian habitats that are beneficial to vegetation and wildlife when the creeks dry up each year.

Edison proposes to monitor the leaking flumes annually and postpone any repairs until it becomes threatening to the structural integrity of the flumes. At such time, Edison would consult with the FS and the Commission prior to completing any flume repairs that would reduce present leakage.

We agree with Edison's proposal. These measures should be sufficient to prevent a failure of the system, while continuing to provide benefits to wildlife as long as possible.

Decommissioning

All flows released from Lake Isabella would pass over the dam, increasing flow in the bypassed reach by as much as 412 cfs over current conditions. Higher flows would increase the wetted perimeter of the channel, improving water availability for some riparian vegetation.

Improved water availability during the growing season could reduce moisture stress (Nilsson 1984) for streambank riparian vegetation. Outside the growing season (September through April) increased flows would have little benefit. Increased flows would not likely affect riparian vegetation composition or cover, however, because riparian development appears to be limited by available substrate and by the scouring effects created by the high stream gradient, high and variable irrigation flows, and floods. Scouring effects of irrigation flows would be amplified slightly in the absence of project diversions. Consequently, decommissioning would have minimal beneficial effects on riparian vegetation and associated wildlife.

Project No. 1930-014

-103-

c. Unavoidable Adverse Impacts

None.

4. Threatened and Endangered Species**a. Affected Environment**

Federally listed species that the U.S. Fish and Wildlife Service (FWS) says may occur in the project area--Kern County, California, and surrounding U.S. Geological Survey 7.5 minute quadrangles--are listed in table 3 (letter from Joel Medlin, Field Supervisor, FWS, Sacramento, California, January 9, 1997).

Edison (1994a) conducted surveys for federal and state listed species, FS sensitive species, species of concern, and rare plants listed by the California Native Plant Society (CNPS) between June 17-19, 1992, for wildlife species, and between April 11-13, 1992, and May 9-10, 1992, for plants species. The survey area included areas adjacent to the project facilities and the entire length of the 1.9-mile-long transmission line.

Based on distribution, habitat requirements, and site survey results, we have determined that only the Bakersfield cactus, American peregrine falcon, bald eagle, and valley elderberry longhorn beetle may find suitable habitat present in the project area. These species are discussed below and our finding of project effects on these species is discussed in the *Environmental Impacts and Recommendations* section. Distribution, habitat requirements, and known occurrences relative to the project for the remaining federally listed species are described in *Appendix A*. Other FS sensitive species, state listed species, species of concern, and rare plants known to occur near the project from site surveys or California Natural Diversity Data Base (CNDB) occurrence records (CNDB 1996) are also listed in table 3 and discussed below.

Table 3. Federal listed species that may occur in the project area with their corresponding state and Forest Service status.

Species	a FWS	b FS	CA c L	CNP d S
PLANTS				
Bakersfield cactus (<i>Opuntia treleasei</i>)	E	-	-	1b
California jewelflower (<i>Caulanthus californicus</i>)	E	-	E	1b

Project No. 1930-014

-104-

San Joaquin wooly-threads (<i>Lembertia congdonii</i>)	E	-	-	1b
Hoover's wooly-star (<i>Eriastrum hooveri</i>)	T	-	-	4
Kern mallow (<i>Eremalche kernensis</i>)	E	-	-	1b
Greenhorn adobe-lily (<i>Fritillaria striata</i>)	PT	✓	T	1b
Piute Mountains navarretia (<i>Navarretia setiloba</i>)	PT	✓	-	1b
San Joaquin adobe sunburst (<i>Pseudobahia peirsonii</i>)	T	✓	E	1b
Kelso Creek monkeyflower (<i>Mimulus shevockii</i>)	PE	-	-	1b
Parish's alkali grass (<i>Puccinellia parishii</i>)	PE	-	-	1b
Calico monkeyflower (<i>Mimulus pictus</i>)	-	-	-	1b
Shevock's hairy golden-aster (<i>Heterotheca shevockii</i>)	-	-	-	1b
MAMMALS				
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	E	-	T	-
Tipton kangaroo rat (<i>Dipodomys n. nitratooides</i>)	E	-	E	-
Giant kangaroo rat (<i>Dipodomys ingens</i>)	E	-	E	-
Greater western mastiff bat (<i>Eumops perotis californicus</i>)	SC	-	CS C	-
Pale Townsend's big-eared bat (<i>Plecotus t. townsendii</i>)	SC	-	CS C	-
BIRDS				
Aleutian Canada goose (<i>Branta</i>	T	-	-	-

Project No. 1930-014

-105-

<i>canadensis leucopareia</i>)				
American peregrine falcon (<i>Falco peregrinus anatum</i>)	E	-	E	-
Least Bell's vireo (<i>Vireo bellii pusillus</i>)	E	-	E	-
Bald eagle (<i>Haliaeetus leucocephalus</i>)	T	-	E	-
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	E	✓	E	-
Prairie falcon (<i>Falco mexicanus</i>)	-	-	CS C	-
California spotted owl (<i>Strix o. occidentalis</i>)	SC	✓	CS C	-
REPTILES				
Blunt-nosed leopard lizard (<i>Gambelia silus</i>)	E	-	E	-
Giant garter snake (<i>Thamnophis gigas</i>)	T	-	T	-
Southwestern pond turtle (<i>Clemmys marmorata pallida</i>)	SC	✓	CS C	-
California horned lizard (<i>Phrynosoma coronatum frontale</i>)	SC	✓	CS C	-
AMPHIBIANS				
California red-legged frog (<i>Rana aurora draytonii</i>)	T	✓	-	-
Kern Canyon slender salamander (<i>Batrachoseps simatus</i>)	SC	-	T	-
Yellow-blotched salamander (<i>Ensatina eschscholtzi croceater</i>)	SC	-	CS C	-
FISH				
Delta smelt (<i>Hypomesus transpacificus</i>)	T	-	T	-

Project No. 1930-014

-106-

Sacramento splittail (<i>Pogonichthys macrolepidotus</i>)	PT	-	-	-
INVERTEBRATES				
Kern primrose sphinx moth (<i>Euproserpinus euterpe</i>)	T	-	T	-
Longhorn fairy shrimp (<i>Branchinecta longiantenna</i>)	E	-	-	-
Valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	T	✓	T	-
Vernal pool fairy shrimp (<i>Branchinecta lynchi</i>)	T	-	-	-

a

Fish and Wildlife Service: E=Endangered; T=Threatened; PE=proposed endangered; PT=proposed threatened; SPC=species of concern.

b

Forest Service sensitive species, Region 5.

c

California Department of Fish and Game: E=endangered; T=threatened; CSC=species of concern.

d

California Native Plant Society: 1b=plants rare, threatened, or endangered in California and elsewhere; 4=plants of limited distribution, a watch list.

Federally Listed Species

Bakersfield cactus: The Bakersfield cactus occurs in chenopod scrub and valley and foothill grassland communities. It has been found on coarse or cobbly well-drained granitic sand on bluffs, low hills, and flats within grasslands at elevations of 500-1,800 feet (CNDB 1996). FWS (1990) says it occurs chiefly within annual grassland on sandy to sandy-loam soils, atop low hills northeast of Oildale, California and southeasterly along the valley floor to the low hills of the Tehachapi Mountains. Oildale is about 15 miles west of the Kern Canyon. The closest known population to the Kern River No. 1 Project is at the mouth of Kern Canyon near the Rio Bravo powerhouse (CNDB 1996). The last 0.15 mile of the project transmission line is located near the mouth of the canyon, however, this area has been disturbed from past land use practices and appears too steep and rocky to support the cactus (Edison 1994a). Bakersfield cactus was not found during site surveys.

Project No. 1930-014

-107-

American peregrine falcon: Peregrines are present in western Sierra Nevada as spring and fall transients; they are not present in winter (Verner and Boss 1980). Peregrines require cliffs for nesting and perching, nearby lake or river, and abundance of bird prey (Verner and Boss 1980). Peregrines are not known to breed in the project area (Edison 1994a).

Bald eagle: No bald eagle nesting has been reported in the project area. Lake Isabella regularly supports between 7 and 10 wintering eagles, which have been observed flying up the North Fork Kern River and high above the Kern River No. 1 Project (Edison 1994a). Suitable foraging and roosting habitat in the project reach is limited (Edison 1994a).

Valley elderberry longhorn beetle: The valley elderberry longhorn beetle (VELB) is dependent on its host plant, elderberry (*Sambucus mexicana* and *S. racemosa*), which is most often associated with riparian and savannah habitats (Barr 1991). Adults feed on the foliage and their larva on the trunk and branch pith. When the adult emerges from the branch, it leaves a distinctive exit hole. The VELB is distributed patchily through the Central Valley from Redding (Shasta County) to Bakersfield (Kern County). Designated critical habitat and known VELB populations are all located in Sacramento, Yolo, and Merced counties (FWS 1980). In 1990, exit holes were found in plants within the Kern Canyon (about 3 miles into the Sequoia National Forest), but none were found in 1991 (Barr 1991). Edison (1994a) found elderberries growing at 18 locations within the project area, but no VELB exit holes were found.

Other Sensitive Species

Calico monkeyflower: This annual occurs in dry foothill woodland and riparian communities and cismontane woodlands (CNDB 1996). It is found on bare granitic soils around gooseberry bushes or granite rock outcrops at elevations of 330 to 4,265 feet (CNDB 1996). Two known locations are in Kern Canyon: the north side of Kern River opposite Democrat Hot Springs and near Richbar Day Use Area. Edison (1994a) did not find any plants around project facilities.

Shevock's hairy golden-aster: This perennial herb is known only from the lower Kern Canyon (CNDB 1996; Semple 1996). It is

Project No. 1930-014

-108-

found in ditches, rock crevices, and shallow sandy soils at elevations from 1,310 to 2,950 feet (CNDB 1996; Semple 1996). It occurs in many small interspersed populations in sandy areas along the Kern River from the canyon mouth to Lake Isabella, including along Highway 178 from Democrat Hot Springs to Live Oak Day Use Area (CNDB 1996).

Greater western mastiff bat: This bat's range includes much of southern California, but most of its historic roosts have disappeared (Edison 1994a; Barbour and Davis 1969). It prefers rugged rocky canyons and cliffs where crevices provide its favored daytime roosts (Barbour and Davis 1969). One of the largest colonies (23 bats) currently known in California roosts near the project intake area during the summer, but migrates to lower elevations during the winter (Edison 1994a). The roost site is accessed through Edison's locked gate to the project intake.

Pale Townsend's big-eared bat: This bat occurs throughout California and lives in a variety of habitats (Barbour and Davis 1969), but prefers mesic habitats with appropriate roosting, maternity, and hibernacula sites (CNDB 1996). It breeds and roosts in caves, tunnels, abandoned mine shafts, and sometimes in buildings (Barbour and Davis 1969; Verner and Boss 1980). Pale Townsend's big-eared bat are known to roost in a mine south of Democrat Hot Springs (CNDB 1996), and caves and other suitable habitat were located in the project area during site surveys (Edison 1994a).

California spotted owl: The California spotted owl is found throughout the entire Sierra province of California, where suitable habitat exists (Verner et al. 1992). Habitat used in the Sierra province includes foothill riparian/hardwood, Ponderosa pine/hardwood, mixed conifer forest, red fir forest, and eastside forest (Verner et al. 1992). Spotted owls are known to nest in some of the more forested areas above the project flowline and to forage in the wooded habitat in the project area (Edison 1994a). Protected activity centers are found at Prefidio Springs, Cow Flat, and Lucas Creek (letter from Linda Brett, District Ranger, FS, Bakersfield, California, January 20, 1994), more than 0.25 mile above the project flowline.

Prairie falcon: The range of the prairie falcon extends over much of the western United States. It nests on high cliff faces and requires open terrain for foraging (Verner and Boss

Project No. 1930-014

-109-

1980). A nest site with three young were observed in the upper part of Stark Canyon on June 19, 1992 (Edison 1994a). The project area provides excellent foraging habitat (Edison 1994a).

Southwestern pond turtle: The southwestern pond turtle inhabits fresh or brackish permanent and intermittent water bodies, including marsh sloughs, ponds, and slow-moving portions of creeks and rivers from Monterey Bay south to northwestern Mexico (FWS 1993a). It is found in the Sierra foothills and in suitable habitats in forest up to 6,000 feet (Verner and Boss 1980), but mostly below 3,500 feet (FWS 1993a). Southwestern pond turtles were found at two locations on the Kern River: mouth of the Kern Canyon, about 3 miles east of the Kern River State Park, and in Cottonwood Creek near its junction with the Kern River (CNDB 1996). Both locations are outside the Kern Canyon. The southwestern pond turtle is also found in Lake Isabella (personal communication, Steve Anderson, District Biologist, FS, Porterville, California, February 10, 1997). The southwestern pond turtle often concentrates in side channels and backwater areas of rivers (FWS 1993). We believe that the swift and variable currents associated with irrigation releases and the limited amount of suitable emergent vegetation makes the project reach unlikely to support populations of the southwestern pond turtle.

Kern Canyon slender salamander: The Kern Canyon slender salamander is endemic to the Kern Canyon, where it occurs in canyons from about Democrat Hot Springs to about the Live Oak Day Use Area (CDFG 1992). They are found under rocks, fallen limbs, and leaf litter, chiefly along the cooler, moister, north- and east-facing slopes (CNDB 1996; Hart 1990, Edison 1994a). No salamanders were found during site surveys, but they are known to occur in the oak-pine woodlands in the project area, often where leaking flumes provide suitable habitat (Edison 1994a).

Yellow-blotched salamander: The yellow-blotched salamander is a forest dweller, found in a variety of habitats from chaparral to mixed conifer types (Verner and Boss 1980). It is found in Dougherty Canyon, a tributary that enters the Kern River just above the Upper Richbar Day Use Area. It is found around seeps and in drainages, usually under rocks or fallen debris, but is less likely to be found on talus slopes than is the Kern Canyon slender salamander (Edison 1994a).

California horned lizard: This lizard is found in a variety

Project No. 1930-014

-110-

of habitats including coastal sage scrub, chaparral, broad-leaved woodlands, washes, and grasslands (Stebbins 1954). It requires loose sandy soils for burrowing and breeding, ants (primarily harvester ants) for forage, and escape cover (rocks or bushes) (Stebbins 1954). Horned lizard scat was observed during site surveys at several locations (Edison 1994a).

b. Environmental Impacts and Recommendations

FWS asked us to analyze direct and indirect project effects on endangered species throughout Edison's service area (an area served by a transmission grid network that encompasses the lower San Joaquin Valley east into Nevada and Arizona and south into Mexico via lines not necessarily owned by Edison) as well as within the project boundary (letter from Joel Medlin, Field Supervisor, FWS, Sacramento, California, January 9, 1997).

We don't consider the service area in our analysis because: (1) the scope of this analysis would be too broad to provide a meaningful evaluation, (2) the effects attributable to the Kern River No. 1 Project could not be defined within such a broad context and would be insignificant due to the small amount of power contributed to the grid which serves numerous power facilities (gas, hydro, coal, etc), (3) no additional capacity is being proposed, and (4) the project's transmission line beyond the intertie with the grid at the Kern Canyon powerhouse is not within our jurisdiction and consequently any mitigation or enhancement measures could not be imposed within our FPA licensing authority.

Our analysis is therefore limited to the area occupied by and affected by operation and maintenance of the project facilities (diversion dam, flowline, penstock, powerhouse, and the 1.9-mile-long transmission line), and the Kern River and adjacent lands within the 10.2-mile-long bypassed reach. Our findings below take into consideration the direct and indirect effects of whitewater augmentation flows, recreation use and developments, continued project operation and maintenance, and decommissioning--the only measures we have identified that may affect endangered, threatened, FS sensitive, and rare species, and species of concern (sensitive species).

Following their review of the draft EA, the FWS determined that the project is not likely to adversely affect any federally listed species and that no further action pursuant to the

Project No. 1930-014

-111-

Endangered Species Act of 1973, as amended, is necessary (letter from Wayne S. White, Field Supervisor, Fish and Wildlife Service, Sacramento, California, October 1, 1997).

Federally Listed Species

California jewelflower, Kern mallow, San Joaquin wooly-threads, Hoover's wooly star Greenhorn adobe-lily, Piute Mountains navarretia, San Joaquin adobe sunburst, Kelso Creek monkeyflower, Parish's alkali grass, San Joaquin kit fox, Tipton kangaroo rat, giant kangaroo rat, Aleutian Canada goose, least Bell's vireo, southwestern willow flycatcher, blunt-nosed leopard lizard, giant garter snake, California red-legged frog, Delta smelt, Sacramento splittail, Kern primrose sphinx moth, longhorn fairy shrimp, and vernal pool fairy shrimp: Because these species are not known to occur within the project area, the project operates run-of-river, and no suitable habitat exists within the project boundary, relicensing or decommissioning the project would not affect these species.

Bakersfield cactus: Bakersfield cactus may occur only in the last 0.15-mile of the project transmission line, but that is unlikely because the habitat is poor due to the steep and rocky canyon slopes. Any operation or maintenance related ground disturbance in the transmission line ROW that might affect this species would be restricted to the pole and tower sites. Because no Bakersfield cactus were found during site surveys (Edison 1994a), and because of the very limited potential habitat disturbance associated with transmission line maintenance activities, impacts to this species is highly unlikely. Moreover, Edison has in place an endangered species alert program, which includes training field personnel on threatened and endangered species identification, natural history, legal status, distribution, and impact avoidance (FERC and FS 1996). Provisions in Edison's endangered species program would ensure that all necessary measures would be taken to prevent ROW maintenance from having any adverse impacts on this species if found in the future. Because the transmission lines would be left under the decommissioning alternative, no habitat disturbance would occur. We therefore find that relicensing or decommissioning the project would not affect this species.

American peregrine falcon: Using Olendorff et al. (1981) raptor protection guidelines, Edison determined that the project transmission line is not considered hazardous to roosting

Project No. 1930-014

-112-

raptors, but the distribution line is considered "extremely hazardous." In 1995, Edison reconfigured poles along the distribution line that were considered hazardous. Edison proposes to install additional protective devices where necessary if monitoring of raptor mortality indicates that a significant hazard still exists (letter from C.E. Miller, Edison, Rosemead, California, April 10, 1995). We agree with Edison's proposal to provide additional raptor protection along the distribution line as necessary, but can't require it because the line is outside our jurisdiction. Given the limited use of the project area and transitory nature of any migrating birds and the agility of peregrine falcons, the project transmission line doesn't represent a collision hazard. Although the project transmission line would remain under the decommissioning alternative, impacts to peregrines are not expected for the reasons stated above. We, therefore, conclude that relicensing or decommissioning the project would not affect the peregrine falcon.

Bald eagle: Wintering eagles could be adversely affected if project measures reduced prey abundance, removed perch sites, or increased disturbance at roost and perch sites. Proposed minimum instream flows would protect any potential forage base, and increased flows from augmented boating flows and decommissioning would not improve the forage base. No winter roost sites are known to occur in the project area. Project maintenance practices are not expected to require vegetation clearing that could remove potential perch sites because project facilities are either primarily underground or cross grasslands. Disturbance to wintering eagles would not likely result from construction of proposed recreation enhancements or from any increase in recreation use of the bypassed reach from whitewater boating flows or access improvements because these activities would likely occur during the summer when eagles are unlikely to be present. The project transmission line doesn't represent a collision or electrocution hazard for reasons discussed above for the peregrine falcon. Given the limited use of the project area, limited suitable foraging and roosting habitat, and likely transitory nature of the species in the project area, potential impacts are unlikely and would be insignificant. Consequently, relicensing or decommissioning the project would not affect the bald eagle.

Valley elderberry longhorn beetle: No VELB exit holes were found during site surveys. Most elderberry plants reported by Edison (1994a) were located more than 100 feet from existing

Project No. 1930-014

-113-

project facilities, and all were growing above the high water line of the Kern River. Seven of the 18 sites containing elderberry plants could be affected if access roads or flume lines required repairs. Current operations don't appear to be affecting the growth of the elderberry plants. Variable and high velocity flows attributable to irrigation releases and the bedrock and boulder dominated substrate are likely the more limiting factors controlling riparian and elderberry vegetation development. Flow increases from augmented boating flows or decommissioning would not be expected to affect elderberry plants because of the small flow increase relative to existing irrigation releases. Upgrades to the recreation facilities at the day-use areas and at Democrat raft-take out would not remove any elderberry plants. Staff are not proposing recreation access improvements to the bypassed reach at this time, but may require them in the future (see section V.7, *Recreation*). Effects of any future recreation access improvements on VELB habitat would be considered and mitigated at the time of the proposal. Because the project would not affect any designated critical habitat or known VELB populations relicensing or decommissioning the project would not affect the VELB.

Other Sensitive Species

Southwestern pond turtle: Changes in flow for whitewater boating and decommissioning alternatives could affect both the quantity and quality of southwestern pond turtle habitat (FS sensitive), if present in the bypassed reach.

The degree of effect on potential southwestern turtle habitat is dependent on the change in flow and the geomorphic character of the stream reach. In narrow, constricted reaches, characteristic of most of the bypassed reach, increased flows would likely result in higher velocities and less sluggish water habitat preferred by pond turtles. In reaches with more broad, open channels, such as that present near Richbar Day Use Area, increases in stream flow may increase the area of suitable habitat if substantial backwater pool and side channel habitat is created. In general, increased flows would likely reduce pond turtle habitat in the bypassed reach because of the incised and confined nature of the reach. Rapid changes in flow during ramping to augment streamflow could also adversely impact pond turtles. Western pond turtles have been observed moving across land in response to high flows in other rivers (Holland 1994). However, because irrigation flows are often high and variable

Project No. 1930-014

-114-

throughout much of the turtles' active period, any turtles in the project area may be somewhat acclimated to changing habitat conditions.

Shevock's hairy-golden aster and calico monkeyflower:

Increased recreational use and proposed recreation developments could affect the rare plants, Shevock's hairy-golden aster and calico monkeyflower, as a result of the increased likelihood of trampling or direct loss during construction of recreation facility upgrades. Present populations of Shevock's hairy-golden aster appear stable and able to withstand limited recreational disturbance; however increased recreational pressures could adversely affect these populations (personal communication, Dana York, Biologist, CALTRANS, February 28, 1997).

The proposed improvements at the day use areas and raft-take out would take place in areas already developed and experiencing heavy recreation use, would not be expected to increase use, would be limited to a small area (less than 2 acres), and would not be expected to remove a substantial amount of vegetation. Therefore, populations of Shevock's hairy-golden aster, which are found along the river near the day-use areas, would not be impacted. The calico monkeyflower would not be impacted for the same reasons.

Potential impacts on Shevock's hairy-golden aster and calico monkeyflower, as well as other sensitive species should be considered by Edison and others when proposing future access improvements. Such effects will be a part of the FS and Commission review when specific access improvements are proposed.

Decommissioning would not impact these plants because (1) recreation improvements would not be provided and project structures would be left in place, thus no habitat disturbance would result; and (2) recreation pressures would likely remain the same, thus the likelihood of trampling would be unchanged.

Kern Canyon slender and yellow-blotched salamanders:

Leakage and spillage from project flumes may enhance habitat conditions for the Kern Canyon slender salamander (state threatened) and the yellow-blotched salamander (species of concern). The temporary and periodic reduction in leakage that would result during augmentation of flows for whitewater boating would not significantly reduce the quality of these localized and isolated habitats for these salamanders. We do agree with

Project No. 1930-014

-115-

Edison, however, that decommissioning, which would eliminate the leakage and spillage altogether, could reduce the quality of these habitats. However decommissioning wouldn't adversely affect the population because these salamanders, which evolved in the dry climate of the canyon, are found in other cool, moist habitats (Verner and Boss 1980, Hart 1990, CNDB 1996). Consequently, the salamanders are not dependant on the habitat created by the leaking flumes, even though they may use them and benefit from the conditions created by the leaking flumes. We recommend in this EA that Edison implement an annual inspection of the flumes and consult with the FS before making repairs that would reduce present leakage. These measures should continue to provide possible benefits to these species. Higher flows from boating augmentation and decommissioning wouldn't affect habitat conditions because these species prefer the moist, calmer environments of tributary canyons to the turbulent and fluctuating Kern River.

California spotted owls: California spotted owls (FS sensitive) are known to nest along the project flowline (Edison 1994a). Continued project operation and maintenance activities would neither remove nor alter suitable spotted owl habitat because most of the flowline is underground and well away (=0.25 mile) from known nests. Impacts to spotted owls would not be expected unless major reconstruction of the flowline took place. In which case, Edison would be required to consult with the FS, the Commission, FWS, and CDFG, and to take appropriate mitigative actions.

Prairie falcon: None of the measures considered in this EA would alter or degrade existing foraging, nesting, or breeding habitat. Also, they would not result in increased human disturbances to foraging or breeding falcons because (1) the recreation improvements are not expected to significantly increase the already heavy recreation pressures, and (2) sufficient distance exists between the existing nest site and day-use areas to prevent disturbance to nesting falcons. No evidence or history of the project transmission lines representing a collision hazard for falcons has been provided.

Pale Townsend's big-eared bat: This species is coexisting with current project operation and management practices. Edison is not proposing any changes in operation or maintenance practices. None of the measures studied would result in disturbances to roosting bats or alteration of potential foraging

Project No. 1930-014

-116-

habitat.

Greater western mastiff bat: Continued access control by the project's locked fence at the intake would protect the greater western mastiff bat's (species of concern) summer roost site from human disturbance. Relicensing the project would not increase human disturbance. We don't recommend any additional measures.

California horned lizard: This species is also coexisting with current project operation and management practices. Horned lizard scat was observed at numerous locations during site surveys, and this species is believed to be present in sizeable numbers (Edison 1994a). Edison is not proposing any changes in operation or maintenance practices that would alter or destroy this species habitat. None of the measures studied would result in destruction of existing habitat.

No other sensitive species are known to occur in the project area. Edison's endangered species alert program and the biological evaluation or assessment procedures required by the FS's 4(e) conditions would ensure that any previously unknown sensitive species located in the project area are identified and protected, before any future actions that might adversely affect these species.

c. Unavoidable Adverse Impacts

None.

Project No. 1930-014

-117-

5. Aesthetic Resources**a. Affected Environment**

Within the project vicinity, the characteristic landscapes are of two distinct types: (1) a narrow river canyon (in which the project is located) with vegetation along the river bank, granitic outcropping, and steep grass-covered slopes rising as much as 1,500 feet above the riverbed; and (2) downstream of the project area beyond the canyon mouth, open, rolling foothills vegetated with sparse grasses and a few commercial citrus groves. The FS has classified the lower Kern River and the surrounding landscape as distinctive because of the scenic interest created by perennial flowing water and riparian vegetation, as well as vertical canyon walls and prominent rock boulders and outcroppings.

b. Environmental Impacts and Recommendations

The projects facilities are a visible manmade intrusion on the landscape. The level of intrusion varies depending on the particular project feature and its location with respect to other structures, vegetation, and topography. The facilities can be seen from Highway 178, which traverses the project area. The most predominant features are the powerhouse, switchyard, and the adjacent transmission line on steel lattice towers. These facilities are located immediately adjacent to Highway 178. Because they are located on a curve on the highway, they are only viewed for a short distance.

Edison conducted an assessment of the visual compatibility of the project facilities and surrounding landscape with the FS's Visual Management System (VMS). The FS reviewed the assessment and concluded that the project facilities are compatible with the VMS (letter from Erik Ostly, Forest FERC Coordinator, FS, Porterville, California, September 28, 1994).

Edison proposes to consult with the FS on mutually agreeable colors when facilities require repainting to reduce contrast of the project facilities with the surrounding environment.

We agree with Edison's proposal to consult the FS before painting project facilities, and recommend that Edison do so. This will ensure that the project facilities remain compatible

Project No. 1930-014

-118-

with FS VMS objectives and will improve views from Highway 178.

The FS's preliminary 4(e) conditions would require Edison to file a visual resource protection plan with the Commission before initiating any land-disturbing activities. We agree that a visual resource protection plan is necessary to ensure that future maintenance activities, such as minor facility modifications, are compatible with FS visual resource management objectives. The visual resource protection plan also should be consistent with the Cultural Resources Management Plan discussed in the *Cultural Resources* section. We recommend that Edison consult with the FS in preparing the plan.

The project currently maintains a minimum flow of 15 cfs during the winter months and 50 cfs during the summer months in the project's bypassed reach. As discussed in the *Aquatic Resources* section releases from Lake Isabella typically maintain flows in the river during the summer recreation season (Memorial Day through Labor Day) at a significantly higher level. Flows between 1,100 cfs and 2,100 cfs would be representative of flows commonly occurring during this period in the bypassed reach in either a normal or wet year (Edison 1994b). At these flows, the rushing water has vitality and sound, and covers some of the rock boulders. During a representative dry year, however, the flows would be about 60 cfs (Edison 1994b), which provide an adequate visual experience for the visitors. At 60 cfs, most of the channel bed that has riffing is covered with water.

Flow levels in the lower Kern River are largely responsible for defining the river's character in terms of magnitude and sound. Variations in flow alter these characteristics, providing the visitor with a variety of visual experiences. Any of the alternatives being considered to augment flows for whitewater boating would have minor beneficial effects on the aesthetic quality of the lower Kern River over existing conditions. The visual differences between the augmented flows would be difficult for the public to discern.

Decommissioning

Under the decommissioning alternative no flows would be diverted from the bypassed reach. This alternative would have the most beneficial effect on the aesthetic resources of the river. But over time, the project structures could gradually deteriorate from lack of maintenance, which would be unsightly to the forest visitor.

c. Cumulative Impacts

Painting the project facilities, as it becomes necessary, with colors that reduce their contrast with the surrounding landscape would have a minor beneficial cumulative impact to the aesthetic resources of the lower Kern River.

d. Unavoidable Adverse Impacts

None.

Project No. 1930-014

-119-

6. Cultural Resources**a. Affected Environment**

Edison conducted a cultural resources survey of the project (White and Taylor, 1984; Taylor, 1992). The Kern River No. 1 Historic District (District), consisting of 11 components of the existing project, is the only cultural resource site in the project's area of potential effect eligible for inclusion in the National Register of Historic Places.

Construction of the District facilities began in 1902 and was completed in 1907. The facilities have historical significance because they made large-scale use of technological innovations of the hydroelectric industry developed during the 1890's and early 1900's, including long-distance high-voltage transmission lines and steel transmission towers.

The California State Historic Preservation Officer (SHPO) and the Kawaiisu Band of Kern Valley Indians (Kawaiisu) concur with the survey's findings (letters from Steade Craig, Acting State Historic Preservation Officer, California Department of Parks and Recreation, Sacramento, California, January 28, 1993; and Phyllis M. Hix, Law Offices of Phyllis M. Hix, Kernville, California, November 10, 1993). We concur as well.

b. Environmental Impacts and Recommendations

Edison's proposed cultural resources management plan ensures the District facilities would not be affected by continued operation of the project. The plan requires Edison to replace materials in-kind as repairs and maintenance work are necessary. The plan also has contingencies, which are consistent with the regulations of the Advisory Council on Historic Preservation (Advisory Council) for the National Historic Preservation Act (36 CFR 800), for treatment of effects of project modifications if determined necessary at a future date.

Specifically, Edison's proposed cultural resources management plan (Taylor, 1993) requires: (1) replacing materials of the District facilities in-kind when repairs and maintenance work are necessary, with minimal impact to the facilities; (2) consulting with the SHPO and the Advisory Council if major modifications to contributing elements and structures of the District are planned; (3) if major modifications must be made, recording, according to the standards of the Historic American Engineering Record and the Historic American Buildings Survey, would be undertaken prior to such actions; (4) if equipment to be modified is removed and not preserved by Edison, offering the equipment to the Smithsonian National Museum of American History, or other appropriate museum with collections in the field of hydroelectric and/or California history; and (5) prior to actions constituting an effect on contributing elements of the District, notifying the SHPO of the action and the proposed treatment. Upon the SHPO's concurrence or the passage of 30 days, Edison would proceed with the planned treatment. If the SHPO does not agree, Edison would consult with the Advisory Council concerning the effect and appropriate treatment.

The SHPO concurs the project would have no effect on the historical integrity of the project if Edison's cultural resources management plan is implemented (letter from Steade Craig, Acting State Historic Preservation Officer, California Department of Parks and

Project No. 1930-014

-120-

Recreation, Sacramento, California, January 28, 1993). The Kawaiisu say the project would not affect cultural resource sites if the plan and measures to protect sites discovered during project operation are implemented (letter from Phyllis M. Hix, Law Offices of Phyllis M. Hix, Kernville, California, November 10, 1993). The FS preliminary 4(e) conditions requires measures to assess and mitigate impacts to cultural resources discovered during project operation (letter from G. Lynne Sprague, Regional Forester, FS, Pacific Southwest Region, San Francisco, California, November 12, 1996).

We recommend Edison implement its proposed cultural resources management plan and measures to protect cultural resources discovered during project operation.

Decommissioning

This alternative would have an adverse effect on the historical integrity of the District's facilities because historical operation of the project would cease with decommissioning. Modifications to secure the facilities, such as the removal or alteration of generating equipment, would likely have adverse effects as well. The Commission staff would need to consult with the Advisory Council on the effects and the transfer of management responsibilities to another management entity after decommissioning, pursuant to the Advisory Council's regulations. A memorandum of agreement pursuant to the Advisory Council's regulations would need to be prepared and signed by the Advisory Council, the SHPO, the Commission staff, and the managing entity concerning the effects of the action, the implementation of a cultural resources management plan, and acceptance of responsibilities by the managing entity.

c. Unavoidable Adverse Impacts

None.

7. Recreation

a. Affected Environment

Recreational use in the project area is strongly water- oriented, and includes fishing, whitewater boating, viewing scenery, picnicking, recreational mining, wading, and swimming. Fishing occurs year-round. A creel survey, conducted from April through September 1992, documented 2,971 anglers using the project's bypassed reach. Angling sites are scattered throughout the bypassed reach where highway turn-outs are available to provide access to the river.

The Kern River is one of the most used whitewater boating rivers in the state. Although the project bypassed reach receives little use,¹³ the Kern River above the project diversion

¹³ WRC-Environmental (1996) estimated that the current annual use rate is only 25 to 100 visits despite an average of about 120 usable days per year. WRC-Environmental (1996), based on study results and interviews with boaters, attributed the low use to the previous belief by boaters that the FS closed this

Project No. 1930-014

-121-

receives considerable use. The whitewater boating season is generally from June through August, when streamflows and air temperatures are high. The FS issues free boating permits to individuals and allows commercial rafting companies to operate under Special Use Permits. Boaters put in at Keysville near Lake Isabella, and take out about 19.5 miles downstream, at Democrat Raft Take-Out, just above the project diversion dam.

Other dispersed recreation opportunities in the project vicinity include equestrian trails, off-road vehicles, mountain- biking, and hiking. To accommodate these uses, there are three trails along State Highway 178, and several trails and primitive roads in the vicinity of the project area.

There are no project recreation facilities. The FS, however, owns and operates four recreation areas in the immediate project vicinity: Live Oak Day Use Area, Upper Richbar Day Use Area, and Lower Richbar Day Use Area within the project's bypassed reach; and Democrat Raft Take-out at the project's impoundment (figure 2). The developed sites have restrooms, picnic tables, barbecues, paved roads, and paved parking areas. The Upper Richbar site also has an "overflow area" that the FS opens on holiday weekends to provide additional parking and picnicking sites. Numerous recreational facilities also exist farther upstream along the lower Kern River between Democrat Raft Take-out and Lake Isabella, around Lake Isabella, and upstream of Lake Isabella along the North and South Forks of the Kern River.

The FS has determined that the lower Kern River, from Isabella dam to the canyon mouth above Bakersfield, meets Wild and Scenic eligibility requirements and, if found suitable, would be an appropriate addition to the National River System. The reach between Democrat dam and the National Forest boundary (Segment 3), where the project is located, was determined to be eligible as a *Recreation River* because of its remarkable wildlife, scenic, and recreation values including: (a) known habitat for the Kern Canyon slender salamander; (b) first views (coming from the San Joaquin Valley) of the dramatic Kern Canyon- -a spectacular change in scenery from the flat, dry agricultural valley to steep, rocky canyon walls and flowing water; and (c) sufficient flows for river oriented recreation and respite from the hot valley.

b. Environmental Impacts and Recommendations

Wild and Scenic River Status

The criteria for *Recreation River* classification includes existing impoundments and diversions, as long as the waterway remains generally natural and riverine in appearance. None of the alternatives analyzed in this EA include proposals, such as constructing new impoundments or reducing flows in the bypassed reach, that would detract from the current condition and the outstanding remarkable values on which the FS determined the eligibility of the lower Kern River. Thus, issuing a new license for the project would not affect the river's eligibility for Wild and Scenic River status, nor, would additional measures be necessary to mitigate effects on outstanding remarkable values.

portion of the river to boating, the level of expertise needed to run many of the rapids, and limited access.

Project No. 1930-014

-122-

Developed Recreation

Edison proposes to enhance existing recreation facilities in the project area (letter from C.E. Miller, Manager of Hydro Generation, Southern California Edison, Rosemead, California, March 27, 1997). The FS requires in their preliminary 4(e) conditions the recreation enhancements proposed by Edison and some additional measures (table 4). Both proposals rehabilitate the existing sites by upgrading the toilets and picnic sites to be fully accessible for people with disabilities, by improving parking, and by improving beach access for disabled persons at these facilities.

The Upper Richbar, Lower Richbar, and Live Oak Day Use Areas serve the public recreating in the project bypassed reach. The Democrat Raft Take-Out, located at the project's impoundment, serves as a take-out for the boaters rafting upstream of the project and as a put-in for boaters fishing the impoundment. FS capacity estimates for the day use areas indicate that in general each site is used to capacity on weekends, each is over-capacity on holiday weekends, and each receives low use on weekdays.

Project No. 1930-014

-123-

Table 4. Proposed enhancements at the developed recreation sites.

FACILITY	EDISON'S PROPOSAL ^a	FS PRELIMINARY 4(e) CONDITIONS
Live Oak Day Use Area	<ul style="list-style-type: none"> * remove existing toilet and replace with one accessible double unit SST (sweet-smelling) vault toilet^b * install two accessible picnic tables and barbeques * provide two parking stalls for people with disabilities * paint parking strips * relocate wheel stops * pave parking area and pathways * install accessibility signs * plant trees 	Same as Edison's proposal
Lower Richbar Day Use Area	<ul style="list-style-type: none"> * install one accessible double unit SST vault toilet * install one accessible picnic table and barbeque * improve existing parking area * provide one parking stall for people with disabilities * paint parking strips * install wheel stops * pave parking area and pathways * install accessibility signs 	Same as Edison's proposal
Upper Richbar Day Use Area	<ul style="list-style-type: none"> * remove existing toilet and install one accessible double unit SST vault toilet * install one accessible picnic table and barbeque * provide two parking stalls for people with 	<p>Same as Edison's proposal with the following additions:</p> <ul style="list-style-type: none"> * install one additional, accessible, double unit SST vault toilet

Project No. 1930-014

-124-

	disabilities * pave parking area and pathways * install accessibility signs	
Democrat Raft Take-Out	* install one accessible double unit SST vault toilet * pave pathways	Same as Edison's proposal with the following additions: * install one accessible picnic table and barbeque * provide accessible parking stall and accessible path from parking area to toilet * paint parking strips * install accessibility signs

a

All facilities (i.e. toilets, picnic tables, paths) would be accessible to people with disabilities.

b

Edison, in its March 27, 1997, letter, incorrectly referred to the toilets to be installed as comfort stations with plumbing. The estimated costs reflect providing vault toilets, as does the information included in their November 7, 1997, additional information filing.

Given the high demand on the facilities within the project bypassed reach, we agree that the FS's measures are needed and would substantially improve public use of the area through improved access by individuals with disabilities for fishing and other shore-based activities. The improvements would help attain FS recreation management objectives defined in the Sequoia National Forest Land and Resource Management Plan (see section VIII, *Consistency with Comprehensive Plans*). Because these enhancements affect project costs (see *Developmental Analysis* section), we make our final recommendation in the *Comprehensive Development* section.

Whitewater Boating

Project diversions reduce flows available for whitewater boating in the bypassed reach by up to 412 cfs. To evaluate the project's effect on whitewater recreation opportunities and the

Project No. 1930-014

-125-

effect of any potential whitewater recreation enhancement opportunities on other resources, Edison conducted a whitewater boating study. The study examined a range of flow releases in the project's bypassed reach to determine the minimum boatable flows, as well as flow levels that would provide higher quality whitewater boating opportunities. The 10.2-mile-long study reach was divided into 4 study sections: Upper (2.9 miles), Lucas (1.5 miles); Richbar (3.1 miles); and Cataracts (2.7 miles). The field evaluation was conducted using kayaks, inflatable kayaks, rafts (paddle and oar), and cataracts.

The bypassed reach contained a total of about 65 rapids ranging in difficulty from Class I to VI (classified according to AWA's International Scale of River Difficulty). WRC-Environmental (1996) classified the Upper study section as Class (C)-IV-V+; the Lucas section as C-IV+; the Richbar section as C-III/IV; and the Cataracts as C-V+.

As a result of the study, FOR/AWA recommend the following measures to enhance whitewater boating:

- When flows are available from Lake Isabella, provide a set schedule of 14 days of augmented flows of 1,250 to 2,350 cfs on weekends, holidays, and special recreation dates from June through August during the hours of 10 a.m. to 7 p.m.
- Provide a mechanism to provide information on hourly flow releases in the bypassed reach.
- Enhance access for boaters and general recreationists by improving: (1) access for kayakers at the Upper Study section; (2) access for kayakers and rafters at the start of the Lucas Study section; (3) the portage around Lucas Falls; (4) access upstream of the Cataracts Study section; and (5) access to, or just upstream of the Kern River No. 1 Project powerhouse.

The FS doesn't recommend any whitewater flow augmentation. No other agency has recommended whitewater boating flows or access improvements. In their comments on the draft EA, the North Kern Water Storage District (Kern Water Storage District) strongly opposed any re-regulation of flows to accommodate recreationists (letter from C.H. Williams, Engineer-Manager, North Kern Water Storage District, Bakersfield, California, August 21, 1997).

Project No. 1930-014

-126-

Edison doesn't propose any additional flow for whitewater boating. Edison believes that sufficient flows are available. Edison also contends that because it has control over a relatively small amount of water compared to the large releases from Lake Isabella, the resulting unpredictability of releases from Lake Isabella would mean that augmented flows would be set on a very short time scale, and would not be useful for boaters planning a trip.

Flow Augmentation for Whitewater Boating: Our analysis of Edison's study results indicates that 500 cfs is the "*minimum*" flow for most craft in the majority of areas that were tested. "*Suitable*" flow conditions were between 700 cfs and 950 cfs and between 1,750 cfs and 2,350 cfs. Flows providing "*optimum*" boating conditions were between 950 cfs and 1,750 cfs.

Based on these results we chose to study three flow regimes: 700 ("*suitable*"), 950 ("*optimum*"), and 1,250 cfs. We chose 1,250 cfs because its within the "*optimum*" range and corresponds to FOR/AWA's lower recommended flow. We looked at the flow records from 1970 through 1990 for the period of June through August (peak boating season) and June through October (entire boating season) to determine how often these flow conditions are available under present operations and potentially with augmentation from power flows. We also looked at how often each of the flows are available on weekend days during the June-August time period to evaluate how often FOR/AWA's proposed augmentation schedule might be provided.

Under existing operating conditions, "*suitable*" flows are present between June and August and June and October an average of 59 and 73 days per year, respectively; "*optimum*" flows 51 and 62 days, respectively; and flows =1,250 cfs 40 and 44 days, respectively. Augmenting flows to 700 cfs from June through August and from June through October would increase the average number of boatable days per year by 15 and 21, respectively; to 950 cfs by 14 and 19, respectively; and to 1,250 cfs by 13 and 21, respectively (see table 5).

Project No. 1930-014

-127-

Table 5. Comparison of the average number of days flow in the Kern River No. 1 bypassed reach equals or exceeds 700 cfs, 950 cfs, and 1250 cfs under "existing" and "augmented" flow conditions.

Flow Alternative	Average Number of Days Flow in the Bypass Equals or Exceeds the 1 Stated Flow						
	Ju n	Ju l	Au g	Se p	Oc t	Total Jun- Aug	Total Jun- Oct
700 cfs (existing)	20	22	17	7	7	59	73
700 cfs (augmented)	25	28	21	11	9	74	94
950 cfs (existing)	17	19	15	5	6	51	62
950 cfs (augmented)	22	24	19	8	8	65	81
1250 cfs (existing)	12	16	12	2	2	40	44
1250 cfs (augmented)	17	20	16	6	6	53	65

1

Based on 20 years of daily flow records (1970 - 1990)

On average, about half of the weekend days had flows that were =1,250 cfs (table 6). On average, augmenting the flow would increase the number of weekend days that flows of 1,250 cfs would be available by 3.

Table 6. Comparison of the average number of days flows in the Kern River No. 1 bypassed reach equal or exceed 700 cfs, 950, and 1,250 cfs under "existing" and "augmented" flow conditions during the weekend period only.

Flow Alternative	Average Number of Days Flow in the Bypass Equals or Exceeds the Stated Flow on Saturday
------------------	--

Project No. 1930-014¹ and Sunday¹-128-

	Jun	Jul	Aug	Total
700 cfs (existing)	6	6	5	17
700 cfs (augmented)	7	8	6	21
950 cfs (existing)	5	5	4	14
950 cfs (augmented)	6	7	5	18
1250 cfs (existing)	4	4	3	11
1250 cfs (augmented)	5	5	4	14

1

Based on 20 years of daily flow records (1970 - 1990)

Flow augmentation would occur more frequently when the flows in the lower Kern River are slightly below average than in years when flows are above or below average. This is because flows in wet years typically equal or exceed preferred boatable flow limits (=2,350 cfs). Conversely, during dry years project flows would be insufficient to attain suitable boating conditions. For example, for flow conditions of 700 cfs and 950 cfs, most augmentation would occur when flows in the lower Kern River are between 500 cfs and 1,000 cfs. These conditions occurred in approximately 7 of the years between 1970 and 1990. Figures 7 and 8 depict flows in the bypassed reach from June through October (1970-1990), and show when augmentation would be necessary to attain flows of 700, 950, and 1,250 cfs.

While increasing the number of days that higher flows are available would improve the quality of the boating experience, it may also adversely affect other recreational users that prefer lower flows. For example, angling, swimming, wading, and recreational mining, which are popular during the peak boating season, desire lower flows. Flows between 100 cfs and 300 cfs are good for angling; angler satisfaction declines gradually at flows up to about 800 cfs and drops off sharply at flows above 1,000 cfs (WRC-Environmental 1996). The best flow conditions for swimming are generally between 200 to 1,000 cfs, but swimming does occur in the bypassed reach with flows up to 2,500 cfs. Wading occurs in conditions up to 1,000 cfs, but conditions are best at the lower stream flows (100 to 300 cfs range) due to

Project No. 1930-014

-129-

increased beach size and area of wadable water
(WRC-Environmental 1996) .

Flow records from 1970 through 1990 indicate that lower flow conditions (100-300 cfs) that might be preferred by some users are present under existing operation on average less than 9 percent of the time (8 days per year) between June and August, and less than 10 percent (15 days) between June and October. While the available data are inconclusive as to the degree that higher flows would degrade the recreational experiences of other users, augmenting flows for whitewater boating would subject other recreational users to higher and potentially less than desirable flows more frequently (table 5). FOR/AWA's proposal of a set schedule of 14 days of augmented flows during June through August has the least impact of the flow augmentation alternatives on other recreational users, but it would still increase the number of days of higher flows by as much as 14 above existing conditions.

The North Kern Water Storage District states that frequent, daily fluctuations that would result from flow augmentation for whitewater boating would also affect water supply to downstream irrigators. The Kern Water Storage District doesn't elaborate on how or to what degree such fluctuations would affect the water supply.

Conclusion: We believe that the available data indicates that current flow conditions allow for a reasonable balance for all the recreation users. On average, "suitable" and "optimum" whitewater boating conditions are available 64 (59 days) and 55 (51 days) percent of the time between June and August, respectively; and 48 (73 days) and 41 (62 days) percent of the time between June and October, respectively. Flows of 1,250 cfs, are available, on average, 11 of the 14 days recommended by FOR/AWA, or about 45 percent of all weekend days during June through August. In contrast, flows (100-300 cfs) that might be

Project No. 1930-014

-130-

desired by other recreational users are present about 9 percent (8 days) and 10 percent (15 days) of the time between June and August and June and October, respectively. Given the existing annual use of about 25 to 100 visits and the availability of about 120 usable days a year (WRC-Environmental 1996), it appears

Project No. 1930-014

-131-

that existing whitewater boating use is not significantly limited or constrained by the project's present operation. We don't believe that flow releases for whitewater boating are needed at this time.

Monitoring of recreation use in the project bypassed reach, by activity, would help to determine if future changes in use patterns warrant a different flow regime. FOR/AWA predict use will increase with better knowledge of the available resource and improved access. FS staff has estimated that an annual whitewater boating demand of 500 visits is not likely to be exceeded in the near future. The whitewater boating study estimated that the potential user demand, with augmented flows, on a long-term (30-year) annual average would be between 336 and 465 additional visits (WRC-Environmental 1996).

We believe that immediate changes in use from improved knowledge of the resources should become apparent in the first five years of the license. Therefore, we recommend that Edison develop and implement a 5-year monitoring plan that monitors recreation uses by activity in the bypassed reach, and at the end of the five year period file a report along with any recommendations to change the flow regime. The monitoring plan should focus on resources that may be directly influenced by flows (fishing, whitewater boating, wading, swimming, recreational mining, etc). Monitoring should document, at a minimum, the numbers of people participating in each activity, flow levels during the survey, and the recreation experience achieved at those flow levels and the factors affecting that experience. Any recommended flow modification should evaluate the potential effects on conflicting recreation, irrigation, and power uses and needs of the waterway.

We discuss the costs of the proposed augmented flows for whitewater boating and the recreation monitoring in the *Developmental Analysis* section, and make our final recommendations in the *Comprehensive Development* section.

Access Improvements for Whitewater Boating: The steep canyon walls and the narrowness and sinuosity of Highway 178 limit the amount of parking and trailheads that can be safely provided. These conditions limit access to the river in the project area, affecting all recreational uses.

FOR/AWA stated that lack of access inhibits recreational opportunities and recommended enhancing access for boaters and general recreationists in the bypassed reach. FOR/AWA recommends improving access in the following areas in the Kern River No. 1 reach: (1) access for kayakers at the start of the Upper Study section; (2) access for kayakers and rafters at the start of the Lucas Study Section; (3) a portage around Lucas Falls for both kayaks and small rafts; (4) access just upstream of the Cataracts Study Section; and (5) access to, or just upstream of the Kern River No. 1 powerhouse (letter from Truman Burns, Representing FOR, San Francisco, California, November 8, 1996).

Project No. 1930-014

-132-

The project doesn't affect access, but it does reduce flows in the bypassed reach which affects recreational experiences of boaters and other users. We agree that access improvements, where they can be safely provided, would enhance recreational opportunities of all recreational users. Edison's participation in improving access would help mitigate the effects of altered flows.

Consideration must be given to pedestrian and traffic safety, threatened, endangered and other sensitive species and their habitat, and the appropriate type and level of recreation use in the bypassed reach when considering where and what access improvements should be provided.

Commission staff, therefore, recommends that Edison file an access improvement plan with the Commission that, as a minimum, assesses the feasibility of providing safe access improvements, and includes a construction plan and an implementation schedule for any recommended portage, trail, trailhead, or parking area construction or improvement or modification of existing areas in the project's bypassed reach. At a minimum the study should evaluate the feasibility of providing access improvements at the 5 areas suggested by FOR/AWA. The plan should also address, as a minimum, the following factors: safety, traffic congestion and other conflicts, FS management objectives, effects on other resources, and cost and the entity responsible for constructing and maintaining the facilities. The FS supports the development of the plan.

We discuss the costs of developing the access plan in the *Developmental Analysis* section, but don't estimate the cost of implementing the plan because the needed measures are unknown. We make our final recommendations in the *Comprehensive Development* section.

Flow Information: FOR/AWA recommend that Edison establish a mechanism such as a flow phone that would provide hourly release information to recreational users. Currently, every morning, the Lake Isabella Watermaster provides the FS, Bureau of Land Management (BLM), local Chambers of Commerce, and other entities information on the flow releases for that day. The FS, BLM, and local Chambers of Commerce post the information on bulletin boards and provide it to people calling by telephone (personal communication with Patty Bates, Acting District Ranger, FS, Bakersfield, California, January 9, 1997).

Operation of the project can vary the flows within the bypassed reach by 412 cfs from those flows released from Lake Isabella. Commission staff believe that providing reliable information on flows in the bypassed reach would assist all recreational users, not just the boaters, in planning activities and would enhance their recreational experiences. Edison in their comments on the draft EA, suggest that the information source compliment the existing information services. Commission staff agree, and recommend that Edison file a plan with the Commission to implement a mechanism to provide flow information to the public, as long as that information is readily available to the public (such as a 1-800 telephone number) and provides, at a minimum, information specific to the daily flows in the Kern River No. 1 bypassed reach.

We discuss the costs of providing the information in the *Developmental Analysis* section, and make our final recommendations in the *Comprehensive Development* section.

Decommissioning

Project No. 1930-014

-133-

Under the decommissioning alternative, no flows would be diverted from the bypassed reach. The higher flows that would result from decommissioning would not provide the best flow conditions for angling or the other water contact and streamside uses that currently occur in the project area. With the project operating, the desired flows for these activities occurred less than 10 percent of the time during the main use periods of June through early September between 1970 and 1991. Flow conditions for whitewater boating, however, would be improved. The number of days of "*suitable*" (700 cfs) and "*optimum*" (950 cfs) boating conditions during the peak use period (June - October) would increase by an average of 21 and 19 days, respectively; the same as would occur with flow augmentation.

c. Cumulative Impacts

The Borel, Kern River No. 1, Kern Canyon, and Rio Bravo Projects reduce flows released from Lake Isabella through each project's bypassed reach by their respective plant capacities (see table 1). The altered flows and the presence of the dams cumulatively affect whitewater boating experiences through much of the lower Kern River. Licenses for the Borel Project and Kern Canyon Project expire on February 28, 2005, and April 30, 2005, respectively. Our recommended recreation monitoring study for the Kern River No. 1 Project would coincide with the pre-filing application studies for the Borel and Kern Canyon Projects. A coordinated recreation monitoring study would provide a comprehensive view of the recreational benefits of any recommended whitewater augmentation flows, and would allow us to make coordinated recommendations for all three projects that would benefit whitewater and other recreation uses on about 32 miles of the lower Kern River. Therefore, we recommend that Edison coordinate, to the extent practicable, the recreation monitoring study for the Kern River No. 1 Project with the recreation studies that will be developed for the Borel Project and PG&E's Kern Canyon Project.

The recreation enhancements recommended in this EA, in conjunction with any recommended measures developed through the recreation use monitoring and access plan also recommended in this EA, would substantially improve recreation opportunities along the lower Kern River. With these enhancements the Kern River No. 1 Project will have a beneficial cumulative effect on the recreation resources of the lower Kern River.

d. Unavoidable Adverse Impacts

Under the decommissioning alternative, increased flow conditions would have minor adverse impacts on angling, water contact and other streamside uses in the lower Kern River.

Project No. 1930-014

-134-

8. Socioeconomic Considerations

a. Affected Environment

The Kern River No. 1 Project is located in Kern County, California, about 17 miles northeast of Bakersfield and about 20 to 25 miles southeast of the cities of Lake Isabella and Kernville, respectively (figure 1). In 1996, the county population was 624,695 and is projected to reach 1,310,000 by 2020. In January 1997, the unemployment rate in Kern County was 14.4 percent, almost double the state rate of 7.3 percent (personal communication, Employment Development Department, Labor Market Information Division, Sacramento, California, March 6, 1997).

FOR/AWA, in their comments on Edison's whitewater boating study, says that the Kernville-Lake Isabella economy is locally depressed and recreation is a valuable source of income (letter from Truman Burns, representing FOR, San Francisco, California, July 9, 1996).

Travel expenditures in Kern County in 1992 were \$704 million. Recreation expenditures accounted for \$69.2 million (10 percent) of this amount, accommodations \$88.5 million (13 percent), retail sales \$154.2 million (22 percent), eating and drinking \$153.5 million (22 percent), and ground transport \$176.9 million (25 percent).

In 1991, Edison paid \$59,109 in taxes and \$5,937 in FS user fees for the Kern River No. 1 Project. The taxes are sources of revenue for local governments.

b. Impacts and Recommendations

FOR/AWA contend that a new license for the Kern River No. 1 Project would have a profound economic impact on the Kern Valley community and recommend that Edison be required to conduct a thorough study of the socioeconomic effects of continued operation (letter from Truman Burns, Representing FOR, San Francisco, California, November 8, 1996). FOR/AWA provide no basis for their concern in their November 8, 1996, comments. We assume, based on FOR's July 9, 1996, letter, that FOR/AWA is primarily concerned with how continued operation would affect whitewater recreation and the out-of-pocket expenditures and economic development this industry provides to the local economy.

Edison proposes no new construction that might create additional jobs, nor do they propose any specific measures to enhance socioeconomic conditions of the Kern Valley.

Relicensing the project would result in the continuation of local, state, and federal taxes and FS user fees paid by Edison and the employment of plant operators, administrators, and project managers. These expenditures would continue to provide economic benefits to Kern County.

Project operation affects flow in the Kern River by as much as 412 cfs, which could influence recreational use and attraction to this part of the lower Kern River and concurrently the economic benefits the lower Kern Valley might receive from secondary expenditures of the

Project No. 1930-014

-135-

recreating public (i.e. food, lodging, gas). Our recommended recreational enhancements (developed recreation sites, flow information, and access improvement studies) would improve experiences of all recreational users in the project area, which can be expected to positively affect the local economy through secondary expenditures and by maintaining already high levels of use. While augmenting flows for whitewater boating would enhance boating experiences in the bypassed reach, we don't believe that existing boating use is presently limited or constrained by the project's flow regime (see *Recreation*, section V.7). Moreover, augmenting flows for whitewater boating would adversely impact other recreationists, which represent a larger portion of the recreating public that are also contributing to the local economy. Consequently, local economic benefits may not increase from project flow releases for whitewater boating.

Our recommended recreation monitoring provides for reconsidering flow changes to accommodate future increases in whitewater boating use. If whitewater recreation increases as FOR/AWA predicts, the local economy may benefit through additional secondary expenditures or increased bookings by commercial outfitters. The degree of benefit to the Kern Valley local economy from these factors is difficult to estimate for a number of reasons: (1) the methods of evaluation and associated assumptions are varied and provide variable results; (2) expenditures associated with other recreational activities (fishing, swimming, mining, etc.), for which information is not available for analysis, would also be influenced by any changes in use that may result from whitewater augmentation; and (3) how much the Kern Valley local economy may directly benefit from secondary expenditures is uncertain given the proximity of the project to Bakersfield, which has a more diverse and abundant supply of restaurants, gas stations, and hotels, and is easier to access than Lake Isabella and Kernville from the project area. For these reasons, we don't attempt to place a dollar value on whitewater recreation, but recognize that any benefit to the local economy would be important. We don't believe, however, that additional studies are needed because our recommended measures would enhance all recreational experiences and the economic benefits from these experiences would follow.

Decommissioning

Decommissioning would result in the loss of taxes, salaries, and fees paid by Edison, with a concurrent loss of associated benefits derived by the state and local governments and the National Forest. No recreation enhancements would be provided that would improve

14 WRC-Environmental (1996) used a unit-day valuation method (benefit transfer approach) to estimate the incremental values of the whitewater boating day directly attributable to augmented flows: long-term (30-year) average annual visit values ranged from \$16,275 to \$32,085 when flows of 750 cfs were met, and \$11,865 to \$23,391 when flows of 950 cfs were met. FOR estimated annual recreational boating values for incremental new visits using unit-day costs based on local commercial market values: annual recreational boating values ranged from \$21,855 to \$118,575 when flows of 750 cfs were met and \$15,933 to \$86,445 when flows of 950 cfs were met (letter from Truman Burns, Representing FOR, San Francisco, California, July 9, 1996).

Project No. 1930-014

-136-

recreational experiences in the area. Decommissioning would add a maximum of 412 cfs flow to the bypassed reach. Economic benefits from the additional flow in the bypassed reach are difficult to estimate for the same reasons discussed previously regarding flow augmentation for whitewater boating.

c. Unavoidable Adverse Impacts

None.

D. NO-ACTION ALTERNATIVE

Under the no-action alternative, Edison would continue to operate the project under the terms of the original license. The environmental enhancements proposed by Edison or that we recommend would not occur.

VI. DEVELOPMENTAL ANALYSIS

In this section, we analyze the project's use of the available water resources to generate hydropower, estimate the economic benefits of the project, and estimate the cost of various environmental enhancement measures and the effects of these measures on project operation. Edison is not proposing any modifications to project facilities, but it is proposing to upgrade some of the recreation facilities.

In addition to an economic analysis of alternatives for continued project operation, we look at the potential cost of decommissioning the Kern River No. 1 Project and the effects decommissioning would have on Edison's and the region's power resources.

A. POWER AND ECONOMIC BENEFITS OF THE PROJECT

The main purpose of the project is to provide power for Edison's customers. Edison does not propose to increase the project's installed capacity or to upgrade the hydraulic capacity of the flowline, which would be needed to fully utilize the existing 26.3-MW installed capacity. Edison has investigated these options and found that they are not economically feasible. We concur.

Based on the 15-year period from 1977 through 1991, the project generates an average of 178,585 MWh annually. We use this average annual generation and Edison's 4.2-MW

¹⁵ dependable capacity rating for the Kern River No. 1 Project as the basis for our analysis of project economic benefits. We base the value of project power benefits on the current cost of replacement, assuming the power would most likely be replaced by a gas-fueled combined cycle combustion turbine. In a recent year (1992) Edison's 55 gas-fired generation units provided about 24 percent of its system energy needs; coal accounted for 14 percent; and non-utility purchases amounted to 32 percent of total energy requirements. Whether Edison would actually provide the power itself, or buy from the market, combustion turbine technology is

¹⁵ The project's dependable capacity is based on the capacity at a flow of 70 cfs, the lowest recorded flow.

Project No. 1930-014

-137-

the most likely technology to be used for new capacity. Its cost, therefore, is a reasonable proxy of project value for the purposes of our economic studies, which are: (1) to provide a basis for measuring the economic benefits of continued project operation, and (2) to provide a basis for estimating the cost of replacing power for any environmental enhancement alternatives that would reduce project generation and/or capacity.

By using current costs, no assumptions are made concerning future escalation or de-escalation of the various cost components included in the cost of project power or alternative power. Although we do not explicitly account for the effects inflation may have on the future cost of electricity, the fact that hydropower generation is relatively insensitive to inflation compared to fossil-fueled generators is an important economic consideration for power producers and the consumers they serve. This is one reason project economics is only one of the many public interest factors the Commission considers in determining whether or not, and under what conditions, to issue a license.

The current cost economic analysis is not entirely a first-year analysis in that certain costs, such as major capital investments, would not be expended in a single year. The maximum period we use to annualize such costs is 30 years. Also, some future expenses, such as tax depreciation expenses, are known and measurable, and are, therefore, incorporated in our cost analysis.

We base our analysis of the project's net benefits on the following:

Capital costs

Net investment	\$5,307,000
----------------	-------------

16

Annual costs

Annual (O&M)	\$ 583,000 ¹⁷
Discount rate	10 percent
Period of analysis	30 years
Term of financing	20 years

Power value

Alternative energy value	19.60 mills/kWh ¹⁸
Capacity value	\$104/kW-year ¹⁶

¹⁶ Undepreciated total capital investment as of December 31, 1993 (rounded).

¹⁷ Estimate by Edison for 1996 (Edison 1994a).

¹⁸ Staff estimated the energy and capacity values based on the cost of combined cycle combustion turbines and regional natural gas fuel cost and alternative capacity cost using a heat rate of 10,000 Btu/kwh.

Project No. 1930-014

-138-

Based on this information, the existing project (without any enhancements) annually generates an average of 178,585 MWh of electricity; has an annual power value, based on the current costs of alternative power sources, of \$3,945,000 (about 22 mills/kWh); and costs \$1,279,000, annually to operate, resulting in a positive annual net benefit of \$2,666,000 (about 15 mills/kWh). As described below, Edison's proposed enhancement measures would not change the amount of generation, but would increase the cost of operation (and, therefore, decrease the net benefits) by about \$30,000 annually, producing a positive net annual power benefit of \$2,635,000 (14.7 mills/kWh). The additional enhancements required by the FS and the state water quality certification and recommended by staff would increase the cost of electricity production by an additional \$58,000 annually, reducing the total annual net benefits to \$2,577,000 (14.4 mills/kWh).

B. COST OF ENVIRONMENTAL ENHANCEMENT MEASURES

Any measures proposed or recommended by the applicant, agencies, and staff would affect project economics as a result of the cost of these measures or their effect on power generation. These costs include capital (construction) costs, operation and maintenance (O&M) costs, and reduced power generation.

In this EA, we consider the following measures that could reduce the economic benefits of the project: bypassed reach water temperature modeling and monitoring, recreational facilities improvements, supplemental whitewater boating flows for the 10.2-mile-long bypassed reach, monitoring recreation patterns in the bypassed reach, providing flow information service to the public, developing an access improvement plan, and studying the adequacy of the FS-required minimum flows for protecting and enhancing the smallmouth bass fishery in the project bypassed reach.

1. Bypassed Reach Water Temperature Monitoring

The SWRCB's Section 401 WQC conditions would require Edison to develop and calibrate a water temperature model to determine what, if any, operational changes may be needed to meet the water temperature standards for the project bypassed reach. Based on information provided by Edison, we estimate it would cost \$60,000 to develop the model and \$25,000 a year for three years to obtain the data needed for model calibration. This is equivalent to an annual cost of about \$14,500 over the 30-year period of our analysis.

The SWRCB's Section 401 WQC conditions also require Edison to maintain the "cold" water beneficial use and/or the thermal objective in the bypassed reach. We note that this measure could result in a reduction in power benefits, if minimum flow releases are increased to meet the temperature criteria, but we are unable to assign a cost to this measure because we don't know the frequency of occurrence or magnitude of the flows to be released.

2. Recreational Facilities Improvements

Edison proposes to provide recreational facilities improvements (picnic tables, toilets, and access improvements) at the Upper Richbar, Lower Richbar, and Live Oak Day Use Areas, and at the Democrat Raft Take-out area. FS preliminary 4(e) conditions require these

Project No. 1930-014

-139-

improvements, plus additional improvements at the Upper Richbar Day Use Area and the Democrat Raft Take-out Area (see *Recreation and Land Use*, section III.b.7 for details).

Table 7 shows the estimated capital costs for these recreation facility enhancements and the equivalent annual costs, levelized over the 30-year period of analysis. None of these enhancements would affect project generation or power value. The total annual cost for all of these measures is \$38,560 over the 30-year period of analysis.

Table 7. Estimated cost of recreation enhancements required by the Forest Service (Source: Edison and Forest Service, with staff modification).

ITEM	ESTIMATED COST	LEVELIZED ANNUAL COST
Edison's Proposed Enhancements for Upper Richbar Day Use Area	\$ 84,000	\$ 11,000
FS's Additional 4(e) Requirements for Upper Richbar Day Use Area	\$ 50,000	\$ 6,600
Edison's Proposed Enhancements for Lower Richbar Day Use Area	\$ 50,000	\$ 6,600
Edison's Proposed Enhancements for Live Oak Day Use Area	\$ 60,000	\$ 7,900
Edison's Proposed Enhancements for Democrat Raft Take-Out	\$ 46,000	\$ 6,000
FS's Additional 4(e) Requirements for Democrat Raft Take-Out	\$ 3,500	\$ 460

3. Supplemental Whitewater Boating Flows

Project No. 1930-014

-140-

FOR/AWA recommend that Edison provide supplemental flows to enhance whitewater boating opportunities within the project bypassed reach. In the recreation section (section 7), we discuss the benefits of providing flow levels required for various boating conditions. Edison's whitewater boating flow studies conclude that the minimum flow for "suitable" boating conditions is 700 cfs and the minimum flow for "optimum" boating conditions is 950 cfs. FOR/AWA recommend a minimum flow of 1,250 cfs be provided on a set schedule of weekend and holiday days during the months of June through August.

Edison can only augment flows by up to 412 cfs, the maximum hydraulic capacity of the Project flowline. Table 5 (section 7) shows the average number of days, by month (June - October), each of the three target flows would be met, with and without augmentation. Table 5 is based on daily historic streamflow records for the 21-year period, 1970 through 1990.

Table 8 shows the average amount and current value of the energy that would be lost, if Edison changed its operation to provide the specified flow, when available.

Table 8. Average annual reduction in generation and associated revenue loss for alternative flow augmentation levels.

Flow Alternat ive	Period	Energy Lost (kWh/YR)	Current Value (\$/YR)
700 cfs	June - August (10am - 7pm)	2,085,000	\$40,870
700 cfs	June - October (10am - 7pm)	3,233,000	\$63,370
950 cfs	June - August (10am - 7pm)	2,291,000	\$44,910
950 cfs	June - October (10am - 7pm)	2,865,000	\$56,160
1250 cfs	14 Days, June - August (10am - 7pm)	572,000	\$11,220

Project No. 1930-014

-141-

The energy losses given in table 8 are based on providing the full augmentation flow for a twelve-hour period each day to account for ramping the flows up and down to provide 8 to 10 hours of full-flow conditions each day. Because of the travel time in the 10.2-mile-long bypassed reach, reducing the flow through the powerhouse to increase the flow down the bypassed reach would cause a temporary reduction of flow in the river below the powerhouse while the increased flow in the bypassed reach travels the 10.2 miles to the powerhouse. These periods of reduced flow could last for several hours (based on the travel time) before and after each period of flow augmentation.

4. Flow Information, Recreation Monitoring, and Access Improvement Plan

In the *Recreation and Land Use* section, we discuss the staff alternatives of providing a flow information service to inform callers of the flow in the bypassed reach; monitoring boating and other recreational use in the bypassed reach for five years, without augmenting the flow; and developing a plan for improving access to the river. The need to augment flow in the bypassed reach would be determined on the basis of the monitoring results and, if found to be consistent with the best comprehensive use of the waterway as required by the FPA, would be implemented by means of a license amendment. We estimate the flow information service would cost Edison about \$15,000 to consult with the agencies, prepare and implement a plan; and \$1,200 a year to operate for a total equivalent annual cost of about \$2,000 over the 30-year period of analysis. We estimate it would cost Edison \$20,000 annually to monitor recreation use in the bypassed reach for five years and \$18,000 to prepare a report at the end of the five years for a total equivalent annual cost of \$9,500 over the 30-year period of analysis. We estimate the boating access plan would cost Edison \$10,000 which is equivalent to \$1,300 annually

over the 30-year period of analysis.¹⁹ These estimates are based on conducting the monitoring and providing the flow-information service for a five-month period each year. After five years, the recreation monitoring requirement would stop.

5. Adequacy of the FS-required minimum flows for protecting and enhancing the smallmouth bass fishery in the project bypassed reach..

¹⁹ Our cost estimates are based on information filed by Edison in its August 29, 1997, letter to the Commission, commenting on the Draft Environmental Analysis.

Project No. 1930-014

-142-

In the *Fisheries* section, we discuss the relationship between WUA and streamflow. Other factors, such as excessive fishing pressure, available food supplies, water temperature, large flow fluctuations, and natural channel structure also affect a stream's fish productivity. Because the relationship between WUA and fish production is theoretical, we recommend that Edison develop and implement a plan to study the adequacy of the FS required minimum flows for protecting and enhancing the smallmouth bass fishery in the 10.2-mile-long project bypassed reach. We estimate it would cost Edison about \$5,000 to develop the plan, and about \$2,500 a year for five years to implement the plan for an equivalent annual cost of \$1,700 over the 30-year period of analysis.

C. DECOMMISSIONING

The following are the actions and associated costs likely to be included in the decommissioning without dam removal alternative.

1. Since most of the project structures and equipment, except for the generator exciters, which were recently replaced, are contributing elements of the Kern River No. 1 Project historic district, we assume this equipment would be left in place. Studies and plans would be required to determine what, if any, equipment to salvage, and how to secure and make safe the structures and equipment to be left in place. We estimate these studies would cost Edison \$200,000.

2. The site-specific costs for implementing the study recommendations cannot be predicted at this time. For purposes of this analysis and from information available for other projects where decommissioning has been considered, we assume additional costs of \$750,000 would be required to make the project dam, water conveyance facilities, transmission facilities, powerhouse and equipment secure and safe.

3. Some entity would need to be found to oversee and maintain the project facilities. We estimate an annual cost of \$75,000 for the materials and labor required for these purposes.

Project No. 1930-014

-143-

4. Edison says it would be necessary to spend about \$1,700,000 for transmission line work that would be needed to provide backup electric service to portions of its service area that now rely on the project for back-up service.

5. In addition to the above costs, Edison would be required to replace the relatively inexpensive project power with a more costly alternative. On the basis of current costs, the combined cycle combustion turbine alternative would cost

\$3,945,000 (about 22 mills/kWh) annually.²⁰

6. All of the flow in the river would pass over the project dam and flow through the natural river channel. There would be no need to monitor water temperature and the recreation facility improvements would not be provided by the licensee. Edison would, therefore, avoid the costs of these mitigation/enhancement measures.

The total levelized annual cost of decommissioning the project facilities would be about \$920,000 (items 1-4, above, levelized over the 30-year period of analysis). Adding to this the cost of replacing the project power (\$3,945,000) with an equivalent amount of power using the combined cycle combustion turbine alternative, gives a total estimated annual cost of \$4,865,000 for the decommissioning (without dam removal) alternative.

D. NO-ACTION ALTERNATIVE

The no-action alternative would be the continued operation of the project under the terms and conditions of the existing license, with no new environmental protection, mitigation, or enhancement measures. This alternative is the baseline for measuring the incremental environmental and economic effects of other alternatives.

Table 9 is a summary of the costs, benefits, and net benefits for each of the alternatives. Since the *no action* alternative represents the status quo condition for the project and resources affected by it, we use the no action project economics as the baseline against which to compare the other

²⁰ Replacing the project's hydroelectric power with natural- gas-fired turbine-driven generators would result in a net increase in air pollution emissions.

Project No. 1930-014

-144-

alternatives. The *proposed project* alternative is the project as proposed by Edison. It includes the recreation improvements Edison agreed to provide during consultation with interested parties; no other changes in the operation or facilities are proposed by Edison. The *staff recommended* alternative is the proposed project with mandatory conditions required by the FS and the state's Water Quality Certification, as well as, the following staff-recommended enhancements: (1) monitor and report on recreational patterns for five years; (2) provide a information service to advise river recreationists of the flow rate in the bypassed reach; (3) develop a plan for improving access to the river; (4) develop and implement a study to determine the adequacy of the required minimum flows for protecting and enhancing the smallmouth bass fishery. The *decommissioning without dam removal* alternative includes replacing the project power with an equivalent amount of power using the most likely alternative for new resources--a combined cycle combustion turbine plant. Although the cost of replacement power is equal to and offset by the power benefits, and, therefore, does not affect the **net benefits** of the decommissioning alternative, we include this cost in table 9 to show the total effect of decommissioning on the **cost** of power. In the *Comprehensive Development and Recommended Alternative* section that follows, we discuss both the economic and environmental basis for the staff-recommended alternative.

Table 9. Summary of the developmental costs, benefits and net benefits for all alternatives. (Source: staff)

ALTERNATIVE	COST	BENEFITS	NET BENEFITS
	\$1,000/YEAR (mills/kWh)		
Baseline (No Action)	\$1,279 (7.14)	\$3,945 (22.04)	\$2,666 (14.90)
Proposed Project	\$1,310 (7.32)	\$3,945 (22.04)	\$2,635 (14.72)
Staff	\$1,369		

Project No. 1930-014

-145-

recommended alternative	(7.65)	\$3,945 (22.04)	\$2,577 (14.39)
Decommissioning w/out dam removal	\$4,865	\$3,945 (22.04)	- \$ 920

VII. COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE

Sections 4(e) and 10(a)(1) of the FPA require the Commission to give equal consideration to all uses of the waterway on which the project is located. When the Commission reviews a hydropower project, the recreational, fish and wildlife, and other nondevelopmental values of the involved waterway are considered equally with its electric energy and other developmental values. In determining whether, and under what conditions, to license a project, the Commission must weigh the various economic and environmental tradeoffs involved in the decision.

Following is the basis for, and a summary of, our recommendations to the Commission for the relicensing of the Kern River No. 1 Project. We weigh the costs and benefits of our recommended alternative against other proposed measures below.

Project No. 1930-014

-146-

A. RECOMMENDED ALTERNATIVE

Based on our independent review and evaluation of the proposed project, the proposed project with our additional recommended environmental measures, decommissioning, and the no-action alternative, we have selected the proposed project with our additional recommended environmental measures as the preferred alternative.

We recommend this alternative because: (1) issuance of a new license would allow Edison to continue to operate the project as a dependable source of electric energy for its customers; (2) the 24.8-MW project would avoid the need for an equivalent amount of fossil-fueled fired electric generation and capacity, continuing to help conserve these nonrenewable energy resources and reduce atmospheric pollution; and (3) the recommended environmental enhancement measures would improve water quality, protect fish and terrestrial resources, improve management and public use of recreation facilities and resources, improve aesthetics, and maintain and protect project historic facilities.

We recommend the following environmental measures be included in any license issued by the Commission for the Kern River No. 1 Project:

- (1) Prepare a soil erosion and sediment control plan, a solid waste and waste water control plan, a hazardous substances control plan, a spoil disposal plan, and a visual resource protection plan before soil-disturbing activities.
- (2) Release a minimum instream flow of 50 cfs from June 1 through September 30 and 15 cfs from October 1 through May 31 of each year, or inflow, whichever is less.
- (3) Develop a water temperature model for the area between the diversion dam and the powerhouse, as required by the water quality certification. The study results would be used to determine if the project can meet the state's cold freshwater habitat objective and if any operation changes would be necessary.
- (4) Prepare a plan to study the adequacy of the minimum flows for protecting and enhancing the smallmouth bass fishery in the project bypassed reach.
- (5) Monitor leaking flumes annually and postpone repairs that would reduce leakage

Project No. 1930-014

-147-

until it becomes threatening to the structural integrity of the flumes to maintain puddles important to wildlife.

(6) Implement Edison's cultural resource protection plan.

(7) Prepare a recreation plan that includes FS recommended enhancements to Live Oak, Upper Richbar, and Lower Richbar Day Use Areas and Democrat Raft Take-out (see *Recreation*, section V.7).

(8) Prepare a plan to evaluate recreational activities in the project bypassed reach to determine changes in recreation patterns and to improve access in the bypassed reach.

(9) Implement a mechanism to provide flow information to recreational users in the bypassed reach.

Because our recommendations for water temperature monitoring, recreation improvements, recreational use monitoring, flow information, and access improvement studies, and smallmouth bass fishery study represent trade-offs between developmental and non-developmental resources, our justification for these measures and a comparison of the alternatives are provided below.

1. Water Temperature Model

The state water quality certification adopts Edison's water temperature study plan to evaluate the projects' effect on water temperatures in the bypassed reach and to determine what, if any, operational changes would be necessary to meet the state's water temperature criteria. Based on information provided by Edison, we estimate it would cost \$60,000 to develop the temperature model and \$25,000 a year for three years to obtain the data needed for model calibration. This would reduce the project's net annual benefits by about \$14,500 over the 30-year period of our analysis. Until the results of the monitoring and modeling are known, we are unable to determine how much lost generation, if any, may result from changes in operation to maintain SWRCB's water quality standard. Water temperature studies suggest, however, that additional flow releases are likely to be necessary infrequently, if at all. We believe that the water temperature study plan, required by the water quality certification, will adequately demonstrate the attainment of the beneficial uses and compliance with basin plan temperature objectives for the Kern River. Because the condition is included in the water quality certification, it will be included in the license.

2. Recreation Facility Improvements

Edison's proposed enhancements to toilets, barbeques, pathways, and parking facilities at the Upper Richbar, Lower Richbar, and Live Oak Day Use Areas and at Democrat Beach Raft Take-out would reduce the project's net annual benefits by \$31,000. The FS preliminary 4(e) conditions would require similar additional improvements at Upper Richbar and Democrat Raft Take-out (see *Recreation*, section V.7 for details) that would reduce the project's net annual benefits by about \$7,060 more than Edison's proposed measures. The recreational facilities to be improved are within the bypassed reach or at the project's reservoir pool. Project operations can directly affect the recreational experience at these facilities which are generally at or

Project No. 1930-014

-148-

exceeding capacity, particularly on weekends and holidays. We believe that the FS's proposed measures would substantially enhance public use of the project area, improve access for people with disabilities, and would ensure the continued benefit of the recreation facilities throughout the license term. We conclude that the public benefits of these recreation enhancements are substantial, needed, and justify their cost. We recommend implementing the FS's required measures.

3. Supplemental Whitewater Boating Flows, Recreation Use Monitoring Plan, Flow Information, and Access Improvement Plan

FOR/AWA recommend augmenting flows on a set schedule during June through August, providing flow information to the public, and improving access to enhance whitewater boating opportunities in the bypassed reach.

The annual loss of power benefits from augmenting flows ranges from \$11,220 to \$63,390. We don't recommend augmenting flows for whitewater boating at this time because: (1) augmentation could adversely affect a large number of other water contact and streamside users (anglers, swimmers, waders, recreational miners) that prefer lower flows that are available less frequently than the proposed boating flows, and (2) existing boating use is low compared with the other recreational activities in the project area, despite the fact that flows are frequently available for either the "*suitable*" or "*optimum*" boating conditions. We believe that the available data indicates that current flow conditions allow for a reasonable balance of all recreation uses and that existing whitewater boating use is not significantly limited or constrained by the project's present operation. Therefore, the benefits of augmenting flows for whitewater boating would not be worth the loss in power and other resource benefits.

Instead of augmenting flows, Commission staff recommend monitoring recreation use to determine if future changes in use patterns warrant a different flow regime. Monitoring would provide better information on the number and types of recreational users and insight on the factors that may be limiting boating use, such as lack of knowledge of the resource, access, safety, and rapid difficulty. We believe the cost of the monitoring plan, estimated to be \$20,000 a year for a period of 5 years plus \$18,000 at the end of five years for a report (equivalent to about \$9,500 levelized over the 30-year period of analysis), is justified because the monitoring plan would ensure that recreation in the bypassed reach continues to meet the immediate needs of all users and that a more informed decision can be made on how best to meet future recreation demands. We, therefore, recommend that within 9 months of license issuance Edison prepare a plan to monitor recreation uses, by activities that may be directly influenced by flows (fishing, whitewater boating, wading, swimming, recreational mining, etc), every year for 5 years and at the end of the 5-year period file a report with the Commission, that includes, as a minimum, the monitoring results, an evaluation of the need for revisions to the flow regime to accommodate recreation interests, and recommendations for any future monitoring efforts. Any recommended flow modification should consider the potential effects on conflicting recreation, irrigation, and power uses and needs of the waterway. The recreation monitoring plan, which would be implemented upon Commission approval, should be developed in consultation with FS, CDFG, CALTRANS, Kern River Watermaster, Kern County Search and Rescue, FOR, AWA, Kern River Alliance, Kern River Outfitters, Kernville and Lake Isabella Chambers of Commerce, and other recreation interest groups. The plan should also be developed in coordination with the relicensing studies for the PG&E Kern Canyon Project and Edison's Borel

Project No. 1930-014

-149-

Project.

Commission staff also recommends that Edison provide a mechanism to inform the public of flows in the bypassed reach. Because project operation can vary flows in the bypassed reach by up to 412 cfs from those released at Lake Isabella, this information would assist all users, including boaters, in planning activities, which would enhance their recreational experience. We believe the benefits of this measure justify its estimated annual cost of \$2,000. We recommend that Edison, after consulting with the FS, BLM, Kern River Watermaster, FOR, AWA, other special interest groups, and the local Chambers of Commerce, file a plan with the Commission to implement a mechanism to provide flow information to the public.

We don't have sufficient information to make a specific access improvement recommendation at this time because a variety of factors must be considered, including the interests of the various users, impacts to sensitive species, safety along Highway 178, and cost. We believe that Edison should participate in providing access improvements where they can be safely provided. The cost to the project for developing the access plan, estimated to be \$10,000, is justified because safe access improvements would enhance public use of the project area throughout the license term. We recommend that within 1 year of license issuance, Edison file an access improvement plan with the Commission that, as a minimum, assesses the feasibility of providing safe access improvements, and includes a construction plan and an implementation schedule for any recommended portage, trail, trailhead, or parking area construction, improvement, or modification of existing areas in the project's bypassed reach. The access improvement plan, which would be implemented upon Commission approval, should be developed in consultation with FS, CDFG, CALTRANS, Kern River Watermaster, Kern County Search and Rescue, FOR, AWA, Kern River Alliance, Kern River Outfitters, Kernville and Lake Isabella Chambers of Commerce, and other recreation interest groups.

In summary, the best available information suggests that FOR/AWA's proposal to augment flows would enhance whitewater boating opportunities to the potential detriment of other resource uses and without evidence that other factors, some of which are beyond the control of the licensee, are responsible for the limited use of the bypassed reach for whitewater boating. Our recommended measures would adequately enhance whitewater boating opportunities as well as other recreational uses and would provide for changing project operation to accommodate whitewater boating needs if changes in use patterns warrant different flow regimes in the future.

4. Mitigation Fund

FOR/AWA recommend that any new license issued include a mitigation fund based on a percentage of Edison's projected revenues (letter from Truman Burns, Representing FOR, San Francisco, California, November 8, 1996). Funds would be dedicated to the acquisition of riparian land and water rights, improving public access, and the existing fishery and recreational use of the lower Kern River. Edison would initially provide \$500,000 to the fund, with annual supplements provided by Edison and public subscription. The fund would be managed by a Lower Kern Advisory Board composed of representatives from, but not limited to: Edison, FS, AWA, FOR, the Kernville and Lake Isabella Chambers of Commerce, the Kern River Alliance, the Kern River Flyfishers, the CDFG, FWS, and Bureau of Land Management.

Project No. 1930-014

-150-

FOR/AWA didn't provide any rationale for the mitigation fund other than to account for Edison's "free" use of the public waterway for the last 89 years, nor do they provide details on what specific measures would be funded.

During this relicensing proceeding, we have evaluated and recommended herein, specific protection and enhancement measures as appropriate. For example, we are recommending that monitoring of recreation use patterns be conducted and access needs evaluated with a work group that includes members from the proposed advisory board. In addition, if during the term of the license there is a need for other mitigation, protection, or enhancement measures, the license can be reopened through certain standard articles placed in any license issued. For the reasons stated above, we don't recommend that a mitigation fund be required.

5. Smallmouth Bass Fishery Study

Over 40 individuals recommended that a smallmouth bass population study be conducted to determine if our recommended flows would be adequate to support smallmouth bass populations. The relationship between WUA and fish production is theoretical. In addition, other factors such as excessive fishing pressure, available food supplies, water temperature, large flow fluctuations, and natural channel structure affect a stream's fish productivity. For these reasons, we recommend that Edison develop and implement a plan to study the adequacy of the FS- required minimum flows for protecting and enhancing the smallmouth bass fishery in the project bypassed reach.

B DECOMMISSIONING

FOR/AWA recommend that we evaluate a decommissioning alternative that would leave project structures in place, after taking appropriate steps necessary to make them safe. FOR/AWA also suggest that environmental benefits be taken into consideration when evaluating costs.

We estimate that decommissioning the project facilities would cost Edison about \$920,000 annually over our 30-year period of analysis (table 8). Considering the lost power benefits (\$3,945,000 annually), this alternative would cost \$4,865,000, about \$3,514,000 more than the cost of the staff recommended alternative. This alternative would also result in greater air pollution from the burning of fossil fuels.

FOR/AWA contend that the value of environmental externalities associated with free flowing streams may outweigh the benefits of power generation. FOR/AWA quote values of a Bonneville Power Administration (BPA) study that concluded free-flowing streams are worth \$260,000/mile, riparian habitat \$4,000/ac, and resident trout \$14/fish. FOR/AWA estimate that the free flowing value of the Kern River using these numbers would be over \$2,600,000.

The Kern River is not managed as a free-flowing system. Management of Lake Isabella for flood control and irrigation dictate flows in the bypassed reach to a larger degree than Edison, which has control of only 412 cfs of flow. Our analysis indicates that decommissioning

Project No. 1930-014

-151-

would provide little to no benefit to riparian vegetation and may result in negative effects on smallmouth bass production. Because values of environmental externalities are difficult to determine and burdened with a plethora of assumptions and because project decommissioning would have little to no benefit to fish and riparian resources in the context of this managed river system, we don't attempt to estimate the value of affected resources.

We believe that the value of the existing project with the recommended protection and enhancement measures would continue to be economically beneficial when compared with the alternative costs of fossil-fuel generation, and that the environment is adequately protected and enhanced with our recommended measures.

FOR/AWA also recommend in its letter of November 8, 1996, that a decommissioning fund be established should a new license be granted to Edison.

On December 14, 1994, the Commission issued a policy statement on project decommissioning at relicensing (18 CFR 2.24).²¹ In that statement, the Commission said that it would determine whether to require decommissioning funding on a case- by-case basis, taking into account the condition and expected lifespan of the project in question and the applicant's financial ability to fund such an action at the end of any license issued.

If licensed with staff's recommended mitigation and enhancement measures, the project would be physically sound and would not result in significant adverse environmental impacts. The record does not indicate that Edison would lack the financial resources to decommission the project. A decommissioning fund, therefore, is not warranted in the circumstances of this case.

C CONCLUSION

Based on our independent analysis of the Kern River No. 1 Project, we conclude that continued operation of the project with the recommended protection and enhancement measures would improve environmental conditions in the project area and would continue to be an economically beneficial use of the resources.

VIII. CONSISTENCY WITH COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA requires the Commission to consider the extent to which a project is consistent with federal and state comprehensive plans for improving, developing, and conserving waterways affected by the project. Under Section 10(a)(2), federal and state agencies filed 35 plans that address various resources in California. We identified five plans that address resources relevant to the Kern River No. 1 Project.²² We also reviewed and

²¹ 60 FR 347 (January 4, 1995).

²² (1) Forest Service. 1988. Sequoia National Forest Land and Resource Management Plan, Department of Agriculture, Porterville, California. March 1988, as amended by the Sequoia National Forest Mediated and Management Plan 1990 Settlement Agreement. July 1990. (2) California Department of Water

Project No. 1930-014-152-23
addressed measures identified in two water quality plans not filed with the Commission. No

conflicts were found with the plans.

FOR/AWA recommend that Edison be required to comply with the goals, management emphasis, prescriptions, and standards and guidelines established in the Sequoia National Forest Land and Resource Management Plan (Forest Plan). Specifically, FOR/AWA recommend that Edison comply with the FS's "no more than 50 percent" diversion prescription on a year round basis (letter from Burns, attorney for FOR, San Francisco, California, November 8, 1996). We discuss consistency with the Forest Plan below.

SEQUOIA NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN

The Forest Plan divides the forest into management areas and provides direction for management activities in these areas. The Forest Plan also provides specific standards and guidelines to be used in managing each area to achieve forest goals.

The Kern River No. 1 Project is in management area BO2, which emphasizes protection and improvement of water-oriented recreation in blue oak savanna. Standards and guidelines relevant to the project focus on developed recreation, dispersed recreation, fish and wildlife, and the watershed.

Developed Recreation: The Forest Plan sets the following priority of developing picnic grounds and campgrounds when need increases: rehabilitate existing, expand existing, develop new. Elderly and handicapped standards should be considered during construction, rehabilitation, and reconstruction of facilities. It also sets a standard and guideline of establishing trails that provide for access between developed facilities and water/streamside. Our recommended alternative rehabilitates and improves picnic, toilet, and paths at Upper Richbar, Lower Richbar, and Live Oak Day Use Areas and the Democrat Take-out, and improves access for people with disabilities. These improvements are consistent with the Forest Plan.

Resources. 1983. The California water plan: projected use and available water supplies to 2010. Bulletin 160-83. Sacramento, California. December 1983. 268 pp. and attachments. (3) California Department of Water Resources. 1994. California water plan update. Bulletin 160-93. Sacramento, California. October 1994. (4) California State Water Resources Control Board. 1975. Water quality control plan report. Sacramento, California. (5) California - The Resources Agency. Department of Parks and Recreation. 1983. Recreation needs in California. Sacramento, California. March 1983. 39 pp. and appendices.

23 (1) California Regional Water Quality Control Board, Central Valley Region (CRWQCB). 1995. Water quality control plan for the Tulare Lake Basin. Second Edition - 1995. (2) State Water Resources Control Board (SWRCB). 1993. California inland surface waters plan. 93-4 WQ. May 1993.

Project No. 1930-014

-153-

Dispersed Recreation: Relevant standards include: (1) develop and manage opportunities for increasing public enjoyment and benefits with emphasis on driving for pleasure and viewing scenery in Rural class areas, and (2) maintain and develop trails to meet user needs and protect resource values. The project facilities are compatible with the FS's Visual Management System (VMS) (letter from Erik Ostly, Forest FERC Coordinator, FS, Porterville, California, September 28, 1994). We recommend that Edison continue working with the FS and other interested entities to define trail and other access improvements in the bypassed reach. To require such improvements now may result in conflicts with other natural resources and public safety, which would be inconsistent with the Forest Plan. Similarly, any requirement to augment flows for whitewater boating would result in conflicts among recreational users (i.e. swimmers, recreational mining, fishing), which would not be consistent with the Forest Plan forest-wide goals. We conclude that our recommended measures are consistent with the Forest Plan.

Fish and Wildlife: Forest-wide standards and guidelines for fish and wildlife are applied to the BO2 management area, which includes the following relevant to the Kern River No. 1 Project: (1) maintain habitat to insure all native fish, wildlife, and plant species will have adequate population levels and distribution to provide for their continued existence throughout their current range; (2) protect sensitive, proposed for listing, and California species of special concern with the long-term objective for removal from Federal listing or to prevent them from being listed; and (3) within riparian area, protect stream courses and adjacent vegetation to maintain or improve overall wildlife and fish habitat, water quality, and recreational opportunities.

The Forest Plan also sets as a forest-wide standard and guideline the protection of fishery streams by specifying minimum flows necessary to maintain fisheries habitat and allowing removal of no more than 50 percent of the flow at any time. FOR/AWA contend that such a measure would protect the Kern's fishery, riparian habitat, and endangered species.

The Kern River is managed for a self-sustaining smallmouth bass fishery, and is stocked with catchable-sized rainbow trout. Based on the results of an IFIM study, conducted in consultation with fish and wildlife management agencies and the FS, Edison's proposed continuation of established minimum flows would protect and maintain habitat conditions for these fish and would meet FS management objectives. Additional flows would not likely improve riparian vegetation because these resources are controlled more by the magnitude of irrigation flows and floods and by the limited substrate suitable for riparian establishment than project diversions. The Kern Canyon slender salamander (a FS sensitive species), referenced by FOR/AWA as one of the species potentially benefiting from a "no more than 50 percent diversion" management prescription, is not likely to occur in the mainstem Kern River because of the turbulent water and high velocities and would not benefit by such a flow prescription.

The Kern River No. 1 Project existed at the time the Forest Plan was developed and is a recognized and accepted use of the national forest lands. The "no more than 50 percent diversion" standard and guideline is just that, a guideline established to direct future activities such as diversions on streams when drafting water for dust abatement during timber and road management activities (personal communication, Erik Ostly, Forest FERC Coordinator, FS, Porterville, California, January 7, 1997).

Project No. 1930-014

-154-

Our analysis indicates that the minimum instream flows and provisions for evaluating the effects of future project activities fully protect natural resources and our recommendation is fully consistent with the Forest Plan.

IX. RECOMMENDATIONS OF FISH AND WILDLIFE AGENCIES

Under the provisions of Section 10(j) of the FPA, as amended by the Electric Consumers Protection Act of 1986, each hydroelectric license issued by the Commission shall include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, and enhancement of such resources affected by the project, where those conditions are not inconsistent with the purposes and requirements of the FPA or other applicable law.

No federal or state fish and wildlife agency filed recommendations pursuant to Section 10(j) of the FPA.

X. FINDING OF NO SIGNIFICANT IMPACT

With our recommended enhancement measures, minimum flows would be provided to protect fish resources in the bypassed reach, cultural resources would be maintained, and comprehensive recreation plans that benefit all users would be developed. Implementing the enhancement measures described in this EA would ensure that the environmental effects of continued operation would remain insignificant. A few of the smaller game and nongame fish species would continue to be entrained into the project flowline and killed, but the number is insignificant.

Based on this analysis, issuance of a license for the project with our recommended environmental measures would not constitute a major federal action significantly affecting the quality of the human environment.

XI. LITERATURE CITED

Barbour, R.W. and W.H. Davis. 1969. Bats of America. University Press of Kentucky, Lexington, Kentucky. 286pp.

Barr, Chreyl B. 1991. The distribution, habitat, and status of the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus* Fisher). U.S. Fish and Wildlife Service, Sacramento, California. 134p.

Beamish, F.W. 1978. Swimming capacity. *In*: Fish Physiology, Volume VII, Locomotion. W.S. Hoar and D.J. Randall, editors. Academic Press, New York, pp 101-187.

Brusven, M.A., and K.V. Prather. 1974. Influence of stream sediments on distribution of macrobenthos. J. Entom. Soc. British Columbia. 71:25-32.

California Department of Fish and Game (CDFG). 1987. Fish and game operations manual.

Project No. 1930-014

-155-

Section 5355. June 1987.

_____. 1992. Annual report on the status of California state listed threatened and endangered animals and plants. State of California, The Resources Agency. Sacramento, California.

California Natural Diversity Data Base (CNDDB). 1996. Natural diversity data base. California Department of Fish and Game, Natural Heritage Division. September 15, 1996.

California Regional Water Quality Control Board. Central Valley Region (CRWQCB). 1995. Water quality control plan for the Tulare Lake Basin. Second Edition - 1995.

Cherry, D.S., K.L. Dickson, J. Cairnes, and J.R. Stauffer. 1977. Preferred, avoided, and lethal temperatures of fish during rising temperature conditions. Journal of the Fisheries Research Board of Canada 34:239.

Christenson, D.P. 1975. Case history - Kern River fish population control 1972. In P. Moyle, Trout/Non-Gamefish Relationships in Streams. Cal. Trout/AFS Symposium. , Sacramento, California.

Dahlberg, M.L., D.L. Shumway, and P. Doudoroff. 1968. Influence of dissolved oxygen and carbon dioxide on swimming performance of largemouth bass and coho salmon. Journal of the Fisheries Research Board of Canada. 25(1): 49-70.

EA Engineering, Science, and Technology, Inc (EA). 1986. Kern River Hydroelectric Project instream flow study and fish population characterization. Prepared for Southern California Edison Company, Rosemead, California. December 1986.

Edison (Southern California Edison Company). 1994a. Application for New License for Major Project - Existing Dam. Kern River No. 1 Water Power Project. FERC No. 1930. Rose Mead, California. April 1994.

_____. 1994b. Additional Information for Application New License. Kern River No. 1 Water Power Project. FERC No. 1930. Rose Mead, California. November 7, 1994.

Eicher Associates, Inc. 1987. Turbine-related fish mortality: review and evaluation of studies. EPRI AP-54580. Prepared for Electric Power Research Institute, Palo Alto, California. November 1987.

Entrex, Inc. 1996. Response to the Federal Energy Regulatory Commission's request for additional information concerning sediment in the lower Kern River. Prepared by Entrex, Inc. for Southern California Edison, Rosemead, California. April 26, 1996.

Federal Energy Regulatory Commission and USDA Forest Service. 1996. Environmental Assessment for Hydropower License, Kern River No. 3 Hydroelectric Project, FERC Project No. 2290. April 2, 1996.

_____. Scoping Document I, Kern River No. 1 Hydroelectric Project, FERC Project No. 1930.

Project No. 1930-014

-156-

January 19, 1995.

_____. Scoping Document II, Kern River No. 1 Hydroelectric Project, FERC Project No. 1930. May 26, 1995.

Flow Science, Inc. 1988. Kern River temperature modeling study. Prepared for Southern California Edison Company, Rosemead, California. March 1988.

Forest Service. 1988. Sequoia National Forest land and resource management plan, Department of Agriculture, Porterville, California. February 1988; as amended by the Sequoia National Forest Mediated and Management Plan 1990 Settlement Agreement. July 1990 .

Harris, R.R.. 1989. Riparian communities of the Sierra Nevada and their environmental relationships. in D.L. Abell (eds) Proceedings of the California riparian systems conference: protection, management, and restoration for the 1990s; September 22-24, 1989, Davis, CA. General Technical Report PSW-110. Pacific Southwest Forest and Range Experiment Station, Forest Service. 544p.

Harris, R.R., C.A. Fox, and R.J. Riser. 1987. Impacts of hydroelectric development on riparian vegetation in the Sierra Nevada Region, California. Environmental Management 11:519-527.

Hart, S. 1990. *California's Wild Heritage, Threatened and Endangered Animals in the Golden State*. California Department of Fish and Game, California Academy of Sciences, Sierra Club Books.

Holland, D.C. 1994. The western pond turtle: habitat and history. Oregon Department of Fish and Wildlife report. prepared for U.S. Department of Energy, Bonneville Power Administration. DOE/BP-621371. BPA, Portland, Oregon. August 1994. 605pp.

Kuchler, A.W. 1977. *Natural vegetation of California*. Map in appendix to Terrestrial vegetation of California. Barbour and Major (eds). 1977. John Wiley & Sons, Inc., New York.

Macgee, J.P., T.E. McMahon, and R.F. Thurow. 1996. Spatial variation on spawning habitat of cutthroat trout in a sediment-rich stream basin. Transactions of the American Fisheries Society 125:769-779.

Nilson, C. 1984. Effects of stream regulation on riparian vegetation. Pages 93-106 in A. Lillehammer and S. J. Saltveit, eds. Regulated rivers. Columbia University Press, New York, New York.

Olendorff, R.R., A.D. Miller, and R.N. Lehman. 1981. Suggested practices for raptor protection on powerlines: the state of the art in 1981. Raptor Research Report No. 4, Raptor Research Foundation, Inc., University of Minnesota, St. Paul, Minnesota. 110pp.

State Water Resources Control Board (SWRCB). 1993. California inland surface waters plan. 93-4 WQ. May 1993.

Project No. 1930-014

-157-

Semple, J.C. 1996. A revision of *Heterotheca* sect. *Phyllothea* (Nutt.) Harms (Compositae: Astereae): the prairie and montane goldenasters of North America. WAT Herbarium, University of Waterloo, Waterloo, Ontario. 148-150pp.

Stebbins, R.C. 1954. Amphibians and reptiles of western North America. McGraw Hill, New York.

Taylor, T. 1992. Archeological survey report, Kern River No.1 transmission line from the powerhouse to tower 1-4, Kern County, California. Environmental Affairs Division, Southern California Edison Company, Rosemead, California.

_____. 1993. Cultural resources management plan for Southern California Edison Company's Kern River No. 1 hydroelectric project, Kern County, California, FERC Project No. 1930. Environmental Affairs Division, Southern California Edison Company, Rosemead, California.

Tuskes, P. and J.F. Emmel. 1981. The life history and behavior of *Euproserpinus euterpe* (Sphingidae). Journal of the Lepidopterous Society. 35:27-33.

U. S. Corps of Engineers (Corps). 1953. Isabella Lake, Kern River, California, Reservoir Regulation Manual. Department of the Army, Sacramento District, Corps of Engineers, Sacramento, California. Amended January 1978.

U. S. Fish and Wildlife Service (FWS). 1980. Listing the valley elderberry longhorn beetle as a threatened species with critical habitat. Federal Register 45(155):52803-52807. August 8, 1980.

_____. 1990. Endangered and threatened wildlife and plants; Determination of Endangered or Threatened Status for five plants from the Southern San Joaquin Valley. Federal Register 55:29361-29370. July 19, 1990.

_____. 1993. Endangered and threatened wildlife and plants; notice of 1-year petition finding on the western pond turtle. Federal Register 58:42717-42718. August 11, 1993.

_____. 1995. Endangered and threatened wildlife and plants; final rule determining endangered status for the southwestern willow flycatcher. Federal Register 60:10694- 10715. February 27, 1995.

Verner, J. and A.S. Boss, technical coordinators. 1980. California wildlife and their habitats: western Sierra Nevada. Pacific Southwest Forest and Range Experiment Station. Gen. Tech. Rep. PSW-37. 439pp.

Verner, J., K.S. McKelvey, B.R. Noon, R.J. Gutierrez, G.I. Gould, Jr., and T.W. Beck (Technical Coordinators). 1992. The California spotted owl: a technical assessment of its current status. Gen. Tech. Rep. PSW-GTR-133. Albany, CA: Pacific Southwest Research Station, Forest Service. 285pp.

Project No. 1930-014

-158-

White, D. and T. Taylor. 1984. An inventory and evaluation of archeological and historic resources along the Kern River in the vicinity of Democrat Hot Springs, Kern County, California. Environmental Affairs Division, Southern California Edison Company, Rosemead, California.

WRC-Environmental. 1996. Kern River whitewater boating study, Kern River No.1 Project: FERC No. 1930. Prepared for Southern California Edison Company, Rosemead, California. July 10, 1996.

XII. LIST OF PREPARERS

David Turner - EA Coordinator, Terrestrial Resources, Threatened and Endangered Species, and Socioeconomic (Wildlife Biologist; M.S., Zoology)

John Costello - Visual Resources, Recreation, Land Use (Landscape Architect; BLA, Landscape Architecture and Environmental Planning).

Charles R. Hall - Need for Power and Developmental Resources (Engineer, M.S., Civil Engineering).

Gaylord Y. Hoisington - Geology and Soils (Soil Conservationist; B.S. Recreation)

Michael H. Henry - Aquatic Resources (Fishery Biologist; B.S., Fisheries).

Edwin Slatter - Cultural Resources (Archeologist; Ph.D. Anthropology)

Project No. 1930-014

-144-

APPENDIX

A. THREATENED AND ENDANGERED SPECIES NOT LIKELY TO OCCUR IN THE PROJECT AREA

The following federal listed species are not likely to occur in the project area because of lack of suitable habitat and range limits. Consequently, relicensing the project would not affect these species. Distribution, habitat requirements, and known occurrences relative to the project are described below to support our conclusion.

California jewelflower, Kern mallow, San Joaquin woolly-threads and Hoover's woolly-star: These four herbs are restricted to grassland with reduced grass cover, and adjacent plant communities (valley sink scrub, valley saltbush scrub, and juniper woodlands) in the southern San Joaquin Valley, and neighboring foothills and valleys (FWS 1990). California jewelflower was historically confined to the valley floor of the Tulare Lake Basin; only one introduced population now occurs in Kern County (FWS 1990). Kern mallow is restricted to the eastern base of the Temblor Range, within valley saltbush scrub in Kern County (FWS 1990). San Joaquin woolly-threads are associated with valley saltbush scrub, and found in the San Joaquin Valley and adjoining foothills from Panoche Pass (San Benito County) southeast to Caliente Creek, east of Bakersfield (FWS 1990). Hoover's woolly-star was historically distributed in the Temblor Range, Cuyama Valley, and discontinuously within valley saltbush and valley sink scrub from Fresno County south in the San Joaquin Valley (FWS 1990). Valley sink scrub, valley saltbush scrub, and juniper woodlands don't occur in the project area. CNNB (1996) has no records of these plants occurring near the project. Project facilities are not located within the known or historical distribution of these plants, and none were found in the area (Edison 1994a).

Greenhorn adobe-lily, Piute Mountains navarretia, and San Joaquin adobe sunburst: These three herbs are found in heavy adobe clay soils in either nonnative grassland and blue oak woodlands (Greenhorn adobe-lily and San Joaquin adobe sunburst) or blue oak, digger pine, or juniper woodlands between 1,000 to 3,200 feet (Piute Mountains navarretia) (FWS 1994a; FWS 1997). Adobe soils are mainly distributed in the valleys and flats near the foothills of the southeastern San Joaquin Valley (FWS 1997). Fourteen populations of Greenhorn adobe-lily are known from Kern County; six populations of Piute Mountains navarretia are known from northern Kern County; and San Joaquin adobe sunburst is known from northeast of Bakersfield, in Kern County. While blue oak woodlands and grassland are the predominate community types in the project vicinity, soils in the area are from the Cienega- Rock outcrop complex, which consists of excessively drained, permeable, pale brown coarse sandy loam about 12 inches deep formed from granitic rock. Suitable habitat for these species is not present and no plants were found during site surveys (Edison 1994a).

Kelso Creek monkeyflower: This desert annual occurs predominately in loamy, coarse sands on alluvial fans and deposits of granitic origin within the Joshua tree or California juniper xeric woodlands of the high desert (CNDB 1996, FWS 1994). Suitable habitat doesn't occur in the project area.

Project No. 1930-014

-145-

Parish's alkali grass: This ephemeral annual grass occurs in small, widely disjunct populations in California, Arizona, and New Mexico, occupying very specific desert habitat of alkaline springs and seeps at elevations of 2,300 to 6,000 feet (FWS 1994c). Suitable habitat for this species doesn't occur in the project area.

San Joaquin kit fox: The San Joaquin kit fox prefers grasslands and desert saltbush communities, but may also occur in oak woodland, alkali sink scrubland, and vernal pool and alkali meadow communities (ARCO 1996a; CDFG 1995; Brown et al. 1997). The San Joaquin kit fox's range extends roughly from the southeastern Contra Costa County south along the eastern flanks of the Interior Coast Range to the southern San Joaquin Valley, including major portions of western Kern County and the valleys, foothills, and plains on the western side of the Interior Coast range (CDFG 1995). The closest known location to the project is east of Highway 99 and north-northeast of Bakersfield (CNDB 1996), well outside the Kern Canyon. The project area is located on the margin of the fox's range, and provides only marginally suitable habitat (agricultural lands and grasslands). Consequently, it is not expected to occur in the project area and would not be impacted by relicensing of the project.

Tipton kangaroo rat and Giant kangaroo rat: The Tipton kangaroo rat was distributed historically in Tulare Lake Basin of the San Joaquin Valley, encompassing portions of Fresno, Kings, Tulare and Kern Counties, California (FWS 1988). Valley saltbush scrub and valley sink scrub communities provide habitat for the Tipton kangaroo rat. State Route 99 forms the eastern boundary of the Tipton kangaroo rat range (FWS 1988), well west of the project area. Preferred habitat of the giant kangaroo rat is native annual grassland with sparse vegetation, good drainage, fine sandy-loam soils, and a slope of less than 10 percent (FWS 1987). Its range is known to have extended from southern Merced County, through the San Joaquin Valley, to southwestern Kern County and northern Santa Barbara County (Hall 1981). It now survives in only a few areas at the southern edge of the original range. Both of these rats are essentially confined to the grassland of the San Joaquin Valley, and are not expected to occur in Kern Canyon. The project doesn't occur within the range of these species and suitable habitat is not present.

Aleutian Canada goose: The Aleutian Canada goose breeds on the Alaska Aleutian Islands, but winters mostly in California's Sacramento and San Joaquin Valleys (Springer et al. 1977, Ehrlich et al. 1992). With the exception of Lake Isabella, about 20 miles to the east, the project area doesn't support large lakes, marshes, and agricultural lands preferred by Canada geese.

Southwestern willow flycatcher: This small, migratory, insectivorous bird occurs in riparian habitats along rivers, streams, and wetlands, where a dense growth of willows, arrowweed, buttonbush or other plants are present, often with a scattered overstory of cottonwood (FWS 1995). Its breeding range includes southern California, southern Nevada, southern Utah, Arizona, New Mexico, and western Texas. Narrower riparian zones, with great distances between willow patches and individual willow plants, are not selected for nesting or singing perches (FWS 1995). No southwestern willow flycatcher was observed during site surveys (Edison 1994a). Habitat within the project reach is not well suited for this species because of the limited riparian habitat.

Project No. 1930-014

-146-

Least Bell's vireo: This migratory song bird inhabits dense, willow-dominated riparian habitats with lush understory vegetation in the immediate vicinity of water courses (FWS 1986). They forage in the riparian habitat and adjoining chaparral habitat. Once abundant throughout the Central Valley and other low-elevation riverine valleys, its historic breeding range extended from interior northern California to northwestern Baja California, Mexico. It has apparently been extirpated from the Sacramento and San Joaquin Valleys (51 FR 16474, May 2, 1986).

Blunt-nosed leopard lizard: The blunt-nosed lizard formally occupied much of the San Joaquin Valley and Sierra foothills from Stanislaus County southward to the Tehachapi Mountains in Kern County (Sandoval et al. 1996). This lizard prefers sparsely vegetated areas on gentle topography on lower portions of the foothills, alluvial fans, valley floors and flat-bottom washes (ARCO 1996b). They are found in non-native grassland and alkali sink scrub communities of the valley floor, which are marked by poorly drained, alkaline, and saline soils, and in foothill chenopod communities in the southern San Joaquin Valley and Carrizo Plain, associated with non-alkaline, sandy soils (Sandoval et al. 1996). They are absent from areas with steep slopes and dense vegetation, or are subject to frequent flooding (Sandoval et al. 1996). Habitat in the project area is unsuitable for this species.

Giant garter snake: The giant garter snake is endemic to valley floor wetlands in the Sacramento and San Joaquin Valleys (FWS 1993). It requires slow to still waters such as marshes, sloughs, ponds, small lakes, and low gradient streams (FWS 1993). The project area is outside the known range of this species. The swift flows of the high-gradient Kern River and lack of emergent vegetation needed for foraging habitat and escape cover (FWS 1993) makes habitat in the project reach unsuitable for giant garter snake.

California red-legged frog: The California red-legged frog occupies distinct riparian and aquatic habitats. The adults are found in dense, shrubby or emergent riparian vegetation closely associated with deep (=23 feet) still or slow moving waters (FWS 1996, Stebbins 1951). They attach their eggs to vertical emergent vegetation such as bulrushes and cattails (FWS 1996). The California red-legged frog is now found primarily from wetlands and streams in coastal drainages of central California (FWS 1996). Its historical range included the Kern River up to Lake Isabella, but areas where it once occurred in the valley near Rio Bravo have been revisited and habitat found to be destroyed (personal communication Steve Anderson, District Biologist, FS, February 19, 1997). The red-legged frog is believed to be extirpated from the Central Valley floor (FWS 1996), including the Kern River. Only one drainage in the Sierra foothills is known to support California red-legged frogs (FWS 1996). Surveys pursuant to Fish and Wildlife Service protocol have not been completed for the project area. However, suitable habitat is not present in the project reach because of the swift and variable river flows and limited emergent vegetation. We believe that red-legged frog is not likely to occur in the project reach because of the lack of habitat and their limited distribution in the Sierra foothills.

Delta smelt and Sacramento splittail: The Delta smelt and Sacramento splittail are species currently found in the upper Sacramento-San Joaquin estuary in central California. Reductions in estuary outflows, especially in dry water years, due to water diversions is listed as the most important cause of the decline of these species (USDI 1996).

Project No. 1930-014

-147-

The Kern River drains into Tulare Lake, located about 40 miles northwest of Bakersfield, California. In recent times, water from the Kern River has not entered the Sacramento-San Joaquin Delta (personal communication, Chuck Williams, Kern River Watermaster, Bakersfield, California, February 21, 1997). In addition, the Kern River No. 1 Project operates as a run-of-river project, without storing any significant water. Continued operation of the project would not impact any listed or proposed threatened and endangered fish species.

Kern primrose sphinx moth: The Kern primrose sphinx moth is known only from the Walker Basin area (elevation 4,500 feet), where it occurs on sandy soils wherever its larval foodplant, *Camissonia contorta epilobioides*, grows (Tuskes and Emmel 1981). The larval foodplant typically grows in dry, disturbed, or gravelly cismontane areas below 5,000 feet in elevation (Munz and Keck 1973). Surveys of the project area were conducted between April 14-18, 1993 (Edison 1994a). No larval food plants were found in the project area (Edison 1994a). Consequently, the Kern primrose sphinx moth is expected to occur in the area and would not be affected by continued operation of the project.

Longhorn fairy shrimp and Vernal pool fairy shrimp: These two fairy shrimp are restricted to vernal pools, an ephemeral freshwater habitat (FWS 1994b). They are not known to occur in riverain waters (FWS 1994b). No vernal pools exist in the project area.

Literature Cited

Atlantic Richfield Company(ARCO). 1996a. San Joaquin kit fox. Coles Levee Ecosystem Preserve. at URL <http://www.arco.com/AWE/clep/spkitfox.htm>.

Atlantic Richfield Company (ARCO). 1996b. Blunt-nosed leopard lizard. Coles Levee Ecosystem Preserve. at URL <http://www.arco.com/AWE/clep/spbnlzrd.htm>.

Brown, N.L., C.D. Johnson, P.A. Kelly, and D.F. Williams. 1997. San Joaquin kit fox profile. The Endangered Species Recovery Program: Endangered Species Profile, California State University, Stanislaus Foundation at URL <http://arnica.csustan.edu/esrpp/sjkfprof.htm>. February 1, 1997.

California Natural Diversity Data Base (CNDDB). 1996. Natural diversity data base. California Department of Fish and Game, Natural Heritage Division. September 15, 1996.

California Department of Fish and Game (CDFG). 1995. San Joaquin kit fox. Bay-Delta and Special Water Projects Division at URL <http://www.delta.dfg.ca.gov/species/kitfox.html>. revised August 16, 1995.

Edison (Southern California Edison Company). 1994a. Application for New License for Major Project - Existing Dam. Kern River No. 1 Water Power Project. FERC No. 1930. Rose Mead, California. April 1994.

Ehrlich, P.R., D.S. Dobkin, and D. Wheye. 1992. Birds in Jeopardy. Stanford University Press, Stanford, California. 259pp.

Project No. 1930-014

-148-

Hall, E.R. 1981. The Mammals of North America. John Wiley and Sons, Inc., New York, 2 vols.

Munz, P.A. and David D. Keck. A California flora with supplement. University of California Press, Berkeley, California. 1681pp. plus sup.

Sandoval, T.M., C.D. Johnson, and D.F. Williams. 1996. Blunt-nosed leopard lizard profile. The Endangered Species Recovery Program: Endangered Species Profile, California State University, Stanislaus Foundation at URL <http://arnica.csustan.edu/esrpp/bnll.htm>. December 19, 1996.

Springer, P.F., G.V. Byrd, and D.W. Woolington. 1977. Reestablishing Aleutian Canada goose. *in* Endangered Birds: Management Techniques for Preserving Threatened Species. S.A. Temple (ed.). University of Wisconsin Press, Madison, Wisconsin. pp:331-338.

Stebbins, R.C. 1954. Amphibians and reptiles of western North America. McGraw Hill, New York.

U.S. Department of Interior (USDI). 1996. Recovery plan for the Sacramento/San Joaquin Delta native fishes. U.S. Fish and Wildlife Service, Region 1. Portland, Oregon. November 1996.

U. S. Fish and Wildlife Service (FWS). 1986. Endangered and threatened wildlife and plants; determination of endangered status for the least Bell's vireo. Federal Register 51(85):16474-16482. May 2, 1986.

_____. 1987. Endangered and threatened wildlife and plants; determination of endangered status for the giant kangaroo rat. Federal Register 52:283-288. January 5, 1987.

_____. 1988. Endangered and threatened wildlife and plants; determination of endangered status for the Tipton kangaroo rat. Federal Register 53:25608-25611. July 8, 1988.

_____. 1993. Endangered and threatened wildlife and plants; determination of threatened status for the giant garter snake. Federal Register 58:54053-54066. October 20, 1993.

_____. 1994a. Endangered and threatened wildlife and plants; Proposed Endangered for the plant *Puccinellia parishii* (Parish's alkali grass). Federal Register 59:14378-14382. March 28, 1994.

_____. 1994b. Endangered and threatened wildlife and plants; determination of endangered status for the conservancy fairy shrimp, longhorn fairy shrimp, and the vernal pool tadpole shrimp; and threatened status for the vernal pool fairy shrimp. Federal Register 59:48136-48140. September 19, 1994.

_____. 1994c. Endangered and threatened wildlife and plants; Proposed Endangered or Threatened Status for 10 plants from the foothills of the Sierra Nevada Mountains in California. Federal Register 59:50540-50550. October 4, 1994.

Project No. 1930-014

-149-

_____. 1996. Endangered and threatened wildlife and plants; determination of threatened status for the California red- legged frog. Federal Register 61:25813-25832. May 23, 1996.

_____. 1997. Endangered and threatened wildlife and plants; Determination of Endangered Status for *Pseudogahia bahiifolia* (Hartweg's golden sunburst) and threatened status for *Pseudobahia peirsonii* (San Joaquin adobe sunburst), two grassland plants from the Central Valley of California. Federal Register 62:5542-5551. February 6, 1997.

Project No. 1930-014

-149-

APPENDIX

B. COMMENTS FROM AGENCIES, GOVERNMENTS, AND NON-GOVERNMENTAL ORGANIZATIONS ON THE DRAFT EA AND STAFF RESPONSES

Copy can be found on hardcopy in public file.

Project No. 1930-014

-149-

APPENDIX

C. PUBLIC COMMENTS ON THE DRAFT EA AND STAFF RESPONSES

Copy can be found on hardcopy in public file.

UNITED STATES OF AMERICA 83 FERC • 62,241
FEDERAL ENERGY REGULATORY COMMISSION

Southern California Edison)
Company) Project No. 1930-014

ORDER ISSUING NEW LICENSE
(Major Project)
(Issued June 16, 1998)

On May 2, 1994, Southern California Edison Company (Edison) filed an application, pursuant to Sections 4(e) and 15 of the Federal Power Act (FPA), 1/ for a new license authorizing the continued operation and maintenance of the 26.3-megawatt (MW) Kern River No. 1 Hydroelectric Project No. 1930 (Kern River No. 1 Project), located on the Kern River in Kern County, California. The project occupies about 140 acres of the Sequoia National Forest. Edison proposes no new capacity or construction.

The Commission issued the original license for the Kern River No. 1 Project on August 9, 1946. 2/ That license expired on June 1, 1996, and since then Edison has operated the project pursuant to successive annual licenses pending the disposition of its application for a new license. For the reasons discussed below, I will issue a new license to Edison for the Kern River No. 1 Project.

I. BACKGROUND

Notice of the application was published on January 3, 1995. 3/ Kern River Outfitters (KRO) 4/ and American Whitewater Affiliation (AWA) filed an early joint motion to intervene on August 29, 1994, which was automatically granted pursuant to the Commission's regulations. 5/ The Cities of Anaheim, Riverside, Banning, Colton, and Azusa, California (Cities) filed a timely joint motion to intervene on March 6, 1995, which was automatically granted. Late motions to intervene were filed by

- 1/ 16 U.S.C. •• 797(e), 808.
- 2/ The effective date of the license was May 1, 1946; 5 FPC 689.
- 3/ 60 Fed. Reg. 5379 (January 27, 1995).
- 4/ Kern River Outfitters is an ad hoc organization of the following four commercial rafting companies: Chuck Richards' Whitewater, Outdoor Adventures, Kern River Tours, and Whitewater Voyages.
- 5/ 18 C.F.R. • 385.214 (1996).

Project No. 1930-014

-2-

Friends of the River (FOR) and Kern River Alliance (KRA) on August 28, 1995, and January 16, 1996, respectively. The respective motions were granted on December 1, 1995, and February 12, 1996.

In their motions, KRO, AWA, and KRA express concerns regarding the amount and timing of water releases and river access needs for whitewater recreation (discussed in detail in Section IX of this order). The Cities seek a sharing with Edison of the output of the Kern River No. 1 Project. FOR believe that Edison needs neither the capacity nor energy generated from the project, and that decommissioning and cost of the environmental externalities that could be mitigated by decommissioning should be seriously considered.

The Commission issued a public notice on September 11, 1996, indicating the project was ready for environmental analysis and soliciting comments, recommendations, and terms and conditions. Comments, recommendations, and terms and conditions were received from the U.S. Forest Service (FS) and jointly from FOR and AWA.

A draft Environmental Assessment (EA), prepared jointly by the Commission and the U.S. Forest Service, Sequoia National Forest, 6/ was issued on July 31, 1997. The draft EA recommended that the project be licensed as proposed by Edison, with mandatory section 4(e) and 401 water quality certification conditions and some additional staff recommendations. Comments on the draft EA were filed by the North Kern Water Storage District; jointly by Friends of the River, Kern River Outfitters, Kern Valley Chamber of Commerce, Kern Valley Community Consensus Council, and Sierra Club Kern-Kaweah Chapter; Southern Sierra Fat Tire Association; Edison; San Joaquin Valley Unified Air Pollution Control District; County of Kern Planning Department; Kern River Watermaster; Kern River Alliance; and 63 individuals. Staff addressed these comments in the final EA (specific responses to these comments are included in Appendix B and C of the EA). The final EA was issued on March 19, 1998, and is incorporated by reference in this order. Background information, analysis of impacts, and the basis for a finding of no significant impact on the environment are contained in the final EA.

By letters dated April 22, 1998, and April 30, 1998, Edison and FOR, respectively, filed unsolicited comments on the final EA.

All comments received from interested agencies, organizations, and individuals on both the draft and final EAs

6/ The Forest Service, Sequoia National Forest, is a cooperating agency on the EA.

Project No. 1930-014

-3-

have been fully considered in determining whether, or under what conditions, to issue this license.

II. PROJECT DESCRIPTION

The Kern River No. 1 Project consists of: (1) a 29-foot-high, 204-foot-long, concrete overflow diversion dam (Democrat dam) with crest elevation at 1,912.7 feet mean sea level, impounding a 27-acre pond; (2) a gated intake structure with trash racks at the left abutment; (3) a water conduit consisting of 42,884 feet of tunnel; a 104-foot-long, 20-foot-wide, concrete sandbox at the tunnel exit; 390 feet of rectangular flume; 904 feet of Lennon flume on steel structure; and 612 feet of arched-concrete conduit; (4) a 45-foot-long, 33-foot-wide, 11-foot-deep forebay; (5) a 1,693-foot-long buried penstock, varying in diameter from 108 inches at the intake to 27 inches at the end of the header at the powerhouse; (6) a 170-foot-long, 71-foot-wide, reinforced concrete powerhouse containing four Pelton-type generating units with a total installed capacity of 26.3 MW; (7) a rectangular tailrace that discharges flows over a weir section into the Kern River; (8) a 1.9-mile-long, 66-kilovolt transmission line tying into Edison's transmission system; and (9) appurtenant facilities. There is about a 10.2-mile-long bypassed reach of the Kern River between Democrat Dam and the project tailrace. The applicant proposes to continue to operate the project in a run-of-river mode.

III. APPLICANT'S PLANS AND CAPABILITIES

In accordance with Sections 10(a)(2)(C) and 15(a) of the FPA, 7/ staff evaluated Edison's record as a licensee with respect to the following: (A) consumption improvement program; (B) compliance history and ability to comply with the new license; (C) safe management, operation, and maintenance of the project; (D) ability to provide efficient and reliable electric service; (E) need for power; (F) transmission services; (G) cost effectiveness of plans; and (H) actions affecting the public. I accept the staff's conclusion in each of these areas.

Here are staff's findings:

A. Consumption Improvement Program

Edison's conservation programs 8/ demonstrate progress in implementing energy management measures for both non-residential and residential customers, including low-income, senior citizens,

7/ 16 U.S.C. •• 803 and 808.

8/ See Exhibit H(a)-6 in Edison's license application, April 1994.

Project No. 1930-014

-4-

disabled, and non-English speaking customers.

Edison has filed two documents with the Public Utilities Commission of California: Demand-Side Management Annual Program Summary Report (March 1992) and Energy Management Programs (April 1991). These reports document Edison's efforts and progress made to conserve electricity and promote energy conservation by its customers.

Staff concluded that Edison's efforts have brought about significant improvements in electricity consumption efficiency and that Edison has in place an adequate electricity consumption improvement program.

B. Compliance History and Ability to Comply with the New License

Staff reviewed Edison's compliance with the terms and conditions of the existing license. Staff found that Edison's overall record of making timely filings and compliance with its license is satisfactory and conclude that Edison has the ability to comply with the conditions of a new license and of orders issued thereunder.

C. Safe Management, Operation, and Maintenance of the Project

Staff reviewed Edison's record of management, operation and maintenance of the Kern River No. 1 Project pursuant to project safety. Staff found that the dam and other project works are safe and that the licensee's record of managing, operating, and maintaining these facilities supports the decision to issue a license.

D. Ability to Provide Efficient and Reliable Service

To increase project equipment reliability, Edison has either replaced or plans to replace in the near future the stator iron and windings in all four project generators. Edison has no plans to further increase capacity or generation at the project.

Edison coordinates all of its generation facilities through an operations center to maximize production at minimal economic and environmental cost. The Kern River No. 1 powerhouse is operated semi-automatically, with alarms connected to the Kern River No. 3 powerhouse which is attended 24 hours a day. Because the Kern River No. 1 Project operates in a run-of-river mode on irrigation flow releases made from Lake Isabella, Edison does not need to coordinate its operation with any upstream or downstream water resources projects other than to notify downstream water resource projects when an emergency shut down becomes necessary.

Over the five-year period, 1989 to 1994, the project lost 2,437 MWh of energy due to unscheduled outages. Over half of

Project No. 1930-014

-5-

this loss occurred over a 5-day period of project shut down caused by a wall collapse in one of the project tunnels. The average annual energy production for this project is 178,585 MWh based on the 15-year period, 1977 through 1992.

Staff found that Edison has operated the project in an efficient manner within the constraints of the existing license and can continue to provide efficient and reliable electric service in the future.

E. Need for Power

Edison is a public utility serving about 4.2 million customers in an area of about 50,000 square miles in southern California, excluding the city of Los Angeles. This area includes some 800 cities and communities and a population of about 11 million people. Edison has owned and operated the Kern River No. 1 Project since 1907. The project has been serving a portion of the power requirements of Edison's customers for a continuous period of nearly 90 years. The project accounts for 24.8 MW of Edison's total hydroelectric resources of 1,153.3 MW.

If a new license is not issued for the project, Edison would need to replace the project's capacity and average annual generation of 179 gigawatthours (GWh). Over the short term (up to 5 years), generation from existing gas-fired units or power purchases could be an alternative to the project's dependable capacity and energy production. If generation from Edison's oil-fired and gas-fired units currently held in standby reserve were to provide needed replacement energy and capacity, the schedule for returning these units to service would have to be advanced, requiring significant capital investments.

The Kern River No. 1 Project displaces oil-fired and gas-fired energy, providing an average annual savings equivalent to nearly 300,000 barrels of oil. Replacement of the project by fossil-fired generation would increase air pollutant emissions in the South Coast Air Basin, where most of Edison's oil and gas units are located. By offsetting the need to produce 179 GWh of energy annually from such generation, the Kern River No. 1 Project reduces direct air emissions in the Los Angeles area.

In addition to the need for project power to serve Edison's customer load, the Kern River No. 1 Project and its associated transmission facilities is needed to provide voltage support when transmission line outages occur on Edison's Cummings or Gorman lines. Without the project, Edison would need to construct additional transmission facilities.

Besides looking at Edison's need, staff also looked at the regional need for power. The electricity generated from the project would benefit the region by providing a portion of the

Project No. 1930-014

-6-

needed regional power. In its 1996 report, the Western Systems Coordinating Council shows that the utilities in the California-Southern Nevada area plan to add over 2,500 MW of capacity to the system over the 10-year planning period (1995-2005).

As licensed, the project will continue to meet part of Edison's needs and a small part of the region's needs. In addition the project will continue to displace fossil-fueled electric power generation the regional utilities now use, and thereby conserve nonrenewable fossil fuels and reduce the emission of noxious byproducts caused by the combustion of fossil fuels.

F. Transmission Services

Project generation provides voltage support for local loads of about 30 MW when line outages occur in a 100-mile-long transmission line serving the Cummings and Gorman areas. Removal of project generation would require Edison to construct new transmission lines or other facilities to avoid interruption of service to these areas. Edison estimates the cost of these facilities would exceed \$20 million.

There are no other transmission lines associated with the project in the area and Edison proposes no modifications to the transmission system.

Staff concluded that Edison's transmission service is sufficient for the project and that no changes are necessary at this time.

G. Cost Effectiveness of Plans

Edison has no plans for additional facilities or project modifications, other than operational improvements, and wildlife, recreational, aesthetic, and cultural resource enhancements. Staff found that the project, as presently configured and as operated according to this order consistent with environmental considerations, fully develops the economical hydropower potential of the site in a cost-effective manner.

H. Actions Affecting the Public

Environmental enhancement measures and recreation improvements included in the license will generally improve environmental quality, particularly for aquatic and wildlife resources, and will have a beneficial affect on public use of project facilities for recreational purposes.

Project No. 1930-014

-7-

IV. WATER QUALITY CERTIFICATION

Under Section 401(a)(1) of the Clean Water Act, 9/ the Commission may not issue a license for a hydropower project unless the relevant state agency has either issued a water quality certification for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year. 10/

On April 26, 1994, Edison applied to the California State Water Resources Control Board (Cal. Water Board) for water quality certification. The Cal. Water Board received the certification request on May 2, 1994. On May 1, 1995, the Cal. Water Board issued certification for the project. On December 2, 1997, Edison submitted a petition for reconsideration of the certification. The Cal. Water Board issued a revised Section 401 certification on January 12, 1998. 11/

The certification contains conditions that require Edison to implement a five-year water quality monitoring program in order to ensure that water temperature objectives for the Tulare Lake Basin Water Quality Control Plan continue to be met, to prevent pollutants and other nuisance materials from entering the surface waters, and to coordinate with the California Fish and Game and take reasonable protection measures during any project-related dewatering activities. Article 408 requires Edison to file a schedule for conducting the water temperature study plan and reserving the Commission's authority to modify project operation to achieve the state's temperature objective for protection of the COLD water beneficial use of the project's bypassed reach. 12/

9/ 33 U.S.C. • 1341(a)(1).

10/ Section 401(a)(1) requires an applicant for a federal license or permit to conduct any activity that may result in any discharge into navigable waters to obtain from the state in which the discharge originates certification that any such discharge will comply with applicable water quality standards.

11/ See Appendix A to this order.

12/ In their April 22, 1998, letter, Edison states that the final EA focuses exclusively on cold water fish habitat and that a specific numeric water temperature criterion would be both inappropriate and incompatible with the Tulare Lake Basin Water Quality Control Plan and the 401 Certification. The final EA (see EA at 11-13) explicitly states the January 12, 1998, water quality certification conditions. The final EA also describes both the cold and warm water fishery in

Project No. 1930-014

-8-

V. SECTION 4(e) CONDITIONS

Section 4(e) of the FPA 13/ requires that Commission licenses for projects located within United States reservations must include all conditions that the Secretary of the department under whose supervision the reservation falls shall deem necessary for the adequate protection and utilization of such reservation. A portion of the Kern River No. 1 Project is located in the Sequoia National Forest, which is under the supervision of the Forest Service.

By letter dated April 29, 1998, the Forest Service provided its final Section 4(e) conditions. 14/ These conditions are included in the license pursuant to ordering paragraph (D) and Appendix B of this order. 15/

the bypassed reach (see EA at 23-24) and the frequency that cold water conditions are met (see EA at 21-22). Further staff does not recommend in the final EA, nor does this order require, that a specific temperature be maintained.

13/ 16 U.S.C. • 797(e).

14/ Forest Service Condition 28 would prohibit a variety of discriminatory employment practices by Edison under Title VI of the Civil Rights Act of 1964. I question whether this condition bears any relationship to the adequate protection and utilization of the reservation, nor does the Commission have the authority to enforce that law. See NAACP v. FPC, 425 U.S. 662 (1975). However, the Supreme Court, in Escondido Mutual Water Co. v. LaJolla Band of Mission Indians, 466 U.S. 765, 777-78, n.21 (1984), held that when the Secretary proposes conditions which the Commission believes to be unreasonable, the Commission may either decline to issue the license or issue the license with the conditions and explain its objections, thereby leaving the court of appeals the final determination of reasonableness.

15/ In their April 22, 1998, letter, Edison requested the Forest Service eliminate the additional enhancement measures at the Upper Richbar Day Use Area (a second accessible, double unit, sweet smelling toilet) not agreed to by Edison (see Forest Service Condition No. 5), because the Forest Service failed to show why this extra enhancement is necessary to protect and use the Forest and that any affect is not project induced. Absent this, Edison requested the Commission license acknowledge the lack of evidence to support the need for the extra facility.

The condition is included in this license in accordance with
(continued...)

Project No. 1930-014

-9-

The Forest Service's Decision Notice on the Section 4(e) conditions is subject to appeal under its own administrative decision making process. 16/ This license is being issued before the Forest Service appeals process is completed. Consequently, any valid revisions to the Section 4(e) conditions included in this license that result from the administrative appeals that may come before the Forest Service will be incorporated in the license. Upon the submittal of such provisions by the Forest Service, the Commission will issue an order amending the license. 17/ The licensee will then have the opportunity to request rehearing, and thereafter file for court review, of such revisions. 18/

VI. THREATENED AND ENDANGERED SPECIES

Section 7(a) of the Endangered Species Act of 1973 (ESA) 19/ requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of designated critical habitat. Based on distribution, habitat requirements, and site survey results, staff determined that the endangered Bakersfield cactus, endangered peregrine falcon, threatened bald eagle, and threatened valley elderberry longhorn beetle are federally-listed species that may find suitable habitat in the vicinity of the Kern River No. 1 Project. The staff's EA concluded that

15/ (...continued)

the Supreme Court decision, in *Escondido Mutual Water Co. v. LaJolla Band of Mission Indians*, 466 U.S. 765, 777-78, n.21 (1984) (see footnote 14). Regarding the support for this facility, the final EA, jointly supported by Commission and Forest Service staff, adequately describes the reasons for requiring the additional facility: project operations can directly affect the recreational experience at these facilities which are at or exceeding capacity; the recommended facilities would substantially improve public use of the area and they would improve access for individuals with disabilities; they would help attain Forest Service recreation management objectives; and they would ensure continued benefit of the recreational facilities throughout the license term (see EA at 52 and 74).

16/ 36 CFR 215.

17/ See Ordering Paragraph (D) below.

18/ See *Escondido Mutual Water Co. v. LaJolla Band of Mission Indians*, 466 U.S. 765 (1984).

19/ 16 U.S.C. • 1536(a).

Project No. 1930-014

-10-

continued project operation and maintenance, with staff's recommended mitigation measures, including the requirement to prepare a biological evaluation prior to any land-disturbing activities (Forest Service Condition 11), would not affect these species. 20/ By letter dated October 1, 1997, FWS determined that the project is not likely to adversely affect any federally listed species and that no further action pursuant to the Endangered Species Act of 1973, as amended, is necessary. I concur.

VII. RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES

Section 10(j)(1) of the FPA 21/ requires the Commission, when issuing a license, to include license conditions, based on recommendations of federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act, 22/ to "adequately and equitably protect, mitigate damages to, and enhance, fish and wildlife (including related spawning grounds and habitat)" affected by the project. No agency submitted conditions pursuant to Section 10(j) of the FPA.

VIII. WILD AND SCENIC RIVER SYSTEM

The Wild and Scenic Rivers Act 23/ prohibits the Commission from licensing any hydroelectric project that is on or directly affects rivers Congress has designated for either inclusion in the Wild and Scenic Rivers System or study for potential inclusion in the System (study rivers). The Forest Service has determined that the lower Kern River, from Isabella dam to the canyon mouth above Bakersfield, meets Wild and Scenic eligibility requirements and, if found suitable, would be an appropriate addition to the National River System. The reach between Democrat dam and the National Forest boundary (Segment 3), where the project is located, was determined to be eligible as a Recreation River because of its remarkable wildlife, scenic, and recreation values.

The criteria for Recreation River classification includes existing impoundments and diversions, as long as the waterway remains generally natural and riverine in appearance. Staff concluded that none of the alternatives analyzed in this EA include proposals, such as constructing new impoundments or

20/ See EA section V.C.4.

21/ 16 U.S.C. • 803(j)(1).

22/ 16 U.S.C. • 661 et seq.

23/ 16 U.S.C. •• 1271-87.

Project No. 1930-014

-11-

reducing flows in the bypassed reach, that would detract from the current condition and the outstanding remarkable values on which the Forest Service determined the eligibility of the lower Kern River. Thus, issuing a new license for the project would not affect the river's eligibility for Wild and Scenic River status, nor, would additional measures be necessary to mitigate effects on outstanding remarkable values. I concur.

IX. INTERVENOR'S ISSUES

A. Whitewater Recreation

The record in this proceeding contains extensive information, comments, analysis, and discussion of whitewater recreation, specifically whitewater boating flows, access improvements, and flow information concerns. 24/ As stated in the EA, the Kern River is a regionally important recreation resource because it provides high quality whitewater opportunities for residents of Southern California and the San Joaquin Valley. It is also important to the local economy because of the tourist spending and jobs associated with boating opportunities.

Friends of the River and American Whitewater Affiliation (Friends) recommend that Edison provide a set schedule of 14 days of augmented flows of 1,250 to 2,350 cfs on weekends, holidays, and special recreation dates from June through August during the hours of 10 a.m. to 7 p.m. The Forest Service doesn't recommend any whitewater flow augmentation. No other agency has recommended whitewater boating flows or access improvements. In their comments on the draft EA, the North Kern Water Storage District (Kern Water Storage District) strongly opposed any re-regulation of flows to accommodate recreationists (letter from C.H. Williams, Engineer-Manager, North Kern Water Storage District, Bakersfield, California, August 21, 1997).

Edison doesn't propose any additional flow for whitewater boating. Edison believes that sufficient flows are available. Edison also contends that because it has control over a relatively small amount of water compared to the large releases from Lake Isabella, the resulting unpredictability of releases from Lake Isabella would mean that augmented flows would be set on a very short time scale, and would not be useful for boaters planning a trip.

In the EA, staff concluded from its review of 20 years of flow records and the results of a whitewater boating study that was conducted with the participation and review of Friends and

24/ See, EA at 52-60, 68, 69, 74-76, and attached letters of comment and responses thereto in Appendices B and C.

Project No. 1930-014

-12-

others, that ample flows for whitewater boating are available for much of the boating season, that present use of the project bypassed reach is low even when ample flows for whitewater boating are available, and that increasing flows for whitewater boating could reduce the recreational experiences for other activities such as swimming, fishing, and recreational mining. 25/

In their April 30, 1998, comments on the FEA, FOR says it recognizes that the Kern River No. 1 license cannot mandate Lake Isabella releases, then goes on to reiterate its recommendation of adding days of "scheduled augmented optimum flows". As staff acknowledge in the final EA, the licensee can only augment flows by 412 cfs to reach a desired flow level when available from Lake Isabella releases. 26/ If the licensee cannot control the releases that produce the desired flows at the project diversion, it has a very limited ability to "schedule" optimum flows in the project bypassed reach. Even if Edison scheduled specific days when it would shut down the Project and direct the entire 412 cfs project flow to the bypassed reach, this would not insure the occurrence of optimum whitewater flows in the range of 700 to 1,250 cfs. The licensee has no way to predict in advance what the flow released from Isabella will be and, therefore, cannot be required to "schedule" specific flows in advance. FOR says that

25/ As stated by staff in the EA at 55-57:

We believe that the available data indicates that current flow conditions allow for a reasonable balance for all the recreation users. On average, suitable and optimum whitewater boating conditions are available 64 (59 days) and 55 (51 days) percent of the time between June and August, respectively; and 48 (73 days) and 41 (62 days) percent of the time between June and October, respectively. Flows of 1,250 cfs, are available, on average, 11 of the 14 days recommended by FOR/AWA, or about 45 percent of all weekend days during June through August. In contrast, flows (100-300 cfs) that might be desired by other recreational users are present about 9 percent (8 days) and 10 percent (15 days) of the time between June and August and June and October, respectively. Given the existing annual use of about 25 to 100 visits and the availability of about 120 usable days a year (WRC-Environmental 1996), it appears that existing whitewater boating use is not significantly limited or constrained by the project's present operation.

26/ See EA, Appendix B at B-10 and B-11.

Project No. 1930-014

-13-

if additional flows are not provided, whitewater boating cannot develop further on the bypassed reach. From the analysis in the EA, it is apparent that, despite the frequent occurrence of suitable whitewater boating flows under existing conditions, whitewater boating use is minimal and not presently constrained by insufficient flows.

Based on my review of the facts in this case, I agree with staff that changes in operation to provide additional whitewater boating flows are not warranted at this time.

Staff, however, also acknowledge that whitewater boating use may increase in the future as knowledge of the resource becomes more widely known and as access is improved. 27/ Article 410 requires Edison to provide a mechanism to inform the public of flow levels in the bypassed reach. This will help all users plan their activities in the area.

To further improve recreation in the project reach and to help offset project effects on available flows, Article 411 requires Edison to prepare an access improvement plan that would assess and implement, where feasible, safe access improvements in the project bypassed reach. I agree with staff that specific recommendations for access improvements cannot be made at this time because of various unknown factors that would influence such a decision, including traffic and pedestrian safety, protected species, competing interests of various users, Forest Service land management objectives, and cost. Developing the access improvement plan will provide a means to base a more informed decision on safe and effective access improvements that will benefit the various users and the resources.

In their April 22, 1998, letter, Edison argues that access improvements are not appropriate as a flow-related mitigation measure because no evidence has been provided regarding the severity of project effects on recreation experiences. Edison also argues that to consider access improvements as an enhancement measure is inappropriate in the context of electric utility deregulation in California because such measures may make the project uneconomic and uncompetitive.

- 27/ The whitewater boating study attributed the low use to the previous belief by boaters that the Forest Service closed this portion of the river to boating, to the level of expertise needed to run many of the rapids, and to limited access. Friends believe that as the word of this resource continues to spread and as the river becomes easier to use (permits, access and river descriptions), its usage will likewise increase (letter from Richard Bowers, AWA, August 30, 1996).

Project No. 1930-014

-14-

The Commission must fully evaluate the recreational resources of all projects under federal license and the ultimate development of these resources, consistent with the needs of the area. The Commission expects licensees to develop suitable public recreational facilities upon project lands and waters and to make provisions for adequate public access to such project facilities and waters. 28/ A desire for better access has been expressed by numerous whitewater boating enthusiasts. 29/ Staff found that access improvements would have definite value in meeting recreation needs in the project reach, if such facilities can be provided in a manner that ensures public safety and appropriate land stewardship. Staff determined that access problems created by topography and the sinuosity of Highway 178, which parallels the project bypassed reach, may be limiting use of the project bypassed reach by whitewater boaters, that other recreational users would also benefit from such access improvements, and that such improvements would help offset effects of project altered flows. 30/ I believe there is sufficient reason to examine how access might be improved to enhance recreational opportunities in the bypassed reach. Article 411 requires Edison to evaluate potential opportunities to improve access. The Commission will carefully consider the costs of any future enhancements that may be recommended from the study before requiring their implementation. However, the specific cost to the project cannot be determined until we know what measures, if any, may be recommended and what options for cost sharing might be recommended. 31/

Article 409 requires Edison to file a plan to monitor recreation use in the project bypassed reach for five years to

28/ 18 CFR Section 2.7.

29/ Several non-governmental organizations (FOR, American Whitewater Affiliation, and others) and over 53 individual commented on the need for access improvements (See EA, Appendices A and B).

30/ See EA at 58 and 59.

31/ In their April 30, 1998, letter commenting on the FEA, FOR says an "implementing mechanism" is needed for any new environmental measures that might be recommended as a result of post-licensing studies. We believe a suitable implementing mechanism is available through the license amendment process and through the specific reservation of authority in Articles 403 (smallmouth bass monitoring study), 409 (recreation monitoring study), and 411 (access improvement study) to require implementation of any recommended measures, as appropriate, that are developed from the above referenced studies.

Project No. 1930-014

-15-

determine if future demands for river recreation warrant operational modifications to protect and enhance recreational values. The article also requires Edison to evaluate the effects of any recommended changes in operation that may result from the study on other recreation uses, irrigation, and energy generation. Other provisions in the article require Edison to coordinate this study, to the extent practicable, with the relicensing efforts for Edison's Borel Project (FERC No. 382) and Pacific Gas and Electric Company's (PG&E) Kern Canyon Project (FERC NO. 178). 32/ With this information and any bypassed reach access improvements, staff will be in a much better position to determine the long-term need and effects of whitewater boating in much of the Kern Canyon below Lake Isabella. Moreover staff will be able to provide, if needed, a coordinated recommendation for changes in operation at all three projects that would have greater benefits for the resources throughout much of the canyon.

Edison also recommends that access improvements be considered, if at all, after the recreation use monitoring study is completed because the study should provide a better indication of whether or not access enhancements are justified and for what purposes. As discussed earlier, sufficient information exists to warrant looking at access improvements now. Moreover, such improvements may influence the recreational use that would be monitored. Therefore, I am requiring that the access improvement plan be filed within one year of license issuance.

In summary, I disagree with the Friends' proposed whitewater augmentation flows because these flows would maximize benefits to whitewater boating at the expense of all other developmental (e.g., power generation) and non-developmental (e.g., other recreation uses) values. Our mandate under the FPA is to balance all competing interests. I believe the new license by requiring the recreation monitoring study, access improvement plan, and flow information service does so. Finally, I reject the Intervenor's argument that the EA is inadequate because staff failed to quantify the monetary benefits of whitewater boating. In their April 30, 1998, comments on the final EA, FOR reiterate their concern that the final EA underestimates the value of whitewater recreation and overestimates the value of lost generation. FOR suggest that a midpoint value between FOR and

32/ Edison requested in their April 22, 1998, letter, that the license reflect that Edison cannot compel PG&E to either conduct their own or participate in the required recreation monitoring. I agree and article 409 requires Edison to coordinate to the extent practicable. A concerted effort, however, would likely be prudent for both parties in terms of cost savings and efficiency in conducting the studies and gathering relevant information affecting both licensee's projects.

Project No. 1930-014

-16-

WRC-Environmental estimates of an incremental annual value of a whitewater boating from augmented flows (\$67,425 when flows of 750 cfs are met and \$49,155 when flows of 950 cfs are met) should be used in the Commission's summary calculation of economic costs and benefits of continued operation of the project, rather than ignoring the benefit estimates. Staff didn't ignore the economic value of boating. However, the Commission is not required to assign dollar values to each benefit and impact, and I do not believe that it is necessary to do so in this case because it would not change my decision. 33/

33/ As stated by the Commission staff in response to comments on the draft EA at page B-38 of the EA:

...The Commission's goal is not to maximize one single aspect of the resource to the detriment of all others, but to balance all uses in the most comprehensive fashion, consistent with our mandate in Section 10(a)(1) of the FPA.

See also staff response to comments at page B-13.

Environmental valuation is a controversial and difficult analysis to conduct. Our analysis is not based on assigning dollar values to all uses of the waterway, nor do we agree that such an approach is feasible and appropriate (see discussion in section V.C.8 of the EA). The monetary worth of a resource use is only one measure of value and should not be the singular determinant in balancing competing uses in the public interest.

We further note that the Commission has determined that it cannot estimate future cost or price trends for the value of energy with any certainty over the 30- to 50-year term of a license. Thus, the economic analyses are based on a current cost approach to comparing the costs and values of various alternatives. Our ability to forecast recreation demands and potential associated economic benefits is similarly constrained. In the face of this uncertainty, we have made what we think is a reasonable balance of competing interests.

In any case, we didn't not recommend augmenting flows for whitewater based solely on the cost of lost power. As we explain in section VII, Comprehensive Development and Recommended Alternative, the available data

(continued...)

Project No. 1930-014

-17-

B. Minimum Flow

Edison proposes to continue to release a minimum instream flow of 50 cubic feet per second (cfs) or inflow, whichever is less, in the bypassed reach between June 1 and September 30 of each year, and a minimum instream flow of 15 cfs or inflow from October 1 through May 31 of each year. 34/ Forest Service Condition No. 4 requires releasing the proposed minimum instream flows for the protection of fishery resources. Article 401 requires that the above minimum flows be provided unless temporary modifications are required by operational emergencies.

In their August 27, 1997, comments on the draft EA, FOR 35/ argue that no studies have been conducted to determine whether the recommended flows are sufficient to support the smallmouth bass fishery and that such a study should be required of any new license issued. Similar comments were provided by various individuals commenting on the draft EA. 36/

The required flows are based on the results of an Instream Flow Incremental Methodology (IFIM) study conducted in consultation with California Department of Fish and Game. 37/

(...continued)

indicates that current flow conditions allow for a reasonable balance of all recreation uses and that whitewater boating use is not significantly constrained by the project's present operation. Augmenting flows could conflict with other recreation uses.

34/ By Order Requiring Minimum Flow Release, dated February 14, 1991, Edison was required to release the above minimum flows (54 FERC • 62,105).

35/ These were joint comments of American Whitewater, FOR, Kern River Outfitters, Kern Valley Chamber of Commerce, Kern Valley Community Consensus Council, Sierra Club Kern-Kaweah Chapter. See EA, Appendix B at B-12.

36/ See EA, Appendix C.

37/ Neither the California Department of Fish and Game nor the United States Fish and Wildlife Service recommended any minimum flows in response to the Commission's Notice of Ready for Environmental Analysis, issued September 11, 1996. The California Department of Fish and Game, in a letter to Edison dated October 5, 1990, stated that 50 cfs from June through September would maintain adequate spatial habitat for adult trout, and that 15 cfs during October through May would maintain adequate habitat for all life stages of

(continued...)

Project No. 1930-014

-18-

The IFIM study showed that 83 percent-of-maximum habitat (expressed as weighted useable area or WUA) for adult rainbow trout is available at 50 cfs, and a minimum of 94 percent-of-maximum WUA for the adult, juvenile, and fry life stages of smallmouth bass is available at 15 cfs. Commission staff believe that these flows should be adequate to protect fishery resources in the bypassed reach, but recognize that the relationship between WUA and fish production is theoretical. 38/ Staff, therefore, recommend that Edison develop a plan to study the adequacy of the minimum flows for protecting and enhancing the smallmouth bass fishery in the project's bypassed reach. Article 403 so requires.

In their April 22, 1998, comments on the final EA, Edison states that the recommended smallmouth bass study is inappropriate because the study would not be meaningful unless the population of smallmouth bass is controlled by habitat-limited factors that are in turn controlled by Edison's required instream flows. Edison believes that large flow fluctuations released from Lake Isabella to meet irrigation demands is the most likely factor, among many recognized in the final EA, affecting smallmouth populations. Edison believes it is unreasonable and unduly burdensome to require it to monitor impacts outside of its control and for which it could not take any action to remedy the problems stemming from the management actions of other parties.

Staff recognize that there are factors affecting the smallmouth population that are not directly attributable to project operation. 39/ However, minimum instream flows are a contributing factor. Staff believe that a monitoring plan to evaluate the effectiveness of the required minimum instream flows in meeting its desired goal of protecting the fishery in the bypassed reach is reasonable and prudent. Such an effort, the level of which would be determined in consultation with the relevant resource management agencies and Edison, would also provide the Commission, the licensee, and the resource agencies a means to adapt the license to changing conditions and needs of the resource and of energy generation. I concur.

Friends also contend that to be consistent with the Sequoia National Forest Land and Resource Management Plan (Forest Plan) no more than 50 percent of the flow in the project bypassed reach should be diverted in order to protect the Kern's fishery,

37/ (...continued)
smallmouth bass.

38/ See Section V.2.b of the EA.

39/ See Section V.2.b of the EA.

Project No. 1930-014

-19-

riparian habitat, and endangered species. I reject Friends' argument because such minimum flows are not necessary for protecting these resources, and information provided by the Forest Service indicates that this guideline applies to other activities such as diversions for drafting water for dust abatement. Moreover, the Kern River No. 1 Project was a recognized and accepted use when the Forest Plan was drafted.

C. Lower Kern Trust Fund

Friends recommend that Edison be required to establish a mitigation fund based on a percentage of Edison's projected revenues over the life of the license, to account for its "free" use of this public waterway over the last 89 years. The fund would be initially funded by Edison at a level of \$500,000, with annual supplements provided by Edison and public subscription. The fund would be managed by a Lower Kern Advisory Board made up of various stakeholders on the Lower Kern including Edison, Forest Service, AWA, FOR, the Kernville and Lake Isabella Chamber of Commerce, KRA, the Kern River Flyfishers, the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the Bureau of Land Management. The funds would be dedicated to the acquisition of riparian land and water rights, improving public access, and recreational use of the Lower Kern.

The Commission disagrees with the idea that there must be mitigation for impacts of original project construction, but will consider alternatives for enhancing resources and mitigating ongoing impacts. 40/ Staff concluded in the EA that project operation has little effect on riparian vegetation. 41/ Staff recommends and this order requires measures to protect and enhance the fishery resources (minimum flows, Article 401; smallmouth bass study, Article 403), recreation access (access improvement study, Article 411), and recreation use (recreation monitoring, Article 409; flow information service, Article 410; and developed recreation enhancements, Forest Service Condition No. 5) in the Lower Kern River. The stakeholders that would be included in Friends' Advisory Board are to be consulted in developing the studies and any recommended measures. I, therefore, reject the need for a mitigation fund.

40/ The Commission's policy on baseline is found in the two following orders for the Cushman Project (FERC No. 460): (1) Declaratory order on nature of proceeding on application for a subsequent license after a minor part license expires, 67 FERC •61,152 (May 4, 1994); and (2) Order granting intervention and denying rehearing, 71 FERC •61,381 (June 22, 1995).

41/ See EA at page 33.

Project No. 1930-014

-20-

D. Decommissioning and Retirement

Friends recommend that the Commission fully investigate the potential benefits of decommissioning the Kern River No. 1 Project because "Edison needs neither the capacity nor energy generated" and because it would benefit the fishery, riparian habitat, and whitewater recreation. Staff evaluated the decommissioning alternative in the EA. 42/ The record shows there is a need for the project, and that the minimum instream flows and monitoring studies will protect the fishery resources affected by the project. 43/ Staff believe that the incremental environmental improvement associated with decommissioning is small for most resources, 44/ and may even be negative for some uses and resources (angling and wading, for example) when compared to continued operation with staff-recommended mitigation and enhancement measures. 45/ No resource agency has recommended decommissioning the project. I do not believe that decommissioning the Kern River No. 1 Project would be in the public interest at this time.

Friends also recommended that a decommissioning fund be established. They believe that such a burden on Edison would be modest and would be fairer than a system that arbitrarily imposes the costs of decommissioning on future rate payers.

42/ Staff evaluated the alternative of decommissioning without removal of project structures for each resource throughout the EA. Staff considered but eliminated from detailed study the alternative of decommissioning with dam removal because no participant suggested that this alternative would be appropriate and because the potential benefits would also be obtained without dam removal, except for unobstructed fish movement and whitewater boating. See EA at 8-9.

43/ See Section III.E, and IX.B, *infra*.

44/ Edison believes that final EA failed to recognize the fact that water rights issues complicate the perceived benefits of decommissioning because water not released by the Watermaster to fulfill Edison's senior water rights might not be released from Lake Isabella. Consequently, decommissioning would not necessarily result in the restoration of 412 cfs of flow to the diverted stretch of the river. Edison's opinion is noted. The final EA provides an analysis of the benefits that would result from not diverting a maximum of 412 cfs (see EA at 9); staff did not intend to suggest that decommissioning would return a maximum of 412 cfs to the diverted reach.

45/ See Response to Comments at B-15.

Project No. 1930-014

-21-

The Commission has discussed this issue recently in a number of cases and in our December 14, 1994 Policy Statement on Project Decommissioning at Relicensing. 46/ The record does not reveal any reasons to question either the project's future viability or usefulness at the end of the license term, or Edison's ability to finance decommissioning at a future time. Therefore, a decommissioning fund is not warranted.

X. OTHER ISSUES

A. Sediment Monitoring Program

In 1996, Edison began a two-year study to monitor sediment deposition in pools in the project bypassed reach to address sediment management concerns raised by California Department of Fish and Game during scoping. Article 402 requires Edison to file the results of the monitoring study and to adjust their sediment releasing operations, if necessary, based on the monitoring results and consultation with state and federal resource agencies.

B. Monitoring Leaking Flumes to Protect Wildlife Habitat

Water leaking from and splashing over the sides of the project flumes enhances small pockets of riparian vegetation and wildlife habitat. Edison proposes to annually monitor these leaking flumes and to consult with the Forest Service before taking measures that would reduce the leakage. Article 405 requires Edison to consult with the Forest Service to determine what measures might be taken to sustain these habitats if repairs to the flumes are required and to implement the agreed upon measures.

C. Cultural Resources

Edison proposes to implement protective measures outlined in its cultural resources management plan to avoid and mitigate impacts to the historical integrity of the Kern River No. 1 Historic District. Article 407 requires Edison to implement the cultural resources management plan. If additional archeological or historic sites are discovered during project operation, Article 408 requires preparation of a site-specific plan to avoid or mitigate impacts to these sites.

46/ See, 60 Fed. Reg. 339, 346 (Jan 4, 1995); III FERC Stats. & Regs., Regs. Preambles, 31,011 at pp. 31,232-33 (Dec. 14, 1994). Cf. Wisconsin Electric Power Company, 73 FERC 61,346 (1995); Menominee Company, et al., 74 FERC 61,023 (1996); Southern California Edison, 77 FERC 61,313 (1996).

Project No. 1930-014

-22-

D. Use and Occupancy of Project Lands and Waters

Requiring a licensee to obtain prior Commission approval for every use or occupancy of project land would be unduly burdensome. Article 412 allows Edison to grant permission, without prior Commission approval, for the use and occupancy of project lands for such minor activities as landscape plantings. Such uses must be consistent with the purpose of protecting and enhancing the scenic, recreational, and environmental values of the project. To further protect the visual quality of the canyon, Article 406 requires Edison to consult with the Forest Service prior to painting project facilities and to select colors that reduce the contrast of the project facilities with the surrounding environment.

E. Administrative Conditions

The Commission collects annual charges from licensees for the administration of the FPA and for recompensing the United States for the use, occupancy and enjoyment of its lands. Article 201 provides for the collection of such funds. Article 202 requires the filing of aperture cards for project drawings. Article 203 requires the establishment and maintenance of amortization reserve account. Article 204 requires Edison to reimburse the owner of a storage reservoir or other headwater improvement project that directly benefits the licensee's project. The benefits will be assessed in accordance with Subpart B of the Commission's regulations.

XI. COMPREHENSIVE PLANS

Section 10(a)(2)(A) of the FPA 47/ requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving waterways affected by the project. Pursuant to this section, federal and state agencies filed 35 comprehensive plans that address various resources in California. Of these, staff identified five plans relevant to the Kern River No. 1 Project. 48/ No conflicts with these comprehensive plans were

47/ 16 U.S.C. • 803(a)(2)(A).

48/ (1) Forest Service. 1988. Sequoia National Forest Land and Resource Management Plan, Department of Agriculture, Porterville, California. March 1988, as amended by the Sequoia National Forest Mediated and Management Plan 1990 Settlement Agreement. July 1990. (2) California Department of Water Resources. 1983. The California water plan: projected use and available water supplies to 2010. Bulletin 160-83. Sacramento, California. December 1983.

(continued...)

Project No. 1930-014

-23-

found for this project.

Two other plans, which are not designated as qualifying comprehensive plans, address water quality resource concerns for the area. 49/ No conflicts with these two plans were found for this project.

XII. COMPREHENSIVE DEVELOPMENT

Sections 4(e) and 10(a)(1) of the FPA 50/ require the Commission, in acting on applications for license, to give equal consideration to the power development purposes and to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of fish and wildlife, the protection of recreational opportunities, and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgement will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for beneficial public uses. The decision to license this project, and the conditions included herein, reflects such consideration.

The EA analyzed the effects associated with the issuance of a new license for the Kern River No. 1 Project, and the EA recommends a variety of measures to protect and enhance the environmental resources, which, as discussed above, I adopt. I conclude that issuance of a new license for the Kern River No. 1 Project will not constitute a major federal action significantly affecting the quality of the human environment.

In determining whether a proposed project will be best adapted to a comprehensive plan for developing a waterway for beneficial public purposes, pursuant to Section 10(a)(1) of the

(...continued)

268 pp. and attachments. (3) California Department of Water Resources. 1994. California water plan update. Bulletin 160-93. Sacramento, California. October 1994. (4) California State Water Resources Control Board. 1975. Water quality control plan report. Sacramento, California. (5) California - The Resources Agency. Department of Parks and Recreation. 1983. Recreation needs in California. Sacramento, California. March 1983. 39 pp. and appendices.

49/ (1) California Regional Water Quality Control Board, Central Valley Region (CRWQCB). 1995. Water quality control plan for the Tulare Lake Basin. Second Edition - 1995. (2) State Water Resources Control Board (SWRCB). 1993. California inland surface waters plan. 93-4 WQ. May 1993.

50/ 16 U.S.C. •• 797(e) and 803(a)(1), respectively.

Project No. 1930-014

-24-

FPA, the Commission considers a number of public interest factors, including the economic benefits of project power.

Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in Mead Corp., 51/ the Commission employs an analysis that uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

In making these determinations, the Commission considers the project power benefits both with the applicant's mitigative proposals and with the Commission's mitigative proposals. Based on current economic conditions, without future escalation or inflation, the Kern River No. 1 Project, if licensed as Edison proposes, would provide a dependable capacity of 4.2 MW and produce an average of about 179,000 MWh of energy annually, at an annual cost of about \$1,310,000 (7.32 mills/kWh). 52/ This is about \$30,000 more than the current annual cost of providing power under the No-Action alternative, which is estimated to be about \$1,279,000 (7.14 mills/kWh), for the same dependable capacity and annual generation. If licensed with the mandatory Forest Service and 401 water quality conditions and staff modifications adopted herein, the proposed project would provide the same capacity and generation at an annual cost of about \$1,369,000 (7.65 mills/kWh), or about \$90,000 more than the No-Action alternative.

The current annual value of the project's power would be \$3,945,000 (22.04 mills/kWh) for all of the above alternatives, since they all provide the same amount of capacity and energy. 53/ To determine whether the project is currently

51/ 72 FERC • 61,027 (1995).

52/ In their April 22, 1998, letter, Edison says that the cost estimate include in Section VII.3 of the final EA (page 75) does not include the \$18,000 cost of preparing the recreation monitoring plan. Staff did include this cost and refers Edison to page 74 of the EA: "We believe the cost of the monitoring plan, estimated to be \$20,000 a year for a period of 5 years plus \$18,000 at the end of the five years for a report..."

53/ Staff estimated the energy and capacity values based on the
(continued...)

Project No. 1930-014

-25-

economically beneficial, the project's cost is subtracted from the value of the project's power. I find the project as licensed by the Commission would be economically beneficial, costing about \$2,577,000 (14.39 mills/kWh) less than the current cost of alternative power.

Based upon my review of the agency and public comments filed on this project, including my review of staff's evaluation of the environmental and economic effects of the proposed project and its alternatives, and my independent analysis pursuant to Sections 4(e) and 10(a) of the FPA, I find that the Kern River No. 1 Project, with the mitigative and enhancement measures included herein, will be best adapted to the comprehensive development of the North Fork Kern River for beneficial public uses.

XIII. LICENSE TERM

Section 15(e) of the FPA 54/ specifies that any license issued shall be for a term that the Commission determines to be in the public interest, but not less than 30 years, nor more than 50 years from the date on which the license is issued. Commission policy is to grant 30-year terms for projects with little or no redevelopment, new construction, new capacity, or environmental mitigative and enhancement measures, 40-year terms for projects with a moderate amount thereof, and 50-year terms for projects with an extensive amount thereof. The environmental

(...continued)

cost of combined cycle combustion turbines and regional natural gas fuel cost and alternative capacity cost using a heat rate of 10,000 Btu/kWh.

In their April 30, 1998, comments, FOR says that the power value used for the EA is too high and should be revised to reflect spot market prices and a much lower capacity value. We acknowledge FOR's comments, but do not believe that spot market prices which vary widely over short time periods is a good basis for appraising the replacement value of a constructed hydropower project. Staff's method of appraisal, which is based on replacement value using combined cycle combustion turbine technology, is a valid basis for our decision-making purposes on this project. Using a somewhat lower power value would not change our decision, since other equally important considerations, as discussed in the final EA and elsewhere in this order, contribute to our decision not to require the licensee to augment flows in the bypassed reach for whitewater boating purposes at this time.

54/ 16 U.S.C. • 808(e).

Project No. 1930-014

-26-

mitigation and enhancement costs of the new license for the Kern River No. 1 Project warrant a term of 30 years, effective the first day of the month in which this license is issued.

XIV. SUMMARY

Background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment are contained in the EA.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if operated and maintained in accordance with the requirements of this license.

The Commission orders:

(A) This license is issued to Southern California Edison Company (Licensee), for a period of 30 years, effective the first day of the month in which this order is issued, to operate and maintain the Kern River No. 1 Hydroelectric Project. This license is subject to the terms and conditions of the FPA, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Federal Power Act.

(B) The project consists of:

(1) All lands, to the extent of the Licensee's interests in those lands, enclosed by the project boundary shown by exhibit G:

Exhibit G Drawing	FERC No. 1930-	Showing
5233859	47	Diversion Dam Reservoir
5233860	48	Diversion Dam Access Road and Water Conduit
5233861	49	Water Conduit
5233862	50	Water Conduit
5233863	51	Water Conduit
5233864	52	Water Conduit
5233865	53	Water Conduit
5233866	54	Powerhouse and Appurtenances
5234617	55	Transmission Line
5234618	56	Overhead Profile Along Conduit

(2) Project works consisting of: (1) a 29-foot-high, 204-foot-long, concrete overflow diversion dam (Democrat dam) with crest elevation at 1912.7 feet mean sea level, impounding a 27-

Project No. 1930-014

-27-

acre pond; (2) a gated intake structure with trash racks at the left abutment; (3) a water conduit consisting of 42,884 feet of tunnel; a 104-foot-long, 20-foot-wide, concrete sandbox at the tunnel exit; 390 feet of rectangular flume; 904 feet of Lennon flume on steel structure; and 612 feet of arched-concrete conduit; (4) a 45-foot-long, 33-foot-wide, 11-foot-deep forebay; (5) a 1,693-foot-long buried penstock, varying in diameter from 108 inches at the intake to 27 inches at the end of the header at the powerhouse; (6) a 170-foot-long, 71-foot-wide, reinforced concrete powerhouse containing four Pelton-type generating units with a total installed capacity of 26.3 MW; (7) a rectangular tailrace that discharges flows over a weir section into the Kern River; (8) a 1.9-mile-long, 66-kilovolt transmission line tying into Edison's transmission system; and (9) appurtenant facilities

The project works generally described above are more specifically shown and described by the following exhibits that also form a part of the application for license and that are designed and described as:

Exhibit A: Description of the Project

Section	Title
A(1)	General Configuration
A(2)	Storage Capacity
A(3)	Turbines and Generators
A(4)	Transmission Lines
A(5)	Mechanical, Electrical, and Transmission Equipment
A(6)	Lands of the United States within Project Boundary

Exhibit F: Project Drawings

Exhibit F Drawing	FERC No. 2290-	Showing
5232260	57	Diversion Dam
5232261	58	Intake Trash Racks
5232262	59	Intake Gates
5232263	60	Intake and Drainage Tunnel Inlets
5232264	61	Gate at Lower End of Drainage Tunnel
5232265	62	Sand Box at Head of Flume No. 1
5232266	63	Concrete Transition for Ends of Flume No. 1
5232267	64	Profile of Flume No. 1
5232268	65	Standard Steel Bents for Flume No. 1
5232269	66	Covered Concrete Conduit No. 3
5232270	67	Flume No. 2 Cow Creek

Project No. 1930-014

-28-

5232271	68	Flume No. 2 Cow Creek Gaging Station
5232272	69	Typical Flume Details
5232274	70	Flume No. 4 Lucas Creek
5232275	71	Flume No. 5 Dougherty Creek
5232276	72	Flume No. 6 Starks Creek
5232277	73	Forebay and Tunnel Sections
5232278	74	Penstock
5232279	75	Steel Pipe Spillway from Forebay
5232280	76	Plan of Powerhouse and 66-kV rack
5232281	77	Section of Powerhouse

(3) All of the structures, fixtures, equipment, or facilities used to operate or maintain the project and located within the project boundary, all portable property that may be employed in connection with the project, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) Exhibits A, F, and G as designated in ordering paragraph (B) above are approved and made part of the license.

(D) This license is subject to the conditions submitted by the Forest Service under Section 4(e) of the FPA, as those conditions are set forth in Appendix B to this order. The Commission reserves the right to amend this ordering paragraph and Appendix B to this order as appropriate in light of the Forest Service's ultimate disposition of any appeals of the Section 4(e) conditions that might arise, and to make whatever additional conforming changes in the license may be necessitated by any such amendment.

(E) This license is subject to the articles set forth in Form L-1 (October 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting Lands of the United States," 54 FPC 1792, 1799 (October 1975), and the following additional articles:

Article 201. The licensee shall pay the United States the following annual charges as determined by the Commission, effective the first day of the month in which this license is issued for the purposes of:

- (1) Reimbursing the United States for the costs of administering Part I of the FPA. The authorized installed capacity for that purpose is 26,300 kilowatts.

Project No. 1930-014

-29-

- (2) Recompensing the United States for the use, occupancy, and enjoyment of 116.69 acres of its lands.
- (3) Recompensing the United States for the use, occupancy, and enjoyment of 23.03 acres of its lands for transmission line right-of-way.

Article 202. Within 45 days of the issuance of the license, the licensee shall file three complete original sets of aperture cards of all the approved drawings, and a fourth, partial original set of aperture cards showing only the Exhibit G drawings. The sets must be reproduced on silver or gelatin 35 mm microfilm. All microfilm must be mounted on type D (3-1/4" x 7-3/8") aperture cards. The licensee shall submit two copies of Form FERC-587 with the aperture cards.

Prior to microfilming, the FERC Drawing Number shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number must be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (e.g., F-1, G-1, etc.), Drawing Title, and date of issuance of this license must be typed on the upper left corner of each aperture card.

Two complete original sets of aperture cards, and one copy of the Form FERC-587, must be filed with the Secretary of the Commission, ATTN.: Division of Licensing and Compliance/ERB. A third complete set of aperture cards shall be filed with the Commission's San Francisco Regional Office. The fourth partial set of aperture cards (Exhibit G only) and the remaining copy of Form FERC-587 shall be filed with the Bureau of Land Management Office at the following address:

State Director
California State Office
Bureau of Land Management
Branch of Adjudication and Records (CA-943.5)
ATTN.: FERC Withdrawal Recordation
2135 Butano Drive
Sacramento, CA 95825-0451

Article 203. Pursuant to Section 10(d) of the FPA, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The licensee shall set aside in a project amortization reserve account at the end of each fiscal year one half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the licensee shall

Project No. 1930-014

-30-

deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensee shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensee shall maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves shall be calculated annually based on current capital ratios developed from an average of thirteen monthly balances of amounts properly includible in the licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rate for such ratios shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall be the interest rate on ten-year government bonds (reported as the Treasury Department's ten-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 204. If the licensee's project was directly benefitted by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the licensee shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license.

Article 401. The licensee shall release from the Democrat dam into the Kern River the continuous minimum flow required by United States Forest Service Condition No. 4 in Appendix B, or inflow to the project, whichever is less, for the protection of fishery resources in the bypassed reach of the Kern River.

This flow may be temporarily modified if required by operation emergencies beyond the control of the licensee, and for short periods upon agreement among the licensee, the Forest Service, and the California Department of Fish and Game. If the flow is so modified, the licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

Article 402. Within six months of license issuance, the licensee shall file for Commission approval the results of the 2-year sediment monitoring program that it began in 1996. The filing also shall contain a sediment management plan for implementing any necessary adjustments to the licensee's sediment releasing operations based on the monitoring results.

Project No. 1930-014

-31-

The sediment management plan shall include a schedule for: implementation of any additional monitoring; implementation of any changes in operation to manage sediment releases in the bypassed reach; consultation with the appropriate federal and state agencies; and filing the results, agency comments, and licensee's response to agency comments with the Commission.

The licensee shall prepare the plan after consultation with the California Department of Fish and Game, Forest Service, and State Water Resources Control Board. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed sediment management plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 403. Within 6 months from the date of issuance of this license, the licensee shall file for Commission approval a plan to study the adequacy of the minimum flows, required by Forest Service Condition No. 4, for protecting and enhancing the smallmouth bass fishery in the project bypassed reach.

The plan shall include a schedule for: implementation of the study plan; consultation with the appropriate federal and state agencies; and filing the results, agency comments, and licensee's response to agency comments with the Commission.

The licensee shall prepare the plan after consultation with the California Department of Fish and Game and the Forest Service. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed study plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Project No. 1930-014

-32-

Authority is reserved to the Commission to modify the minimum flows required by article 404 if the study results show that flow modifications are warranted.

Article 404. Within 3 months from the date of issuance of this license, the licensee shall file for Commission approval a schedule for conducting the "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan", submitted by the licensee on December 2, 1997, and required as a condition of the water quality certification.

If the results of the temperature study indicate that changes in project structures or operations, including alternative flow releases, are necessary to achieve the state's temperature objective for protection of the COLD water beneficial use for the project section of the Kern River, the Commission may direct the licensee to modify project structures or operations.

Article 405. The licensee shall inspect the project flumes at least once each year to monitor the structural integrity of the leaking flumes. Prior to making any repairs that would reduce the existing leakage, which is providing micro-riparian habitats important to vegetation and wildlife, the licensee shall consult with the Forest Service and the Commission to determine what measures may be possible to continue to sustain the micro-riparian habitats created by the leaking flumes. The licensee shall implement the agreed to measures upon Commission approval.

The licensee may take whatever measures are necessary in an emergency to prevent a catastrophic failure of the flowline. If such emergency measures become necessary, the licensee shall notify the Forest Service and the Commission as soon as possible, but no later than 24 hours after each such incident.

Article 406. Prior to painting project facilities, the licensee shall consult with the United States Forest Service on the colors necessary to reduce the contrast of the project facilities with the surrounding environment.

Article 407. The licensee shall implement its cultural resources management plan contained in appendix E-9 of its license application for the Kern River No. 1 Water Power Project, FERC No. 1930, filed with the Commission on May 2, 1994, to avoid and mitigate impacts to the historical integrity of the Kern River No. 1 Historic District (District).

If modifications are proposed that will alter the historical integrity of the District, the licensee shall file a plan for mitigating impacts based on consultation with the California State Historic Preservation Officer and the Forest Service, for Commission approval. The Commission may require additional work and changes to the plan based on this filing. The licensee shall

Project No. 1930-014

-33-

not proceed with modifications until a plan for mitigation has been approved by the Commission and implemented.

Article 408. If archeological or historic sites are discovered during project construction or operation, the licensee shall: (1) consult with the California State Historic Preservation Officer (SHPO) and the Forest Service (FS) about the discovered sites; (2) prepare a site-specific plan, including a schedule, to evaluate the significance of the sites and to avoid or mitigate any impacts to sites found eligible for inclusion in the National Register of Historic Places; (3) base the site-specific plan on recommendations of the SHPO and the FS, and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; (4) file the site-specific plan for Commission approval, together with the written comments of the SHPO and the FS; and (5) take the necessary steps to protect the discovered archeological or historic sites from further impact until notified by the Commission that all of these requirements have been satisfied.

The Commission may require cultural resources surveys and changes to the site-specific plans based on the filings. The licensee shall not implement a cultural resources management plan or begin any land-clearing or land-disturbing activities in the vicinity of any discovered sites until informed by the Commission that the requirements of this article have been fulfilled.

Article 409. Within 9 months from the date of issuance of this license, the licensee shall file for Commission approval a plan to monitor recreation use in the project's bypassed reach for the purpose of determining whether future demands for river recreation in the project's bypassed reach warrant modifications to the project's operating scheme to protect and enhance recreational values of the Kern River. Recreational activities to be monitored, at a minimum, should include those activities directly influenced by river flows--whitewater boating, swimming, fishing, wading, recreational mining, etc. Monitoring should document, at a minimum, the numbers of people participating in each activity, flow levels during the survey, and the recreation experience achieved at those flow levels and the factors affecting that experience. The licensee shall coordinate, to the extent practicable, the monitoring study with the relicensing studies that will be conducted for the Borel (FERC Project No. 382) and Kern Canyon Projects (FERC Project No. 178) in order to provide a coordinated recommendation for all three projects that would benefit much of the lower Kern River affected by the three projects.

The monitoring plan shall include a description of the methods to be employed, the objectives of the monitoring study, the parameters to be measured, and a monitoring schedule.

Project No. 1930-014

-34-

Monitoring shall be conducted every year for 5 years and at the end of the 5-year period the licensee shall file a report with the Commission that includes, at a minimum, the monitoring results, an evaluation of the need for revisions to the flow regime to accommodate recreation interests, and recommendations for any future monitoring efforts. Any recommendations for flow modifications should assess the effects on any conflicting recreation, irrigation, and power uses and needs of the waterway.

The licensee shall prepare the monitoring plan after consultation with the Forest Service, California Department of Fish and Game, Fish and Wildlife Service, CALTRANS, Kern River Watermaster, North Kern Water Storage District, Kern County Search and Rescue, Friends of the River, American Whitewater Affiliation, Kern River Alliance, Kern River Outfitters, Kernville and Lake Isabella Chambers of Commerce, Sierra Club Kern-Kaweah Chapter, Kern Valley Community Consensus Council, Pacific Gas and Electric Company, and other interested recreation advocacy groups. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and other interested parties, and specific descriptions of how the agencies' and other interested parties comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies and other interested parties to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission. The Commission also reserves the right to require changes to the project's operational scheme if the study results show that flow modifications are warranted to protect and enhance recreation values in the project bypassed reach.

Article 410. Within 1 year from the date of issuance of this license, the licensee shall file for Commission approval a plan to implement a mechanism to provide flow information to the public. The plan may complement the existing services provided by the Forest Service, Kern River Watermaster, Bureau of Land Management, and the local Chambers of Commerce, as long as the information is readily available to the public (such as a 1-800 telephone number) and provides, at a minimum, information specific to the daily flows in the Kern River No. 1 bypassed reach.

The licensee shall prepare the plan after consultation with the Forest Service, Bureau of Land Management, Kern River Watermaster, Friends Of the River, American Whitewater

Project No. 1930-014

-35-

Affiliation, Kern River Alliance, Kern River Outfitters, Kernville and Lake Isabella Chambers of Commerce, Sierra Club Kern-Kaweah Chapter, Kern Valley Community Consensus Council, and other interested recreation advocacy groups. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and other interested parties, and specific descriptions of how the agencies' and other interested parties comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies and other interested parties to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 411. Within 1 year from the date of issuance of this license, the licensee shall file for Commission approval an access improvement plan that, as a minimum, assesses the feasibility of providing safe access improvements within the project's bypassed reach. The plan should evaluate, at a minimum, the feasibility of providing safe access at the following locations in the project bypassed reach: (1) access for kayakers at the start of the Upper Study section; (2) access for kayakers and rafters at the start of the Lucas Study Section; (3) a portage around Lucas Falls for both kayaks and small rafts; (4) access just upstream of the Cataracts Study Section; and (5) access to, or just upstream of the Kern River No. 1 powerhouse.

The plan shall include a construction plan and an implementation schedule for any recommended portage, trail, trail head, or parking area construction, improvement, or modification of existing areas in the project's bypassed reach. For any recommended improvement, the plan shall also address, as a minimum, the following factors: vehicle and pedestrian safety, traffic congestion and other conflicts, Forest Service management objectives, effects on other resources, including threatened and endangered and Forest Service sensitive species and their habitat, and the cost and the entity responsible for constructing and maintaining the recommended improvements.

The licensee shall prepare the plan after consultation with the Forest Service, California Department of Fish and Game, Fish and Wildlife Service, CALTRANS, Kern River Watermaster, North Kern Water Storage District, Kern County Search and Rescue, Friends Of the River, American Whitewater Affiliation, Kern River Alliance, Kern River Outfitters, Kernville and Lake Isabella Chambers of Commerce, Sierra Club Kern-Kaweah Chapter, Kern Valley Community Consensus Council, Southern Fat Tire

Project No. 1930-014

-36-

Association, and other interested recreation advocacy groups. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and other interested parties, and specific descriptions of how the agencies' and other interested parties comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies and other interested parties to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan and to implement the recommended improvements. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 412. (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement.

Project No. 1930-014

-37-

To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir.

No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or

Project No. 1930-014

-38-

permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than ten watercraft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved exhibit R or approved report on recreational resources of an exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least seventy-five feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than fifty total acres of project lands for each project development are conveyed under this clause (d) (7) in any calendar year.

At least sixty days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within forty-five days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (I) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to insure

Project No. 1930-014

-39-

that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee shall not unduly restrict public access to project waters.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(I) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(J) This order is final unless a request for rehearing is filed within 30 days from the date of its issuance, as provided in Section 313(a) of the FPA. The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order, except as specifically ordered by the Commission. The licensee's failure to file a request for rehearing shall constitute acceptance of this license.

Carol L. Sampson
Director
Office of Hydropower Licensing

Project No. 1930-014

-40-

APPENDIX A

WATER QUALITY CERTIFICATION CONDITIONS

Accordingly, the State Water Resources Control Board certifies that the Kern No. 1 Project will comply with Sections 301, 302, 303, 306, and 307 of the Clean Water Act, and with applicable provisions of state law provided SCE complies with the following terms and conditions:

- 1) Natural temperature waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.

Elevated temperature wastes shall not cause the temperature of waters designated COLD or WARM to increase by more than 5°F above natural receiving water temperature.

In order to demonstrate the attainment of the COLD beneficial use and compliance with the Basin Plan temperature objective for the Kern River, as defined in the Tulare Lake Basin Water Quality Control Plan (5D), from the SCE Kern River No. 1 powerhouse upstream to Democrat Dam, SCE shall:

- a) Conduct the temperature monitoring and modeling study (for a period not to exceed five years) as described in the "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan" (Plan) submitted by SCE to the SWRCB on December 2, 1997 (Attachment 2). The specific conditions of the Plan are hereby incorporated into this modification to the water quality certification by reference.
- b) An annual progress report shall be prepared and submitted to the Chief of the Division of Water Rights of the SWRCB and the Director of the California Department of Fish and Game by the following March 1 after each year of temperature monitoring. The progress report will summarize data collected, initial analyses, if any, and results of model calibration, when appropriate. The progress report will include any recommendations for changes to the monitoring program, and when appropriate will recommend conclusion of monitoring. Cessation of monitoring before the completion of five years of monitoring shall occur only upon approval of the Executive Director of the SWRCB.
- c) A final summary report shall be prepared within six months of the conclusion of temperature monitoring. The summary report will provide the results of model

Project No. 1930-014

-41-

calibration, validation, and simulations. This will include an accurate description of the model, the data used for calibration and validation, and the measured performance of the model. The results of the temperature simulation model will be tables and plots of simulated longitudinal temperatures, which can be interpolated to estimate stream temperatures for project release flows. The report will summarize the effect of natural warming, the effect of project-related warming, and the likelihood that the project will maintain the COLD beneficial use and the thermal objective of the Basin Plan.

- d) If, based on modeling and as determined by the Executive Director of the SWRCB, the results suggest that project operations may not maintain the COLD beneficial use and/or the thermal objective for the conditions evaluated, SCE shall prepare an operations plan for approval by the Executive Director of the SWRCB. The operations plan will indicate what controllable water quality factor actions need to be taken to achieve the temperature objective for protection of the COLD water beneficial use for that section of the Kern River. Upon review of the final report of the temperature monitoring and modeling study described in "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan", the SWRCB will utilize the operations plan to determine what additional terms and conditions may be necessary, if any, to maintain the COLD beneficial use. SCE shall implement any additional terms and conditions established by the SWRCB.
- 2) In order to protect the beneficial use designations identified in the Basin Plan, operation of the project shall not add the following substances to surface waters:
- a) Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses;
 - b) Perceptible floating material including, but not limited to, solids, liquids, foams or scums which could result in degradation of water quality;
 - c) Suspended or settleable material in concentrations that cause a nuisance or adversely affect beneficial uses;
 - d) Oil, greases, waxes or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water;

Project No. 1930-014

-42-

- e) Toxic pollutants present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health; and,
 - f) Coliform organisms attributable to human wastes.
- 3) If the permittee or licensee initiates any activities requiring installation of concrete or grout, fresh concrete or grout shall not be allowed to contact or enter surface water.
 - 4) Any project dewatering activities shall be coordinated with the California Department of Fish and Game, and all reasonable measures taken to protect the beneficial uses of water.
 - 5) Only water used for power generation is authorized for discharge. Discharge of any other materials is prohibited.

Project No. 1930-014

-43-

APPENDIX B

FOREST SERVICE SECTION 4(E) CONDITIONS

I. GENERAL

As a co-operating agency, the Forest Service provides the following FINAL 4(e) conditions for inclusion in the license for FERC project No. 1930-014, Kern River No. 1. These FINAL 4(e) conditions are being provided within 45 days of completion of the final environmental assessment.

License articles contained in the Commission's Standard Form L-1 (revised October 1975) issued by Order No. 540, dated October 31, 1975, cover general requirements that the Secretary of Agriculture, acting by and through the Forest Service, considers necessary for adequate protection and utilization of the land and resources of the Sequoia National Forest. For the purposes of section 4(e) of the Federal Power Act (16 U.S.C. 797(e)), the purposes for which National Forest System lands were created or acquired shall be the protection and utilization of those resources enumerated in the Organic Administration Act of 1897 (30 Stat. 11), the Multiple-Use Sustained Yield Act of 1960 (74 Stat. 215), the National Forest Management Act of 1976 (90 Stat. 2949), and any other law specifically establishing a unit of the National Forest system or prescribing the management thereof (such as the Wilderness Act or Wild and Scenic Rivers Act), as such laws may be amended from time to time, and as implemented by regulations and approved Forest Plans prepared in accordance with the National Forest Management Act.

Pursuant to said section 4(e) of the Federal Power Act, the following conditions covering specific requirements for protection and utilization of National Forest System lands shall also be included in any license issued.

II. STANDARD FOREST SERVICE PROVISIONS

Condition No. 1 - Forest Service Approval of Final Design

Before any construction of the project occurs on national Forest System land, the Licensee shall obtain the prior written approval of the Forest Service for all final design plans for project components which the Forest Service deems as affecting or potentially affecting National Forest system resources. The Licensee shall follow the schedules and procedures for design review and approval specified in the conditions included herein. As part of such prior written approval, the Forest Service may require adjustments in final plans and facility locations to preclude or mitigate

Project No. 1930-014

-44-

impacts and to assure that the project is compatible with on-the-ground conditions. Should such necessary adjustments be deemed by the Forest Service, the Commission, or the Licensee to be a substantial change, the Licensee shall follow the procedures of Article 2 of the license. Any changes to the license made for any reason pursuant to Article 2 or Article 3 shall be made subject to any new terms and conditions of the Secretary of Agriculture made pursuant to section 4(e) of the Federal Power Act.

Condition No. 2 - Approval of Changes After Initial Construction

Notwithstanding any Commission approval or license provisions to make changes to the project, the Licensee shall get written approval from the Forest Service prior to making any changes in the location of any constructed project features or facilities, or in the uses of project lands and waters, or any departure from the requirements of any approved exhibits filed with the Commission. Following receipt of such approval from the Forest Service, and at least 60 days prior to initiating any such changes or departure, the Licensee shall file a report with the Commission describing the changes, the reasons for the changes, and showing the approval of the Forest Service for such changes. The Licensee shall file an exact copy of this report with the Forest Service at the same time it is filed with the Commission. This article does not relieve the Licensee from the amendment or other requirements of Article 2 or Article 3 of this License.

Condition No. 3 - Consultation

Each year during the 60 days preceding the anniversary date of the license, the Licensee shall consult with the Forest Service with regard to measures needed to ensure protection and development of the natural resource values of the project area. Within 60 days following such consultation, the Licensee shall file with the Commission evidence of the consultation with any recommendations made by the Forest Service. The Commission reserves the right, after notice and opportunity for hearing, to require changes in the project and its operation that may be necessary to accomplish natural resource protection.

III. FOREST SERVICE PROVISIONS

A. FISH AND WILDLIFE RESOURCE MANAGEMENT

Condition No. 4 - Minimum Streamflow Requirements

The minimum instream flow for fisheries in the existing

Project No. 1930-014

-45-

license is to be required for the new license.

The Licensee shall release the minimum instream flow of 50 CFS or inflow, whichever is less, from June 1 through September 30 of each year.

The Licensee shall release the minimum instream flow of 15 CFS or inflow, whichever is less, from October 1 through May 31 of each year.

These instream flow releases shall be continuously monitored by the Licensee at the existing USGS gage Station No. 11192500. If monitoring of streamflows in the bypassed reach of the Kern River No. 1 Project identifies a violation of the minimum flow requirements, the Licensee shall file a report with the Commission within 30 days from the date that the data becomes available indicating the violation. The Licensee shall file a report that identifies the cause, duration, and severity of the violation, any environmental impacts resulting from the violation, and the measures that were implemented to correct the violation. Based on this report, the Commission reserves the right to require modifications to the projects facilities and operations to ensure future compliance.

B. RECREATION RESOURCE MANAGEMENT

Condition No. 5 - Project Recreation Plan

Within 1 year following the date of issuance of this license and before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for accommodation of project-induced recreation.

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule.

The following new construction and enhancements to existing facilities are needed for the protection and utilization of NFS lands. These improvements shall be designed and constructed to be accessible to people of all abilities. These facility improvements are further described in the estimates of construction costs for developed recreation facilities, submitted by Southern California Edison on November 7, 1994 to the FERC.

Project No. 1930-014

-46-

a. The Live Oak Day Use Area shall have two accessible picnic tables and Bar-B-Que's installed. One double unit pre-fabricated accessible SST (Sweet Smelling Toilet) vault toilet shall be installed. One existing toilet will be removed. Parking sites for persons with disabilities shall be identified. The parking area and paths shall be surfaced with a compacted water bound macadam type material and striped. Accessibility signs shall be installed. Container trees shall be installed. Estimated cost is \$60,000.

b. The Upper Richbar Day Use Area shall have one accessible picnic table and Bar-B-Que installed. The existing vault toilet shall be removed. Two double unit pre-fabricated accessible SST vault toilets shall be installed. Parking sites for persons with disabilities shall be identified. The parking area and paths shall be surfaced with a compacted water bound macadam type material and striped. Accessibility signs shall be installed. Estimated cost is \$134,000.

c. The Lower Richbar Day Use Area shall have one accessible picnic table and Bar-B-Que installed. One double unit pre-fabricated accessible SST vault toilet shall be installed. Parking sites for persons with disabilities shall be identified. The parking area and paths shall be surfaced with compacted water bound macadam type material and striped. Accessibility signs shall be installed. Estimated cost is \$50,000.

d. Democrat Raft Take-Out shall have one accessible picnic table and Bar-B-Que installed. One double unit pre-fabricated accessible SST vault toilet shall be installed. The existing toilet shall be removed. Parking sites for persons with disabilities shall be identified. Paths and a portion of the parking area shall be surfaced with a compacted water bound macadam type material and striped. Accessibility signs shall be installed. Estimated cost is \$49,500.

C. SOIL CONSERVATION AND PROTECTION OF WATER QUALITY

Condition No. 6 - Erosion Control Plan

Before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for the control of erosion, stream sedimentation, dust, and soil mass movement.

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60

Project No. 1930-014

-47-

days following the filing date, unless the Director, Office of Hydropower Licensing, prescribed a different commencement schedule.

Condition No. 7 - Solid Waste and Waste Water Plan

Before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan, approved by the Forest Service, for the treatment and disposal of solid waste and waste water generated during construction and operation of the project. At a minimum, the plan must address the estimated quantity of solid waste and waste water generated each day; the location of disposal sites and methods of treatment; implementation schedule; areas available for disposal of wastes; design of facilities; comparisons between on and offsite disposal; and maintenance programs.

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule.

Condition No. 8 - Hazardous Substances Plan

Within 1 year following the date of issuance of this license and at least 60 days before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for oil and hazardous substances storage and spill prevention and cleanup.

At a minimum, the plan must require the Licensee to (1) maintain in the project area, a cache of spill cleanup equipment suitable to contain any spill from the project; (2) to periodically inform the Forest Service of the location of the spill cleanup equipment on National Forest system lands and of the location, type, and quantity of oil and hazardous substances stored in the project area; and (3) to inform the Forest Service immediately of the nature, time, date, location, and action taken for any spill.

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule.

Condition No. 9 - Spoil Disposal

Project No. 1930-014

-48-

Before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for the storage and/or disposal of excess construction/tunnel spoils and slide material. At a minimum, the plan must address contouring of any storage piles to conform to adjacent land forms and slopes, stabilization and rehabilitation of all spoil sites and borrow pits, and prevention of water contamination by leachate and runoff. The plan also must include an implementation schedule and maintenance program.

The licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule.

E. AESTHETICS

Condition No. 10 - Visual Resource Protection

Before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for the design and construction of the project facilities in order to preserve or enhance its visual character. The plan must consider facility configurations and alignments, building materials, color, conservation of vegetation, landscaping, and screening. Project facilities of concern to this plan include, among other things, clearings, diversion structures, penstocks, pipes, ditches, powerhouses, other buildings, transmission lines and corridors, and access roads.

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule.

F. ENDANGERED SPECIES

Condition No. 11 - Protection of Sensitive and T&E Species

Before starting any activities the Forest Service determines to be of a land-disturbing nature on Forest Service land, the Licensee shall prepare a Biological Evaluation evaluating the potential impact of the action on the species

Project No. 1930-014

-49-

or its habitat and submit it to the Forest Service for approval. In consultation with the Commission, the Forest Service may require mitigation measures for the protection of the sensitive species proposed for listing or listed under the Federal Endangered Species Act, or that may affect that species' critical habitat, the Licensee shall prepare a Biological Assessment evaluating the potential impact of the action on the species or its critical habitat and submit it to the Forest Service for review prior to submission to the commission and the relevant Service agency (United States Fish and Wildlife Service or National Marine Fisheries Service) for consultation pursuant to the Endangered Species Act of 1973.

G. OTHER CONDITIONS

Condition No. 12 - Development Plans

Development plans; layout plans; construction, reconstruction, or alteration of improvements plans; or revision of layout or construction plans for this area must be approved in advance and in writing by the Forest Supervisor. Trees or shrubbery on the licensed area may be removed or destroyed only after the authorized officer has approved, and has marked or otherwise designated that which may be removed or destroyed. Timber cut or destroyed will be paid for by the Licensee as follows: Merchantable timber at appraised value and young growth timber below merchantable size at current damage appraisal value; provided, that the Forest Service reserves the right to dispose of the merchantable timber to others than the Licensee at no stumpage cost to the Licensee. Trees, shrubs, and other plants may be planted in such manner and in such places about the premises as may be approved by the authorized officer. Removal of hazards shall be done after securing approval from the authorized officer.

Condition No. 13 - Maintaining Improvements

The Licensee shall maintain the improvements and premises to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the authorized officer. For example, trash, debris unusable machinery, and so forth, will be disposed of separately; other materials will be stacked, stored neatly, or within buildings. Disposal will be at an approved existing location, except as otherwise agreed to by the authorized officer.

Condition No. 14 - Existing Claims

This Licensee is subject to all valid claims and existing rights.

Project No. 1930-014

-50-

Condition No. 15 - Regulation Compliance

The Licensee, in exercising the privileges granted by this license, shall comply with the regulations of the Department of Agriculture and all Federal, State, county, and municipal laws, ordinances, or regulations that are applicable to the area or operations covered by this license.

Condition No. 16 - Protection United States Property

The Licensee shall exercise diligence in protecting from damage the land and property of the United States covered by and used in connection with this license.

Condition No. 17 - Surrender of License

Prior to any surrender of this license, the Licensee shall submit a restoration plan for approval by the Forest Supervisor, and shall restore National Forest System resources to a condition satisfactory to the Forest Supervisor.

Condition No. 18 - Indemnification

The Licensee shall indemnify, defend, and hold the United States harmless for any costs, damages, claims, liabilities, and judgements arising from past, present, and future acts or omissions of the Licensee in connection with the use and/or occupancy authorized by this license. This indemnification and hold harmless provision includes but is not limited to acts and omissions of the Licensee or the Licensee's heirs, assigns, agents, employees, contractors or lessees in connection with the use and or occupancy authorized by this license which results in: (1) violations of any laws and regulations which are now or which may in the future become applicable, and including but not limited to environmental laws; (2) judgements, claims, demands, penalties, or fees assessed against the United States; (3) costs, expenses, and damages incurred by the United States; or (4) the release or threatened release of any solid waste, hazardous substances, pollutant, contaminant, or oil in any form in the environment.

Condition No. 19 - License is Not Exclusive

This license is not exclusive. The Forest Service reserves the right to use or permit others to use any part of the licensed area under Forest Service jurisdiction, for any purpose, provided such use does not interfere with the rights and privileges hereby authorized, or authorized under the Federal Power Act. The Licensee shall allow officers of

Project No. 1930-014

-51-

the United States free and unrestricted access to the project lands and project works in the performance of their official duties.

Condition No. 20 - Construction Approval

All construction, reconstruction, substantial change, or alteration shall be submitted for approval by the authorized officer issuing this license; the proposed action may commence only upon approval by said authorized officer of plans, specifications, and written construction stipulations; such construction stipulations shall become part of this license during the term of the proposed action as long as deemed necessary by said authorized officer.

Condition No. 21 - Project Safety

The Licensee shall carry out all operations in a skillful manner, having due regard for the safety of employees and the public, and shall safeguard unsafe areas. The Licensee shall regularly inspect its facilities and provide further effective safety measures as needed for safety protection.

Condition No. 22 - Water Pollution

The Licensee shall discharge no waste or by-product if it contains any substances in concentrations that would result in violation of water quality standards set forth by the State; would impair present or future beneficial uses of water; would cause pollution, nuisance, or contamination; or would unreasonably degrade the quality of any waters. During the construction and operation of the project, the Licensee shall protect project water quality by using the existing Best Management Practices mutually agreed to by the Forest Service and the State.

Condition No. 23 - Damage - High Hazard Clause

The Licensee is hereby made liable for all injury, loss, or damage to the United States land and property, including but not limited to, fire suppression costs, directly or indirectly resulting from or caused by the Licensee's powerlines covered by this license or other high risk use and occupancy of the area covered by the license, regardless of whether the Licensee is negligent or otherwise at fault, provided that the maximum liability without fault shall not exceed \$1,000,000 for any one occurrence and provided further that the Licensee shall not be liable when such injury, loss, or damage results wholly, or in part, from a negligent act of the United States, or from an act of a third party not involving the facilities of the Licensee. Determination of liability for injury, loss, or damage,

Project No. 1930-014

-52-

including fire suppression costs, in excess of the specified maximum, shall be according to the laws governing ordinary negligence.

Condition No. 24 - Risk and Hazards

The Licensee is responsible for inspecting National Forest System lands covered by this license for dangerous trees, hanging limbs, and other evidence of hazardous conditions and, after securing permission from the Forest Service is responsible for removing such hazards.

Condition No. 25 - Signs

The Licensee shall consult with the Forest Service prior to erecting signs related to safety issues on the area covered by this license. Prior to erecting any other signs or advertising devices on the area covered by this license the Licensee must obtain approval of the Forest Service as to location, design, size, color, and message.

Condition No. 26 - Pesticide-Use Restrictions

Pesticides may not be used to control undesirable woody and herbaceous vegetation, aquatic plants, insects, rodents, trash fish, and so forth, without the prior written approval of the Forest Service. The Licensee shall submit a request for approval of planned uses of pesticides. The report must cover annual planned use and be updated as required by the Forest Service. The Licensee shall provide information essential for review in the form specified. Exceptions to this schedule may be allowed only when unexpected outbreaks of pests require control measures that were not anticipated at the time the report was submitted. In such an instance, an emergency request and approval may be made.

On National Forest System lands the Licensee shall use only materials registered by the U.S. Environmental Protection Agency for the specific purpose planned. The Licensee must strictly follow label instructions in the preparation and application of pesticides and disposal of excess materials and containers.

Condition No. 27 - Area Access

The United States shall have unrestricted use of any road constructed within the project area for all purposes deemed necessary or desirable in connection with the protection, administration, management, and utilization of Federal lands or resources and alone shall have the right to extend rights and privileges for use of the road to States and local subdivisions thereof, as well as to other users, including

Project No. 1930-014

-53-

members of the public, except contractors, agents and employees of the Licensee; provided, that the agency having jurisdiction shall control such use so as not unreasonably to interfere with use of the road by the Licensee, particularly as to safety or security uses, or cause the Licensee to bear a share of the costs of maintenance greater than the Licensee's use bears to all use of the road.

Condition No. 28 - Nondiscrimination in Employment & Services

During the duration of this license, the Licensee agrees that:

- a. In connection with the performance of work under this license, including, maintenance, and operation of the facilities, the Licensee shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, age or handicap. (Ref. Title VII of the Civil Rights Act of 1964 as amended).
- b. The Licensee and its employees shall not discriminate by segregation or otherwise against any person on the basis of race, color, religion, sex, national origin, age, or handicap by curtailing or refusing to furnish accommodations, facilities, services, or use privileges offered to the public generally. (Ref. Title VI of the Civil Rights Act of 1964 as amended, Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendments, and the Age Discrimination Act of 1975).
- c. Title VI of the Civil Rights Act of 1964, as amended, attaches coverage to the Licensee's employment practices if discrimination in employment impeded the delivery of services and benefits to people on the basis of their race, color or national origin.
- d. The Licensee shall include and require compliance with the above nondiscrimination provisions in any contract made with respect to the operations, maintenance and constructions under this license.
- e. Signs setting forth this policy of nondiscrimination to be furnished by the Forest Service will be conspicuously displayed by the Licensee at the public entrance to the premises, and at other exterior or interior locations as directed by the Forest Service.
- f. The Forest Service shall have the right to enforce the forgoing nondiscrimination provisions through the FERC by suit for specific performance or by any other available remedy under the laws of the United States or the State in

Project No. 1930-014

-54-

which the breach or violation occurs.

Condition No. 29 - Construction Stipulations

a. Plans, Part of Approval

The Licensee shall prepare the following plans in consultation with Forest Service and other appropriate agencies.

A. Revegetation/rehabilitation

B. Fire

C. Spill Prevention

D. Construction

The Licensee shall submit these plans for Forest Service approval six months prior to commencement of construction activities. Said plans shall be attached hereto and marked as Exhibits A through D, respectively.

b. Fire Plan Part of Approval

A project fire plan describing the Licensee's responsibilities for prevention and suppression of fires, developed by the Licensee, and subject to Forest Service approval, shall become part of this approval, as Exhibit B to be attached hereto. The Licensee shall obtain Forest Service approval for said plan before beginning any on-the-ground construction and shall strictly follow its terms.

c. Designation of Construction Manager

The Licensee shall designate a construction manager for the project construction. This individual shall be qualified to represent the Licensee and shall be present or have a qualified acting representative present at all times while project construction activities are taking place. This individual shall be the person who receives the on-the-ground approvals and directions from the designated Forest Service representative(s).

d. Construction Inspections by Licensee

The Licensee shall perform daily (or on a schedule otherwise agreed to by the Forest Service in writing) inspections of Licensee's operations while they are proceeding. The Licensee shall document these inspections (informal writing sufficient) and shall deliver such documentation to the Forest Service on a weekly basis. The inspections must

specifically include fire plan compliance, public safety,
and environmental protection. The Licensee shall act
immediately to correct any items found to need correction.

Project No. 1930-014

-55-

e. Site Development Schedule

As a part of this authorization, the Licensee shall, in consultation with the Forest Service, prepare a schedule for the progressive development of the licensed site and installation of facilities. Such a schedule shall be prepared six months prior to commencement of construction activities, and shall set forth an itemized priority list of planned improvements and the planned date for completion. This schedule shall be made a part of this authorization. The Licensee may accelerate the scheduled date for installation of any improvement authorized, provided the Licensee has met other scheduled priorities; and provided further, that the Licensee has completed all priority installations authorized to the satisfaction of the Forest Service prior to the scheduled due date.

The Licensee shall submit all construction plans to the Forest Service for approval a minimum of 45 days before anticipated start of construction. All plans for construction of facilities must have the approval with signature of a registered professional engineer of the appropriate specialty, and must have the approval of the Forest Service prior to the use of these plans in constructing this project. These plans shall then become part of this authorization as Exhibit E, to be attached hereto.

The Licensee shall ensure that construction bid invitations are in compliance with this authorization and with all applicable environmental protection standards.

In the actual layout on-the-ground, the Licensee shall use accurate mapping based on an adequate survey of the land, including the location of special areas such as water courses.

The Licensee shall furnish to officers of the United States such information as may be required concerning the construction, operation, and maintenance of the project, and any alteration thereof.

When asked by the Forest Service, the Licensee shall provide for an on-the-ground review with the Forest Service of the plans for any area of concern to the Forest Service at least 7 days prior to beginning construction on that area.

f. Use of Explosives

1. The Licensee shall use only electronic detonators for blasting, except near high-voltage powerlines. The Forest

Project No. 1930-014

-56-

Service may allow specific exceptions when in the public interest.

2. In the use of explosives, the Licensee shall exercise the utmost care not to endanger life or property and shall comply with the requirements of the Forest Service. The Licensee shall be responsible for any and all damages resulting from the use of explosives and shall adopt precautions to prevent damage to surrounding objects. The Licensee shall furnish and erect special signs to warn the public of the Licensee's blasting operations. The Licensee shall place and maintain such signs so they are clearly evident to the public during all critical periods of the blasting operations, and shall ensure that they include a warning statement to have radio transmitters turned off.

3. The Licensee shall store all explosives in a secure manner, in compliance with State and local laws and ordinance, and shall mark all such storage places "DANGEROUS - EXPLOSIVES." Where no local laws or ordinances apply, the Licensee shall provide storage that is satisfactory to the authorized officer and in general not closer than 1,000 feet from the road or from any building or camping area.

4. When using explosives, the Licensee shall adopt precautions to prevent damage to landscape features and other surrounding objects. When directed by the authorized officer, the Licensee shall leave trees within an area designated to be cleared as a protective screen for surrounding vegetation during blasting operations. The Licensee shall remove and dispose of trees so left when blasting is complete. When necessary, and at any point of special danger, the Licensee shall use suitable mats or some other approved methods to smother blasts.

g. Unattended Construction Equipment

The Licensee shall not place construction equipment on National Forest Land prior to actual use or allow it to remain on National Forest land subsequent to actual use. The Licensee shall remove equipment from National Forest System land unless a permit is issued for equipment storage.

h. Protection of Wildlife and Plant Species

If threatened, endangered, or sensitive (as defined in the Forest Service manual) wildlife and plant species are found during use under this authorization, the Licensee shall notify the Forest Service and shall take immediate measures to protect said species as directed by the Forest Service.

i. Traffic Safety

Project No. 1930-014

-57-

When construction is in progress adjacent to or on Forest Service controlled roads open to public travel, the Licensee shall furnish, install, and maintain temporary traffic controls to provide the public with adequate warning and protection from hazardous or potentially hazardous conditions associated with the Licensee's operations. Devices must be appropriate to current conditions and must be covered or removed when not needed. Except as otherwise agreed, flagmen and devices must be as specified in the "Manual or Uniform Traffic Control Devices for Streets and Highways" (MUTCD).

j. Surveys, Land Corners

The Licensee shall protect, in place, all public land survey monuments, private property corners, and forest boundary markers. In the event that any such land markers or monuments are destroyed in the exercise of the privileges authorized by this authorization, depending on the type of monument destroyed, the Licensee shall reestablish or reference same in accordance with (1) the procedures outlined in the "Manual of Instructions for the Survey of the Public Land of the United States," (2) the specifications of the County Survey, or (3) the specifications of the Forest Service.

Further, the Licensee shall ensure that any official survey records affected are amended as provided by law.

k. Cultural Resource Discoveries

If, prior to or during excavation work, items of potential cultural, historical, archeological, or paleontological value are reported or discovered, or a known deposit of such items is disturbed, the Licensee shall immediately cease excavation in the area so affected. The Licensee shall then notify the Forest Service and shall not resume excavation until it receives written approval from the authorized officer.

If it deems it necessary or desirable, the Forest Service may require the Licensee to have performed recovery, excavation, and preservation of the site and its artifacts at the Licensee's expense. At the option of the Forest Service, this authorization may be terminated at no liability by the United States when such revocation is deemed necessary or desirable to preserve or protect archaeological, paleontological, or historic sites and artifacts.

FINAL ENVIRONMENTAL ASSESSMENT
FOR HYDROPOWER LICENSE

Kern River No. 1 Hydroelectric Project

FERC Project No. 1930-014

California

Federal Energy Regulatory Commission
Office of Hydropower Licensing
Division of Licensing and Compliance
888 First Street, NE
Washington, D.C. 20426

and

USDA Forest Service
Sequoia National Forest
900 West Grand Avenue
Porterville, California 93257-2035

TABLE OF CONTENTS

Section	Page
SUMMARY	i
I. APPLICATION	1
II. PURPOSE OF ACTION AND NEED FOR POWER	1
A. PURPOSE OF ACTION	1
B. NEED FOR POWER	1
III. PROPOSED ACTION AND ALTERNATIVES	4
A. EDISON'S PROPOSAL	4
1. Project Facilities and Operation	4
2. Proposed Environmental Measures	5
3. Federal Land Management Conditions	6
B. STAFF'S PREFERRED ALTERNATIVE	7
C. DECOMMISSIONING WITHOUT REMOVAL OF PROJECT STRUCTURES	7
D. NO-ACTION ALTERNATIVE	8
E. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY	8
1. Federal Takeover	8
2. Nonpower License	8
3. Decommissioning With Removal of All Project Structures	8
IV. CONSULTATION AND COMPLIANCE	9
A. AGENCY CONSULTATION	9
B. INTERVENTIONS	10
C. SCOPING	10
D. WATER QUALITY CERTIFICATION	11

V. ENVIRONMENTAL ANALYSIS 14

 A. GENERAL DESCRIPTION OF THE KERN RIVER BASIN 14

 1. Kern River Basin 14

 2. Existing Hydropower Development and the Corp's
 Lake Isabella 14

 B. SCOPE OF CUMULATIVE IMPACT ANALYSIS 16

 1. Geographic Scope 17

 2. Temporal Scope 17

 C. PROPOSED ACTION AND ACTION ALTERNATIVES 17

 1. Geological Resources 17

 2. Aquatic Resources 19

 3. Terrestrial Resources 31

 4. Threatened and Endangered Species 34

 5. Aesthetic Resources 45

 6. Cultural Resources 47

 7. Recreation 48

 8. Socioeconomic Considerations 61

 D. NO-ACTION ALTERNATIVE 63

VI. DEVELOPMENTAL ANALYSIS 63

 A. POWER AND ECONOMIC BENEFITS OF THE PROJECT 64

 B. COST OF ENVIRONMENTAL ENHANCEMENT MEASURES 65

 1. Bypassed Reach Water Temperature Monitoring 66

 2. Recreational Facilities Improvements 66

 3. Supplemental Whitewater Boating Flows 67

 4. Flow Information, Recreation Monitoring, and
 Access Improvement Plan 68

 5. Adequacy of the FS-required minimum flows for
 protecting and enhancing the smallmouth bass
 fishery in the project bypassed reach.. . . . 69

 C. DECOMMISSIONING 69

 D. NO-ACTION ALTERNATIVE 70

VII. COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE 71

 A. RECOMMENDED ALTERNATIVE 72

 1. Water Temperature Model 73

 2. Recreation Facility Improvements 73

 3. Supplemental Whitewater Boating Flows, Recreation
 Use Monitoring Plan, Flow Information, and Access
 Improvement Plan 74

 4. Mitigation Fund 76

 5. Smallmouth Bass Fishery Study 77

 B. DECOMMISSIONING 77

 C. CONCLUSION 78

VIII. CONSISTENCY WITH COMPREHENSIVE PLANS 78

IX. RECOMMENDATIONS OF FISH AND WILDLIFE AGENCIES 81

X. FINDING OF NO SIGNIFICANT IMPACT 81

XI. LITERATURE CITED 82

XII. LIST OF PREPARERS 86

LIST OF FIGURES

Figure	Page
Figure 1. Location of Kern River No. 1 Project and other FERC-licensed hydroelectric developments in the Kern River Basin	2
Figure 2. Kern River No. 1 facilities, developed recreation sites, and USGS gaging stations	4
Figure 3. Average (1973) and dry (1977) water year hydrographs for the Kern River No. 1 Project, with a minimum flow of 15 cfs (October 1 through May 31) and 50 cfs (June through September)	20
Figure 4. Wet (1983) water year hydrograph for the Kern River No.	

1 Project, with a minimum flow of 15 cfs (October through May) and 50 cfs (June through September) . 21

Figure 5. Catchable-sized rainbow trout stocked in the Kern River No. 1 Project bypassed reach and between the upstream Borel powerhouse and Democrat dam (1986-1996) . . . 24

Figure 6. Instream flow study results for rainbow trout and smallmouth bass in the Kern River bypassed reach . 28

Figure 7. Kern River bypassed reach flows for the months of June-October, augmented to 700 cfs (top) and 950 cfs (bottom) with power flows when possible 56

Figure 8. Kern River bypassed reach flows for the months of June-October, augmented to 1,250 cfs with power flow when possible 57

LIST OF TABLES

Table	Page
Table 1. Locations of diversion dams (river miles below Lake Isabella), reach lengths, and minimum flow requirements between Lake Isabella and the Rio Bravo Hydroelectric Project's tailrace.	16
Table 2. Species and fork lengths (mm) of fish collected from the project diversion pool	26
Table 3. Federal listed species that may occur in the project area with their corresponding state and Forest Service status.	34
Table 4. Proposed enhancements at the developed recreation sites.	51
Table 5. Comparison of the average number of days flow in the Kern River No. 1 bypassed reach equals or exceeds 700 cfs, 950 cfs, and 1250 cfs under existing and augmented flow conditions.	54
Table 6. Comparison of the average number of days flows in the Kern River No. 1 bypassed reach equal or exceed 700 cfs, 950, and 1,250 cfs under "existing" and "augmented" flow conditions during the weekend period only.	54
Table 7. Estimated cost of recreation enhancements required by the Forest Service	67
Table 8. Average annual reduction in generation and associated revenue loss for alternative flow augmentation levels.	67
Table 9. Summary of the developmental costs, benefits and net benefits for all alternatives.	71

APPENDICES

A. THREATENED AND ENDANGERED SPECIES NOT LIKELY TO OCCUR IN THE
PROJECT AREA A-1

B. COMMENTS FROM AGENCIES, GOVERNMENTS, AND NON-GOVERNMENTAL
ORGANIZATIONS ON THE DRAFT EA AND STAFF RESPONSES . . . B-1

C. PUBLIC COMMENTS ON THE DRAFT EA AND STAFF RESPONSES . . C-1

SUMMARY

The Kern River No. 1 Project is an existing, operating hydroelectric facility, located on the lower Kern River, about 17 miles northeast of Bakersfield, California. The 26.3-megawatt project is located on lands within the Sequoia National Forest. The project diverts water from 10.2 miles of stream. Southern California Edison Company (Edison), the current licensee, proposes to continue operating the project with environmental enhancements.

The environmental analysis documented in this final environmental assessment (EA) is a cooperative effort between the U.S. Forest Service (FS) and the Federal Energy Regulatory Commission (Commission). Reference in this document to "we" should be understood to be the two agencies' collective statements or conclusions, unless otherwise stated.

We analyze the effects of various alternatives, both for continued project operation and for project decommissioning with project structures left in place. Our analysis shows that the best alternative for the Kern River No. 1 Project would be for Edison to continue to operate the project while providing the following environmental protection and enhancement measures: (1) preparing a site-specific soil erosion and sedimentation control plan, a solid waste and wastewater control plan, and a spoil disposal plan before land-disturbing activities, including the recommended recreation enhancement measures (installing vault toilets and constructing parking areas and paths); (2) preparing a hazardous substance storage and spill prevention plan; (3) preparing a visual resources protection plan before soil-disturbing activities and consulting with the Forest Service before painting project facilities; (4) continuing to release minimum instream flows required by the existing license; (5) studying the adequacy of the minimum flows for protecting and enhancing the smallmouth bass fishery in the project bypassed reach; (6) developing a water temperature model for the project bypassed reach, as required by the water quality certification; (7) monitoring leaking flumes annually and postponing repairs that would diminish leakage until they threaten the flume's structural integrity to maintain localized pools important to wildlife; (8) implementing Edison's cultural resource management plan; (9) preparing a plan to implement improvements to Live Oak, Upper Richbar, Lower Richbar Day Use Areas and Democrat Raft Take-out; and (10) providing flow information to the public and preparing an access improvement plan to enhance recreational use in the bypassed reach.

We don't recommend any flow releases for whitewater boating enhancement because of potential conflicts with other recreational uses and because the existing whitewater boating use in the Kern River No. 1 bypassed reach is low compared to other

recreational activities in the project area, despite the fact that flows are frequently available for either the "suitable" or "optimum" boating conditions. We believe that the available data indicates that current flow conditions allow for a reasonable balance of all recreation uses and that existing whitewater boating use is not significantly limited or constrained by the project's present operation. We do, however, recommend that Edison work with the FS and other interested groups to develop a plan to monitor recreation patterns in the bypassed reach for 5 years to evaluate the need for future flow augmentation. We also recommend that this monitoring study be coordinated with the relicensing studies for Edison's Borel Project (FERC No. 382) and Pacific Gas & Electric's Kern Canyon Project (FERC No. 178). This would ensure that any future recommended change in project operations to accommodate recreational interests are done in a coordinated fashion to improve recreation in much of the lower Kern River.

We conclude that issuing a new license for the project, with our recommended environmental enhancements, wouldn't constitute a major federal action significantly affecting the quality of the human environment.

FINAL ENVIRONMENTAL ASSESSMENT

FEDERAL ENERGY REGULATORY COMMISSION
OFFICE OF HYDROPOWER LICENSING

and

USDA FOREST SERVICE
SEQUOIA NATIONAL FORESTKern River No. 1 Hydroelectric Project
FERC No. 1930-014, California

I. APPLICATION

On May 2, 1994, Southern California Edison Company (Edison) filed an application for new license for continued operation and¹ maintenance of the existing 26.3-megawatt (MW) Kern River No. 1 Project (FERC No. 1930-014). The project is located on the Kern River, about 17 miles northeast of Bakersfield and 16 miles southwest of Bodfish, in Kern County, California (figure 1). The project is located on about 117 acres within the Sequoia National Forest.

II. PURPOSE OF ACTION AND NEED FOR POWER

A. PURPOSE OF ACTION

The Federal Energy Regulatory Commission (Commission) must decide whether to relicense the project, and what, if any, conditions should be placed on any license issued. The Forest Service (FS) must decide what license conditions are needed for adequate protection and utilization of National Forest System lands if the Commission grants a new license.

In this final environmental assessment (EA), we assess the environmental and economic effects of: (1) operating the project as proposed by Edison, (2) operating the project as proposed by Edison with alternative enhancement measures, and (3) decommissioning the project without removing project structures. We also consider a no-action alternative.

B. NEED FOR POWER

Edison is a public utility serving about 4.2 million

1/ The maximum hydraulic capacity of the project flowline is 412 cfs, which is less than the combined capacity of the four project turbines operating at full design capacity. The operating capacity of the project is, therefore, limited by flow to 24.8 MW.

Graphic can be found on hard copy in public file.

[1994a], as modified by staff).

hydroelectric developments in the Kern River Basin (Source: Edison

Figure 1.
Location of Kern River No. 1 Project and other FERC-licensed

customers in an area of about 50,000 square miles in southern California, excluding the city of Los Angeles. This area includes some 800 cities and communities and a population of about 11 million people. Edison has owned and operated the Kern River No. 1 Project since 1907. The project has been serving a portion of the power requirements of Edison's customers for a continuous period of nearly 90 years. The project accounts for 24.8 MW of Edison's total hydroelectric resources of 1,153.3 MW.

If a new license is not issued for the project, Edison would need to replace the project's capacity and average annual generation of 179 gigawatthours (GWh). Over the short term (up to 5 years), generation from existing gas-fired units or power purchases could be an alternative to the project's dependable capacity and energy production. If generation from Edison's oil-fired and gas-fired units currently held in standby reserve were to provide needed replacement energy and capacity, the schedule for returning these units to service would have to be advanced, requiring significant capital investments.

The Kern River No. 1 Project displaces oil-fired and gas-fired energy, providing an average annual savings equivalent to nearly 300,000 barrels of oil. Replacement of the project by fossil-fired generation would increase air pollutant emissions in the South Coast Air Basin, where most of Edison's oil and gas units are located. By offsetting the need to produce 179 GWh of energy annually from such generation, the Kern River No. 1 Project reduces direct air emissions in the Los Angeles area.

In addition to the need for project power to serve Edison's customer load, the Kern River No. 1 Project and its associated transmission facilities is needed to provide voltage support when transmission line outages occur on Edison's Cummings or Gorman lines. Without the project, Edison would need to construct additional transmission facilities.

Besides looking at Edison's need, staff also looked at the regional need for power. The electricity generated from the project would benefit the region by providing a portion of the needed regional power. In its 1996 report, the Western Systems Coordinating Council shows that the utilities in the California-Southern Nevada area plan to add over 2,500 MW of capacity to the system over the 10-year planning period (1995-2005).

If relicensed, the project would continue to meet part of Edison's needs and a small part of the region's needs. In addition the project would continue to displace fossil-fueled electric power generation the regional utilities now use, and thereby conserve nonrenewable fossil fuels and reduce the emission of noxious byproducts caused by the combustion of fossil fuels.

III. PROPOSED ACTION AND ALTERNATIVES

A. EDISON'S PROPOSAL

1. Project Facilities and Operation

The Kern River No. 1 Project consists of: (1) a 29-foot-high, 204-foot-long concrete overflow diversion dam (Democrat dam) impounding a 27-acre pond at crest elevation 1,913 feet above mean sea level; (2) a gated intake structure at the left abutment with trash racks; (3) a 104-foot-long, 20-foot-wide sand box and a water conduit consisting of 42,884 feet of tunnel, 390 feet of rectangular flume, 904 feet of Lennon flume on steel structure, and 612 feet of arched-concrete conduit; (4) a 45-foot-long, 33-foot-wide, 11-foot-deep forebay; (5) a 1,693-foot-long buried penstock, varying in diameter from 108 inches at the intake to 27 inches; (6) a 170-foot-long, 71-foot-wide, reinforced concrete powerhouse containing four generating units with a total installed capacity of 26.3 MW; (7) a rectangular tailrace that discharges flows over a weir section into the Kern River; (8) a 1.9-mile-long, 66-kilovolt transmission line tying into Edison's transmission system; and (9) appurtenant facilities (figure 2).

Graphic can be found on hard copy in public file.

Figure 2. Kern River No. 1 facilities, developed recreation sites, and USGS gaging stations (Source: Edison 1994a).

The pool behind Democrat dam holds about 247 acre-feet of non-usable storage. The project operates in a run-of-river mode, diverting flows around a 10.2-mile-long bypassed reach. Minimum flows are normally released from as many as two slide gates located at the sand box, depending on the season's minimum flow requirement. An additional release site is located closer to the intake, which can be used when maintenance requires the other two release sites to be closed. The powerhouse return flows are immediately impounded by the Pacific Gas & Electric's Kern Canyon Hydroelectric Project (FERC No. 178). Edison proposes to continue to operate the project to provide a continuous minimum flow in the bypassed reach of 50 cfs from June 1 through September 30 and a continuous minimum flow of 15 cfs from October 1 through May 31, or inflow to the reservoir, whichever is less, as required by the existing license.

The project requires a minimum of 5 cfs to operate, and is limited to 412 cfs by the capacity of the flowline to the powerhouse. The powerhouse has four Pelton impulse-type turbines, equipped with governors that direct flows under the turbines during sudden shutdowns to maintain water supplies to the downstream users. The Kern River No. 1 Project is operated remotely from Edison's Kern River No. 3 Project (FERC No. 2290), which is attended 24 hours a day.

2. Proposed Environmental Measures

Edison proposes to continue to operate the project as described above, with the additional protection and enhancement measures summarized below.

Monitor leaking flumes annually and postpone repairs that would reduce leakage until it becomes threatening to the flumes structural integrity to maintain localized pools important to wildlife.

Provide raptor protection along an 0.8-mile-long² distribution line at the project.

2/ In 1995, Edison reconfigured those poles along the distribution line that were considered to be hazardous. Edison says it will install additional protective devices as necessary if monitoring of raptor mortality indicates that a significant hazard still exists (letter from C.E. Miller, Edison, Rosemead, California, April 10, 1995). The distribution line is not within the Commission's jurisdiction because it is not a primary line [18 CFR §4.70]; consequently, while we approve of Edison's proposed avian protection measures, they wouldn't be made a requirement of any new license.

Provide the following recreational site enhancements:

install and/or replace existing toilets with accessible vault toilets at Live Oak, Upper Richbar, and Lower Richbar Day Use Areas and Democrat Raft Take-out;

provide accessible picnic tables and barbeques at the day use areas; and

improve parking and pathways for disabled persons at the day use areas, and provide hard pack surface for pathways at Democrat Raft Take-out.

Consult with FS on mutually agreeable colors when facilities require repainting to reduce contrast of the project facilities with the surrounding natural environment.

Implement a cultural resources management plan to protect the historic project facilities.

3. Federal Land Management Conditions

Because the project occupies lands of the Sequoia National Forest, the FS has authority, under Section 4(e) of the Federal Power Act (FPA), to impose mandatory conditions on any hydropower license the Commission would issue. Preliminary conditions filed on November 13, 1996, and modified by letter dated June 3, 1997,

3

are summarized below.

- (1) Receive FS approval for all final design plans for project components the FS deems as affecting or potentially affecting National Forest System resources.
- (2) Receive FS approval for making any changes in the location of project features or facilities or in the use of project land or waters or any departure from the requirements of any approved exhibits filed with the Commission.
- (3) Consult with the FS each year with regard to measures needed to ensure protection and development of the natural resource values of the project area.
- (4) Release a minimum flow in the project bypassed reach of 50 cubic feet per second (cfs) from June 1 through September 30, and 15 cfs from October 1 through May 31, and monitor flows at FS designated locations and dates.

3/ FS will provide final 4(e) conditions within 45 days of issuance of the final EA.

- (5) Develop a recreation plan that includes, in addition to Edison s proposal, installing a second double unit accessible SST (sweet-smelling) vault toilet at the Upper Richbar Day Use Area; and installing of one accessible picnic table and barbeque, painting parking stripes, and providing accessible parking and a pathway to the comfort station at Democrat Raft Take-out.
- (6) Prepare erosion control, solid waste and waste water, hazardous substance, spoil disposal, and visual resources protection plans before soil-disturbing activities.
- (7) Implement measures to protect FS sensitive species and threatened and endangered species, before taking any actions that may affect these species.
- (8) Implement or follow other conditions pertaining to development plans, maintaining improvements, existing claims, regulation compliance, protection of U.S. property, surrender of license, indemnification, construction approval, project safety, water pollution, liability, hazardous condition identification, signage, pesticide use restrictions, FS access, nondiscrimination in employment and services, and construction stipulations.

B. STAFF'S PREFERRED ALTERNATIVE

In addition to Edison s proposed measures and the required 4(e) conditions, the Commission staff recommends that Edison be required to (1) implement a mechanism to provide information on flow in the bypassed reach to the public, (2) prepare a recreation access improvement plan, (3) study the adequacy of the FS required minimum flows for protecting and enhancing the smallmouth bass fishery in the project bypassed reach, (4) implement the Water Temperature Study Plan filed with the Commission on December 2, 1997, and (5) monitor recreation use, by activity, in the bypassed reach for 5 years and coordinate this study with the relicensing studies for the Borel and Kern Canyon Projects.

C. DECOMMISSIONING WITHOUT REMOVAL OF PROJECT STRUCTURES

The Kern River No. 1 Project could be decommissioned keeping all facilities intact or removing all or part of the project structures. Either alternative would involve denial of the relicense application and surrender or termination of the existing license with appropriate conditions.

In a joint letter filed November 8, 1996, Friends of the River (FOR) and American Whitewater Affiliation (AWA), hereafter referred to as FOR/AWA, recommend that the project could be decommissioned and abandoned in place, after appropriate measures

are taken to make the project safe.

This decommissioning alternative would involve retaining and securing from access the project structures (dam, powerhouse, tunnels, flumes, and transmission lines), salvaging or removing the generating equipment, and passing all flows over the dam. Modification to Edison's transmission line system would be required to provide the backup electric service capability now provided by the project.

D. NO-ACTION ALTERNATIVE

Under the no-action alternative, the project would continue to operate under the terms and conditions of the existing license, and no new environmental protection, mitigation, or enhancement measures would be implemented. We use this alternative as the baseline environmental condition for comparison with other alternatives.

E. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

We considered the following alternatives to Edison's proposal but eliminated them from detailed study because they are not reasonable in the circumstances of this case.

1. Federal Takeover

We don't consider federal takeover and operation of the project to be a reasonable alternative. Federal takeover and operation of the project would require Congressional approval. While this fact alone does not eliminate this alternative from further analysis, there is no evidence to indicate that federal takeover should be recommended to Congress. No party has suggested federal takeover would be appropriate, and no federal agency has expressed an interest in operating the project.

2. Nonpower License

Issuing a nonpower license would not provide a long-term resolution of the issues. A nonpower license is a temporary license the Commission would terminate whenever it determines that another governmental agency would assume regulatory authority and supervision over the lands and facilities covered by the nonpower license. In this case, no government agency has suggested its willingness or ability to do so. No party has sought a nonpower license, and we have no basis for concluding that the project should no longer be used to produce power. Issuing a nonpower license, therefore, is not a realistic alternative in these circumstances.

3. Decommissioning With Removal of All Project Structures

No participant has suggested that removal of all project structures (dam, powerhouse, flumes, penstock) would be appropriate, and we have no basis for recommending it. The benefits from decommissioning with removal of all project structures, which includes restoring diverted flows (maximum of 412 cfs) to 10.2 miles of the Kern River, eliminating any fish entrainment mortality that might be occurring, and providing additional flow for whitewater boating, would also be obtained with decommissioning without removal of project structures. The only advantage of dam removal would be unobstructed fish movement and whitewater boating.

While we recognize these potential benefits, we don't regard this alternative as reasonable because it would result in possible significant adverse environmental impacts, lost project recreation benefits, and lost electric power generation. For example, dam removal would cause (1) short-term noise, dust, and land disturbance that may temporarily affect visitor recreational experiences and displace wildlife in the area; (2) erosion and stream sedimentation, which could adversely affect water quality and fish habitat; (3) the loss of a small, but much used reservoir fishery resource; (4) the loss of historically significant cultural resources; and (5) the loss of the boat take-out at Democrat dam. Proposed enhancements at the day use areas and Democrat dam wouldn't be provided. Because the project power is needed, some or all of the power would be replaced by fossil-fueled power plants, adding to air pollution. In addition to the direct costs of removing the dam, intake structures, above ground water conduits, and powerhouse, which we estimate to cost \$2.5 million, Edison says it would need to spend about \$1.7 million to modify its transmission line system to provide the backup electric service capability now provided by the project. Because of the high cost relative to the environmental benefits, removal of all project structures is not a reasonable alternative compared to the other alternatives considered herein.

IV. CONSULTATION AND COMPLIANCE

A. AGENCY CONSULTATION

The Commission's regulations require applicants to consult with the appropriate resource agencies before filing an application for a license. This consultation is the first step in complying with the Fish and Wildlife Coordination Act, the Endangered Species Act, the National Historic Preservation Act, and other federal statutes. Pre-filing consultation must be complete and documented according to the Commission's regulations.

After the Commission issued a public notice on September 11, 1996, stating the application was ready for environmental analysis, the following entities commented: (1) FOR/AWA by

letter dated November 8, 1996, and (2) FS by letter dated November 13, 1996. On February 10, 1997, Edison filed an untimely response to FOR/AWA s November 8,1996, comments. FS filed revised preliminary 4(e) conditions by letter dated June 3, 1997.

B. INTERVENTIONS

In addition to filing comments, organizations and individuals may petition to intervene and become a party to the licensing proceedings. The following entities filed for and were granted intervenor status.

INTERVENOR	DATE OF MOTION TO INTERVENE
Kern River Outfitters and American Whitewater Affiliation	August 29, 1994
Cities of Anaheim, Riverside, Banning, Colton, and Azusa, California	March 6, 1995
Friends of the River	August 24, 1995
Kern River Alliance	December 30, 1995

C. SCOPING

Scoping Document I, which asked for written comments on issues to be addressed in the EA, was issued on January 23, 1995, and was noticed in the Federal Register on January 27, 1995, and in the Bakersfield Californian on February 15 and March 1, 1995. In addition to comments provided at the scoping meetings on March 7 and 8, 1995, written comments were received from the following

⁴
entities.

COMMENTING ENTITIES	DATE OF LETTER
California Department of Boating and Waterways	March 16, 1995

4/ Additional public input was solicited by Edison at collaborative meetings held between November 1996 and August 1997. The issues discussed at these meetings, whitewater recreation flows, access, minimum instream flows, fish habitat improvements, recreation improvements, and recreation use by the public in the project area, are the same as those discussed throughout this EA.

COMMENTING ENTITIES	DATE OF LETTER
San Joaquin Valley Unified Air Pollution Control District	April 4, 1995
Southern California Edison Company	April 10, 1995
American Whitewater Affiliation	April 12, 1995

Scoping Document II, addressing these comments, was issued May 26, 1995.

D. WATER QUALITY CERTIFICATION

On April 26, 1994, Edison applied to the State Water Resources Control Board (SWRCB) for a water quality certificate (WQC) for the project, as required by Section 401 of the Clean Water Act. The SWRCB received the request on May 2, 1994 (letter from C. E. Miller, Manager of Hydro Generation, Edison, Rosemead, California, May 16, 1994).

On May 1, 1995, the SWRCB granted certification to the project (letter from Walt Pettit, Executive Director, State Water Resources Control Board, Sacramento, California, May 1, 1995). On December 2, 1997, Edison filed a "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan" with the SWRCB. On January 12, 1998, the SWRCB amended Edison's certification to reflect the current Tulare Lake Basin Plan water quality objective for temperature (letter from Walt Pettit, Executive Director, State Water Resources Control Board, Sacramento, California, January 12, 1998). Under the requirements of section 401(d) of the Clean Water Act, the following water quality certificate conditions are to be included in any new license for the project.

- 1) Natural temperature waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Control Board that such alteration in temperature does not adversely affect beneficial uses.

Elevated temperature wastes shall not cause the temperature
5
of waters designated COLD or WARM to increase by more than
5øF (2.8øC) above natural receiving water temperature.

- 5/ Cold Freshwater Habitat (COLD) - Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

In order to demonstrate the attainment of the COLD beneficial use and compliance with the Basin Plan temperature objective for the Kern River, as defined in the Tulare Lake Basin Water Quality Control Plan (CRWQCD 1995), from the Edison Kern River No. 1 powerhouse upstream to Democrat Dam, Edison shall:

- a) Conduct the temperature monitoring and modeling study (for a period not to exceed five years) as described in the "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan" submitted by Edison to the SWRCB on December 2, 1997.
- b) An annual progress report shall be prepared and submitted to the Chief of the Division of Water Rights of the SWRCB and the Director of the CDFG by the following March 1 after each year of temperature monitoring. The progress report will summarize data collected, initial analyses, if any, and results of model calibration, when appropriate. The progress report will include any recommendations for changes to the monitoring program, and when appropriate will recommend conclusion of monitoring. Cessation of monitoring before the completion of five years of monitoring shall occur only upon approval of the Executive Director of the SWRCB.
- c) A final summary report shall be prepared within six months of the conclusion of temperature monitoring. The summary report will provide the results of model calibration, validation, and simulations. This will include an accurate description of the model, the data used for calibration and validation, and the measured performance of the model. The results of the temperature simulation model will be tables and plots of simulated longitudinal temperatures, which can be interpolated to estimate stream temperatures for project release flows. The report will summarize the effect of natural warming, the effect of project-related warming, and the likelihood that the project will maintain the COLD beneficial use and the thermal objective of the Basin Plan.
- d) If, based on modeling and as determined by the Executive Director of the SWRCB, the results suggest that project operations may not maintain the COLD beneficial use and/or the thermal objective for the conditions evaluated, Edison shall prepare an operations plan for approval by the Executive Director of the SWRCB. The operations plan will indicate what controllable water quality factor actions need to be taken to achieve the temperature objective for

protection of the COLD water beneficial use for that section of the Kern River. Upon review of the final report of the temperature monitoring and modeling study described in "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan", the SWRCB will utilize the operations plan to determine what additional terms and conditions may be necessary, if any, to maintain the COLD beneficial use. Edison shall implement any additional terms and conditions established by the SWRCB.

- 2) In order to protect the beneficial use designations identified in the Basin Plan, operation of the project shall not add the following substances to surface waters:
 - a) Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses;
 - b) Perceptible floating material including, but not limited to, solids, liquids, foams or scums which could result in degradation of water quality;
 - c) Suspended or settleable material in concentrations that cause a nuisance or adversely affect beneficial uses;
 - d) Oil, greases, waxes or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water;
 - e) Toxic pollutants present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health; and,
 - f) Coliform organisms attributable to human wastes.
- 3) If the licensee initiates any activities requiring installation of concrete or grout, fresh concrete or grout shall not be allowed to contact or enter surface water.
- 4) Any project dewatering activities shall be coordinated with the CDFG, and all reasonable measures taken to protect the beneficial uses of water.
- 5) Only water used for power generation is authorized for discharge. Discharge of any other materials is prohibited.

V. ENVIRONMENTAL ANALYSIS

In this section, we first describe the general environmental setting of the project area. We then discuss the site-specific and cumulative effects of the resources affected by the project, including the effects of the proposed action, action alternatives, and no action.

A. GENERAL DESCRIPTION OF THE KERN RIVER BASIN

1. Kern River Basin

The Kern River originates as the North Fork Kern River in the Sierra Nevada Mountain range at an elevation of 14,495 feet near Mt. Whitney. It then flows 80 miles south to Lake Isabella (elevation 2,065 feet) where it is joined by the South Fork Kern River. From Lake Isabella, the Kern River flows west through the Kern Canyon and then across the southern San Joaquin Valley to Buena Vista Lake Bed, where it ends because of consumptive uses, evaporation, and infiltration. For analyses purposes, we define the reach from Lake Isabella to the mouth of the Kern Canyon, located about 34 miles west of Lake Isabella near the Sequoia National Forest boundary, as the lower Kern River. Streamflow in the lower Kern River is largely regulated by releases from the U.S. Army Corps of Engineers (Corps) Lake Isabella for irrigation, flood control, and hydroelectric power.

As the lower Kern River descends through the Kern Canyon, the canyon changes from the broad and gentle valley surrounding Lake Isabella to a rugged, very narrow, steep-sided gorge until it opens into the San Joaquin Valley. State Highway 178 follows the canyon, mostly paralleling and occasionally crossing the river. The highway is immediately adjacent to the river in several places, including in the project bypassed reach.

Recreation opportunities along the lower Kern River and within the surrounding Sequoia National Forest are varied, but water-oriented recreation is a major attraction. The Kern River is a major regional whitewater boating attraction, and summer irrigation flow releases from Lake Isabella provide relatively high flows in the lower Kern River for boating when other comparable resources in southern California have limited water.

2. Existing Hydropower Development and the Corp's Lake Isabella

Lake Isabella, a 570,000 acre-foot reservoir constructed in 1953 by the Corps, is managed primarily for flood control and

6/ Unless otherwise indicated, the source of our information is Edison's May 2, 1994, application for new license and supplemental filings.

other purposes such as recreation, but reservoir releases are also scheduled by the Watermaster to meet the water rights of downstream agricultural interests and energy companies. During the summer months, nearly all of the water released from the reservoir is used to irrigate approximately one million acres of cultivated land in the San Joaquin Valley. Flows released from Lake Isabella are highest in the summer when agricultural releases are made, and lowest in the winter when the dam stores water.

Six FERC-licensed hydroelectric projects are located on the mainstem of the Kern River. No other projects are proposed for licensing or exemption from licensing on the Kern River. Edison's Kern River No. 3 Project (FERC NO. 2290), relicensed on December 24, 1996, is located on the North Fork of the Kern River. The other five projects, which are up for relicensing between now and 2033, are located on the 34-mile-long reach of the lower Kern River downstream of Lake Isabella and affect flows in 61 percent of this reach (table 1).

Water from Lake Isabella is diverted to Edison's Borel Project powerhouse (FERC No. 382), located 7 miles downstream of the lake. Also, the Isabella Partners Project (FERC No. 8377) powerhouse is located at the base of Isabella dam. The Borel Project has a capacity of 605 cfs, and the Isabella Partners Project generates from reservoir releases greater than the Borel Project's capacity. Historically, a minimum flow of 5 cfs has been provided in the 7-mile-long bypassed reach below Isabella dam and the Borel Project tailrace. On September 29, 1997, the Commission issued an Order Establishing A Minimum Flow Release

7

for the Borel Project of 50 cfs from June through September and
8
15 cfs from October through May.

Below the Borel Project tailrace the river is not diverted for 13 miles until it reaches Edison's Kern River No. 1 Project (FERC No. 1930) at Democrat dam. Flows are diverted from Democrat dam for 10.2 miles to the Kern River No. 1 powerhouse. Minimum flows in the diverted reach are 50 cfs (June-September) and 15 cfs (October-May). Flows from the Kern River No. 1 tailrace are immediately diverted by Pacific Gas and Electric Company's (PG&E) Kern Canyon Project (FERC No. 178). Minimum flows in Kern Canyon's 1.6-mile-long bypassed reach are 25 cfs during wet years and 12.5 cfs during dry years. Releases from the Kern Canyon Project tailrace flow 0.1 mile, then are diverted by the Independent Hydro Producer's Rio Bravo Project (FERC No.

7/ 80 FERC •62,289

8/ Edison filed a timely request for rehearing on this order on October 29, 1997. The Commission has not acted on the rehearing request.

4129). The minimum flow in this project's 2.0-mile-long bypassed reach is 50 cfs year-long. The two Edison projects and the PG&E project were constructed, and operated on unregulated flows, before the construction of the Lake Isabella dam in 1953.

Table 1. Locations of diversion dams (river miles below Lake Isabella), reach lengths, and minimum flow requirements between Lake Isabella and the Rio Bravo Hydroelectric Project's tailrace.

Project- License Expiration	Location of Diversion dams (capacity - cfs)	Reach length (miles)	Minimum flow requirements
Isabella (FERC 8377) - 4/30/2038	Mile 0.0 (flows > 605 cfs)	0	0 cfs (5 cfs in practice)
Borel (FERC 382) - 2/28/2005	Mile 0.0 (605 cfs)	7.0	15 cfs (Oct - May) 50 cfs (Jun - Sep)
Free-flowing section	Mile 7.0	13.0	5 cfs + Borel Project outflows
Kern No. 1 (FERC 1930) - 4/30/1996	Mile 20.0 (412 cfs)	10.2	15 cfs (Oct - May) 50 cfs (Jun - Sep)
Kern Canyon (FERC 178) - 4/30/2005	Mile 30.2 (720 cfs)	1.6	25 cfs (normal & wet year) 12.5 cfs (dry year)
Free-flowing section	Mile 31.8	0.1	Kern Canyon Project outflows + min. flow
Rio Bravo (FERC 4129) - 8/31/2033	Mile 31.9 (1,600 cfs)	2.0	50 cfs (yearlong)
Rio Bravo (tailrace)	Mile 33.9	---	Rio Bravo Project outflows

Source: Staff, as modified from Edison (1994a).

B. SCOPE OF CUMULATIVE IMPACT ANALYSIS

According to the Council on Environmental Quality's Regulations for implementing NEPA (•1508.7), an action may cause

cumulative impacts on the environment if its impacts overlap in space and/or time with the impacts of other past, present and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

Based on our review of Edison's license application and agency and public comments, we have identified aesthetic character and whitewater boating opportunities as the resources that have the potential to be cumulatively affected by the Kern River No. 1 Project in combination with other past, present, and future activities. We chose these resources because the succession of dams and reduced flows in the bypassed reaches of the existing hydropower developments on the Kern River and the operations of Lake Isabella have cumulatively altered the aesthetic character of the Kern River Basin and altered whitewater boating opportunities.

1. Geographic Scope

Our geographic scope of analysis for cumulatively affected resources is defined by the physical limits or boundaries of (1) the proposed action's effect on the aesthetic character of the lower Kern River and whitewater boating in the lower Kern River, and (2) contributing effects from other hydropower activities and operation of Lake Isabella for irrigation, recreation and other purposes. The geographic scope of our analysis is the lower Kern River from Lake Isabella to the tailrace of the Rio Bravo Hydroelectric Project. We chose to restrict our cumulative resource evaluations to the lower Kern River because (1) streamflows in the lower Kern River are controlled by the Corps at Lake Isabella--consequently, any changes made in the operation of the Kern River No. 1 Project would not affect the Kern River above Lake Isabella; and (2) available resources and demands on these resources in the lower Kern River where the project is located are sufficiently different from the resources and demands in the high Sierra Mountains of the upper basin. Recreational demands on the upper Kern have been addressed in Final EA for the Kern River No. 3 Project 2290 (FERC and FS 1996).

2. Temporal Scope

The temporal scope of our cumulative analysis will include past, present, and future actions and their effects on each resource that could be cumulatively affected. For purposes of our analysis, the temporal scope will look 30 years into the future (expected term of new license), concentrating on the effect on the resources from reasonably foreseeable future actions. The historical discussion will, by necessity, be limited to the amount of available information.

C. PROPOSED ACTION AND ACTION ALTERNATIVES

In this section we discuss the effects of project alternatives on environmental resources. For each resource we first describe the affected environment--the existing condition and baseline against which we measure effects, and then discuss the specific environmental issues.

1. Geological Resources

a. Affected Environment

The project is located in a canyon formed by numerous episodes of uplift, deformation, erosion, deposition, and intrusion of igneous rocks. The canyon has steep rock walls, cluttered with bedrock outcrops and large boulders. Alluvial fans have formed along the base of the canyon walls. Soils consisting of fine well-sorted sandy loams have developed from the alluvial fans. Coarse sandy loams have developed from weathering of the bedrock, boulders, and steep canyon walls.

The steep rock walls and bedrock outcrops result in the watershed having rapid runoff rates with concentrated flows. The soils are highly erodible.

b. Environmental Impacts and Recommendations

Erosion Control

Edison does not propose any new construction, modifications, or changes to the project itself, that would cause land-disturbing activities. However, Edison does propose recreation enhancement measures (constructing parking lots and foot paths and installing vault toilets) that would involve minor land-disturbing activities (see Recreational Resources section) that could cause erosion and sedimentation.

The FS preliminary 4(e) conditions require Edison to develop, before starting any land-disturbing activities, (1) an erosion and sediment control plan, (2) a solid waste and waste water plan, and (3) a spoil disposal plan.

Implementation of the preliminary 4(e) conditions would protect water quality and other environmental resources during land-disturbing activities. Therefore, we recommend Edison develop a site-specific erosion and sediment control, solid waste and waste water, and spoil disposal plans before any land-disturbing activities, including the proposed recreational enhancements.

Decommissioning

Decommissioning the project would put more flow (see Aquatic Resources section) into the mainstream that under most circumstances could cause bank erosion with an increase in sedimentation. However, because the Kern River already experiences large flow fluctuations (50 to 10,000 cfs), the banks and streambed can accommodate the slightly higher flow normally diverted by the project (a maximum of 412 cfs) without causing significant bank erosion or scouring.

c. Unavoidable Adverse Impacts

None.

2. Aquatic Resources

a. Affected Environment

Water Quantity

The Kern River Basin has mild, dry, summers and wet winters, characteristic of Mediterranean subtropical climates. The annual precipitation in the basin is between 10 and 30 inches.

Streamflow at the project is recorded at three U.S. Geological Survey (USGS) stations: USGS gage number 11192500, located in the bypassed reach 0.4 mile downstream of Democrat dam; USGS gage number 11192000, located on the flowline 2.3 miles below the diversion; and USGS computational station number 11192501, which combines the flow data from the stations in the flowline and the bypassed reach to calculate the total inflow to the project. The projects minimum flow requirement is recorded at USGS gage number 11192500.

The total annual flows (1969 through 1990) for the USGS computational station were used to determine representative average, wet, and dry water years. The volume of water that flowed through the system in 1973 was nearest to the calculated mean, and is considered an average water year. The lowest and highest volumes were in 1977 and 1983, respectively, and are considered dry and wet water years.

Figure 3 shows the mean monthly computed project inflows, flowline flows, and what the bypassed reach flows would have been with the current minimum flow requirements, during average (1973) and dry (1977) water years, respectively. Figure 4 shows the same flow records for a wet (1983) water year.

The highest recorded spill over Democrat dam was 40,000 cfs occurring on November 19, 1950. Since Lake Isabella was constructed in 1953, the highest recorded spill over Democrat dam was 10,000 cfs on December 6, 1966. The combined flow of the North Fork Kern River (USGS gage number 11186001) and South Fork Kern River (USGS gage number 11189500) on December 6, 1966, upstream of Lake Isabella, was 88,700 cfs. Flow in the bypassed reach during November through January 1977, before a minimum flow was required, was often less than 1 cfs.

Water Quality

The California Regional Water Quality Control Board (CRWQCB) identified the beneficial uses of the Kern River from Lake Isabella to the Kern River No. 1 powerhouse as: hydropower generation, water contact and non-contact recreation, freshwater fish habitat (warm and cold), and rare and endangered species habitat (CRWQCB 1995). Beneficial uses downstream of the

powerhouse--
in addition
to all those
uses above
the
powerhouse--
include
municipal
and domestic
supply,
agricultural
supply,
industrial
service and
process
supply, and
as a source
for ground
water
recharge.
Cold
freshwater
fish habitat
is not a
designated
beneficial
use below
the Kern
River No. 1
powerhouse.

Graphic can be found on hard copy in public file.

Graphic can be found on hard copy in public file.

Edison
analyzed
water
quality
samples
collected
upstream of
Democrat
dam, within
the bypassed
reach, and
downstream of the powerhouse on March 31 and September 23, 1992.

Figure 3. Average (1973) and dry (1977) water year hydrographs for the Kern River No. 1 Project, with a minimum flow of 15 cfs (October 1 through May 31) and 50 cfs (June through September) (Source: Staff, as modified from Edison, 1994a).

The study results found project waters characteristic of the Kern River Basin: calcium sodium bicarbonate water, soft, relatively low in dissolved solids, and slightly alkaline. Ammonia and pH did not meet water quality objectives defined by CRWQCB (1995) or SWRCB (1993) at a few sample sites, but project operation does not appear to affect the levels of these or any other water quality parameters. The following describes Edison's water quality study results that didn't meet the state's water quality objectives, and possible reasons for why the readings didn't meet

these
objectives.
We also
discuss water
temperature
to provide
insight to
the water

Graphic can be found on hard copy in public file.

quality
certificate
condition
that requires
Edison to not
allow an
increase in
water
temperature
more than
2.8°C
throughout
the bypassed
reach (see
section IV.
D.).

Figure 4. Wet (1983) water year hydrograph for the Kern River No. 1 Project, with a minimum flow of 15 cfs (October through May) and 50 cfs (June through September) (Source: the staff, as modified from Edison, 1994a)

Water temperature: Uses of water that support cold water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates, are designated by the state as "cold" freshwater habitat. The state's inland surface waters objective for waters designated as "cold" freshwater fish habitat is to not allow an increase in water temperature more than 2.8°C above the natural receiving water temperature (CRWQCB 1995)

Studies conducted by Edison in 1992 showed that water temperatures measured at Democrat dam did not increase more than 2.8°C in the bypassed reach. On March 31, 1992, when the bypassed reach flow averaged 29 cfs, water temperature measured above the diversion dam was 12.6°C. In the bypassed reach the water temperature was 14.5°C to 15.2°C, and below the powerhouse the water temperature was 14.3°C. On September 29, 1992, when bypassed reach flow averaged 62 cfs, the temperature measured 1 mile above, and immediately above, Democrat dam was 21.5°C. The water temperature in the bypassed reach was 21.5°C to 22.0°C, and below the powerhouse the water temperature was 21.0°C.

In 1987 Edison conducted a temperature modeling study in the Kern River between Lake Isabella and above the Kern River No. 1 powerhouse (Flow Science 1988). Water temperature profiles were collected from Lake Isabella on October 9-10, 1987, and stream temperatures were collected at five stations below the Isabella dam between August and October. The study indicated that the

thermal response of Lake Isabella, with its large surface area, to changes in local atmospheric conditions was the dominant factor in defining the water temperature in the river below the lake. However, since the diurnal variations in Lake Isabella were confined to the upper 5 meters of the water column, withdrawal of water from below this elevation would maintain a relatively stable base temperature in the upper reaches of the river. Passing water through the Borel and Kern River No. 1 Projects' power canals helps reduce the total heat added to the river below Lake Isabella, although it can increase the diurnal water temperature fluctuations when the Borel Project draws water from the surface of Lake Isabella. The average daily water temperatures at Democrat dam ranged from 18°C to 24.5°C during the 3-month study. Between September 7-30, 1987, when the average daily flow in the bypassed reach was a constant 65 cfs, the range of the average daily water temperature at Democrat dam was between 24.3°C and 20.5°C. During this period there was less than a 1°C increase in the daily average water temperature upstream of the Kern River No. 1 powerhouse.

Dissolved oxygen: The state's water quality objectives require that dissolved oxygen (DO) concentrations not fall below 8 milligrams per liter (mg/l) between Lake Isabella and Kern River No. 1 powerhouse, and not below 7 mg/l below the powerhouse.

All DO concentrations measured by Edison in the bypassed reach met the state's minimum objective. The DO concentration above Democrat dam was 7.4 mg/l on September 23, 1992, lower than the state's 8 mg/l minimum objective. This lower concentration was attributed to the impacts of cattle grazing, septic tank discharges, or fertilizer runoff. The DO concentration below the powerhouse was 6.5 mg/l on September 23, 1992, lower than the state's 7 mg/l minimum objective. Edison attributed this lower concentration to degradation of plant material near the sample site, and no comments were filed with the Commission disagreeing with this conclusion.

pH: The state's water quality objective for pH is in the range of 6.5 to 8.3 units, and isn't allowed to change at any time more than 0.3 units from normal ambient pH levels.

A single field measurement of 8.6 units was recorded by Edison in the bypassed reach during the water quality study. Slightly high readings were also recorded above Democrat dam (8.4 units) and in Lucas Creek (8.5 units), a tributary to the bypassed reach. These data indicate that relatively high alkalinity is a characteristic of the Kern River in general, and is not attributed to the project or its operations.

Ammonia: The state's water quality objective for unionized ammonia states that discharges of wastes shall not cause

concentrations to exceed 0.025 mg/l in receiving waters. Two samples collected by Edison in September 1992, one upstream of the project (0.45 mg/l) and one 600 feet upstream of the powerhouse (0.04 mg/l), contained ammonia concentrations above the Basin Plan objectives. High ammonia levels are likely caused by upstream land use practices such as animal grazing, septic system discharges, or application of fertilizers. The presence of ammonia concentrations upstream of the project at least ten times greater than that measured in the bypassed reach indicates that ammonia is not project-related.

Water Rights

Edison's water rights for the project are for hydroelectric generation and incidental domestic use, and are based on pre-1914 appropriation of 412 cfs. This water right has allowed Edison to divert water at Democrat dam since before the construction of Lake Isabella in 1953.

To fulfill the water right of the project from Isabella Reservoir upstream, the Corps releases through the Isabella dam outlets during October through May, the preproject flow of the Kern River (including the South Fork) up to 412 cfs (the plant capacity); and during June through September, the first 74 cfs of flow of the river, the next 50 cfs to bypass the plant for recreational purposes, and the next 338 cfs to be diverted for power (U.S. Corps of Engineers 1953, amended January 1978).

No changes to the existing project facilities or operations are proposed that would require additional water rights over the term of the new license.

Fisheries Resources

The Kern River between Democrat dam and the Kern River No. 1 powerhouse is a moderately steep stream dominated by boulders and bedrock. Habitat is dominated by broad runs (39.6 percent), pools (27 percent), and cascades (14.8 percent). Narrow and wide riffles, braided low-gradient cascades, and runs make up the remaining habitat types (EA 1986).

From 1850 through the 1970's the lower reaches of the Kern River were characterized as being abundant in suckers and squawfish (Christenson 1975). These species were abundant well upstream of the Kern River No. 1 Project. The abundance of rainbow trout in the vicinity of the project was sparse, even in 1850. The rainbow trout populations declined over time due to numerous causes.

Edison conducted fish population studies at three stations within the diversion pool upstream of Democrat dam during the week of March 21, 1994. Fish were sampled using beach seines,

gill nets, minnow traps, and electrofishing equipment. A total of 39 fish and eight species were collected during this sampling effort. The fish species collected were mosquitofish, white crappie, common carp, largemouth bass, smallmouth bass, brown bullhead, channel catfish, and hitch. None of these fish species are stocked on a regular basis, and are therefore considered self-sustaining populations.

CDFG manages the project bypassed reach for its self-sustaining smallmouth bass fishery, and stocks it with catchable-sized rainbow trout. The fishing season is year-round with a no-size, 5 fish per day limit. Fish are stocked in the diverted reach area about 30 weeks per year during the spring-early summer and fall--when water temperature is cool enough. Fish are stocked year-round in the 13-mile reach between Democrat dam and the Borel powerhouse--every week from Memorial Day weekend through Labor Day weekend and every other week for the remainder of the year. The programmed stocking allotment for 1996 in the bypassed reach and the section upstream of Democrat dam was 8,400 and 18,000 fish, respectively. Slightly fewer fish were stocked in 1996 than scheduled (figure 5).

Trout are stocked at about eight locations throughout the diverted reach at increments of 100 pounds each (150 to 260 fish). Since 1990 the average catchable-sized trout stocked in the Kern River is about one-half pound, and ranging from 8 to 14 inches in length. Before 1990 more fish were stocked at a smaller size--about one-third pound each. Trout are stocked at one pound each in the reach upstream of Democrat dam.

Graphic can be found on hard copy in public file.

Figure 5. Catchable-sized rainbow trout stocked in the Kern River No. 1 Project bypassed reach and between the upstream Borel powerhouse and Democrat dam (1986-1996) (Source: Staff, as modified from Edison, 1994a and personal communication, Roger Ellis, Hatchery Manager, California Department of Fish and Game, Fresno, California, January 2, 1997).

Edison conducted a creel census in the project bypassed reach of the Kern River, where State Highway 178 parallels the river, from late April to the end of September 1992. The average catch rate for all fish caught during the census period was 0.537

9

fish per hour. Smallmouth bass accounted for 75.6 percent of the total catch (0.406 fish per hour) and 19.4 percent of the fish caught were rainbow trout (0.104 fish per hour). All other species combined accounted for 5 percent of the catch. Although a large percentage of the fish caught were smallmouth bass, few were kept (13 percent) because of their small size. Because the rainbow trout are raised to a catchable size, a larger percentage of them were kept by anglers (74 percent). Most anglers rated the fishing as poor (66 percent), and only 2 percent rated it as excellent.

b. Environmental Impacts and Recommendations

Fish Entrainment

Fish moving downstream can be entrained into intake structures and suffer injury or death when passing through turbines at hydroelectric plants (Eicher Associates 1987).

Flows from the diversion pool pass through two trash screens. One is located adjacent to the dam and oriented parallel to the river flow. The other is 40 feet upstream and oriented perpendicular to the flow. The two screens are constructed of bar material on 2-inch centers, with widths of 36 feet and 30 feet, respectively. Edison is not proposing any mitigation measures to reduce the potential impacts of fish entering the project intake structure. Neither the FS nor the fish and wildlife agencies have recommended any entrainment-related measures. To analyze the project's entrainment-related impacts, we reviewed Edison's fish sampling studies at the diversion pool above Democrat dam and the water velocity measurement taken at the project's intake screens.

A total of 39 fish were collected using beach seines, gill
10
nets, and electrofishing equipment. The fork lengths in millimeters (mm) of these fish are shown in table 2.

- 9/ A total of 2,790 rainbow trout were stocked that year between May 5 and July 24 on a weekly basis.
- 10/ Distance from the tip of the snout to the fork of the caudal fin.

Table 2. Species and fork lengths (mm) of fish collected from the project diversion pool (Source: Staff, as modified from Edison, 1994a)

Species	Range of fork lengths (mm) and (number)		
	Beach seine	Gill net	Electrofishing
Largemouth bass	44 - 61 (3)	490 (1)	345 - 466 (2)
Smallmouth bass			130 - 155 (2)
White crappie	125 - 185 (4)	150 (1)	176 - 192 (3)
Mosquitofish	17 - 28 (13)		
Hitch	50 -76 (3)		
Carp		430 (1)	
Channel catfish			125 (1)
Brown bullhead			222 - 273 (5)
Total number = 39	23	3	13

Velocity measurements were collected in the channel upstream of the two screens and along the screens surfaces when project intake was 397 cfs (96.4 percent of maximum capacity). The approach velocities--the component of the measured velocity that carries fish toward the intake--at the two screens averaged about 0.25 feet per second (fps) (0.13 fps to 0.41 fps) and 0.86 fps (0.74 fps to 1.09 fps). The bypass velocities--the component of the measured velocity that tends to carry objects past the screens--averaged 0.44 fps and 0.41 fps for each screen, respectively.

The only gamefish sampled from the diversion pool that would have difficulty avoiding the screens' approach velocities is the smallest largemouth bass (44 to 61 mm). The swimming speed of largemouth bass, with an average length of 82 mm, has been measured at 0.5 fps (Dahlberg et al. 1968). Beamish (1978) measured the swimming speed of 81 mm to 224 mm largemouth bass at 1.1 fps to 1.9 fps. All of the other gamefish sampled from the diversion pool (table 2) have swimming speeds greater than the screens' approach velocities. In addition, the warmwater fish habitat in the immediate vicinity of the intake is not as suitable as the area upstream that contains vegetative cover.

The studies that Edison conducted showed that few fish would be entrained at the project's intake. Because the project turbines are Pelton units, all of the fish that travel through the flowline and turbines would be killed. The agencies have not recommended any entrainment-related mitigation measures, and we concur that none are necessary.

Minimum Instream Flows

Providing a minimum flow at Democrat dam is necessary to protect the fishery resources in the project bypassed reach of the Kern River.

In the Order Requiring Minimum Flow Release, dated February 11, 1991, Edison was required to release minimum flows of 50 cfs from June 1 through September 30, or inflow, whichever is less, to protect rainbow trout habitat, and 15 cfs from October 1 through May 31, or inflow, whichever is less, to protect smallmouth bass habitat. Flows greater than the minimum flow requirements--up to the project's capacity of 412 cfs--can be diverted for power purposes. Flows greater than the combined minimum flow and the project's capacity are spilled into the bypassed reach.

Edison proposes to continue to release its current minimum flow requirements.

FS preliminary 4(e) conditions require that the existing minimum flow requirements be maintained during the new license term. We didn't receive any flow-related 10(j) recommendations from the fish and wildlife agencies.

Edison conducted an instream flow study in the bypassed reach in 1986. The study showed that 83 percent-of-maximum weighted useable habitat (WUA) for adult rainbow trout is available at 50 cfs, and a minimum of 94 percent-of-maximum WUA for the adult, juvenile, and fry life stages of smallmouth bass is available at 15 cfs (figure 6). The CDFG, in a letter to Edison dated October 5, 1990, stated that 50 cfs from June through September would maintain adequate spatial habitat for adult trout, and that 15 cfs during October through May would maintain adequate habitat for all life stages of smallmouth bass.

We concur with the CDFG's conclusion and believe that the existing minimum flows provide adequate protection for the fishery resources in the bypassed reach.

The relationship between WUA and fish production is theoretical, however. In addition, other factors such as excessive fishing pressure, available food supplies, water temperature, large flow fluctuations, and natural channel structure affect a stream's fish productivity. Therefore, we recommend that Edison develop and implement a plan to study the adequacy of the FS-required minimum flows for protecting and enhancing the smallmouth bass fishery in the project bypassed reach.

Edison operates four gages to monitor (1) water flow through

the
powerhouse,
(2) spill
flows over
the
diversion
dam, (3)
instream

Graphic can be found on hard copy in public file.

flows in the
channel
below the
diversion
dam, and (4)
minimum
instream
flows as
released
through a
pipe in the
sandbox at
the top of
the flowline
(letter from
Ronald
Schroeder, Manager,

Graphic can be found on hard copy in public file.

Licensing
and
Compliance,
Edison,
Rosemead,
California
to Arthur
Gaffrey,
Forest
Supervisor,
Sequoia
National
Forest, July
1, 1997).
Compliance

Figure 6. Instream flow study results for rainbow trout and smallmouth bass in the Kern River bypassed reach (Source: the staff, as modified from EA Engineering, Science, and Technology 1986).

with minimum instream flow release requirements is currently being recorded continuously by an acoustic velocity meter installed on the release pipe at the sandbox. The record for this gage (Station No. 11192500) is reviewed, approved, and published annually by the USGS in "Water Resources Data: California." Edison proposes to continue to operate and maintain Station No. 11192500 to monitor compliance with the instream flow requirements. FS 4(e) conditions require monitoring of instream

12

flows. We believe that compliance monitoring is necessary and that the existing system would be sufficient to ensure compliance. We recommend that Edison continue to operate and maintain USGS Station No. 11192500 in order to monitor the minimum instream flows.

Water Quality

Temperature: Rainbow trout prefer water temperatures less than 20°C, and have a 7-day upper lethal temperature limit of 25°C (Cherry et. al 1977). CDFG does not stock catchable-sized trout in streams when water temperature reaches 24°C and it appears that such temperatures would continue to occur regularly, or when stream flows drop below 10 cfs.

Suitable streams with flow between 2 and 10 cfs may be planted if water temperatures don't exceed 21°C and other conditions are suitable. Stocking is discontinued if conditions are unsuitable because of shallow water, lack of pools, growth of algae, poor water quality, or other reasons (CDFG 1987).

The SWRCB is requiring Edison to develop a water temperature model for the area between the diversion dam and the powerhouse. The study results would be used to determine if the project can meet the state's cold freshwater habitat objective and if any operation changes would be necessary. If necessary, Edison would develop a project temperature operations plan for how the project would operate to meet the water temperature objective (see section IV.D).

The water temperature studies conducted at the project indicate that water temperature at Democrat dam is usually 20°C during August, September, and the first half of October, and water temperature does not increase more than 1°C between Democrat dam and the project powerhouse. Flows from Lake Isabella are normally high during the early warm summer months, and taper off in September and October (figures 3 and 4). To meet SWRCB's cold freshwater habitat temperature objective, additional flow releases may be necessary to guarantee that the water temperature in the bypassed reach doesn't increase by more than 2.8°C above the natural receiving water temperature.

We don't know exactly how much additional flow would be necessary to meet SWRCB's requirement, but the available information indicates that additional flow may only be necessary during the first half of October. Monitoring the flows and water temperatures for a 5-year period would help determine if, or how much, additional flow is needed to maintain the state's cold

12/ FS plans to revise its 4(e) conditions to indicate that the current monitoring protocol is adequate.

freshwater fish habitat temperature objective. We defer our final recommendation on this issue to the Comprehensive Development and Recommended Alternative section (section VII).

Sediments released during dam work in 1988: Increased volumes of fine sediments can reduce fish spawning success rates (Macgee et. al 1996) and influence benthic composition and micro-distribution in streams (Brusven 1974).

An undetermined volume of stored sediment was released into the bypassed reach during dam construction activities in 1988. CDFG was concerned that these sediments may have filled in important pool and riffle habitats. To determine if these sediments affected aquatic resources, Edison conducted a sediment grain size analysis, a two-day field measurement survey of selected pool habitats, and a reconnaissance of the bypassed reach in 1995. In addition, sediment bars observed during a November 1991 sediment study were compared to 1984 aerial photographs--before the 1988 sediment releases.

No specific instream sediment aggradation attributable to the 1988 release was observed. The sediment bars and islands observed during the 1991 sediment study were also evident in the 1984 aerial photographs. Edison estimated that sediment contribution in the bypassed reach from side channels and erosion resulting from road construction and maintenance may be as great as the sediment released from Democrat dam. Fine sediment was not observed filling interstitial spaces between and underneath large particle types such as cobble and boulder in cascade and riffle habitats at the time of the survey.

Edison calculated that coarse sand and finer sediment would be transported by the river under half bankfull conditions (about 800 cfs). Flows exceeding 1,000 cfs were common in the bypassed reach during 1993 and 1995, and were likely sufficient to have removed any lingering sediment from the 1988 release. Because Edison releases sediment only when flows exceed 1,000 cfs, future released sediments should not accumulate in the bypassed reach.

In addition to conducting the sediment-related studies, Edison is monitoring sediment deposition at pools in the bypassed reach for two years beginning in 1996. Monitoring would allow Edison to qualitatively predict the relationship between streamflow and sediment transport capacity. Measurement of any sediment accumulation during the monitoring period would help quantify sediment volume and calibrate what flows are necessary for transport. We recommend that Edison complete this monitoring and adjust their sediment releasing operations, if necessary, based on the monitoring results.

Hazardous Substances: FS preliminary 4(e) conditions would require Edison to file a plan for oil and hazardous substance

storage and spill prevention and cleanup within 1 year of license issuance or before soil disturbing activities. While Edison has an aggressive spill prevention program, including appropriate containment structures and onsite clean-up materials, a hazardous substances control plan is reasonable for the protection of natural resources, and we recommend that Edison prepare the plan.

Decommissioning

Under the decommissioning alternative, flows in the bypassed reach would be up to 412 cfs more than they are currently. Because the bypassed reach is stocked with catchable-sized rainbow trout, trout production in the bypassed reach is not an issue. CDFG manages the bypassed reach for natural production of smallmouth bass.

In wet water years, not diverting water at Democrat dam would cause relatively minor year-round flow increases in the bypassed reach. In average water years, bypassed reach flow would not be significantly increased except during October through February, when flow would increase from 15 cfs (October) and 73 cfs (February) to 152 cfs and 450 cfs, respectively.

In general, bypassed reach flow increases would have a negative impact on smallmouth bass habitat and production. Because the percent-of-maximum WUA for fry, juvenile, and adult smallmouth bass peaks between 20 and 35 cfs, flow increases to about 50 to 200 cfs would significantly decrease the amount of smallmouth bass habitat and productivity. If the project was decommissioned, reductions in smallmouth bass habitat would be even more significant during dry water years.

Smallmouth bass prefer warmer water temperatures than trout. Any increases in water temperature would be beneficial for smallmouth bass. Water temperatures in the bypassed reach currently exceed 20°C during the high-flow summer months. The magnitude of flow increase that would result from decommissioning the project would not significantly change water temperature. No change in smallmouth bass productivity--related to temperature--would occur.

c. Unavoidable Adverse Impacts

A minor portion of the smaller game and nongame fish species would continue to be entrained into the project flowline. Because the project turbines are Pelton units, all of the fish that travel through the flowline and turbines would be killed.

3. Terrestrial Resources

a. Affected Environment

Vegetation

Uplands immediately surrounding the project's diversion dam, flowline, and powerhouse consist of a mixture of open blue oak woodland and annual grassland. The oak woodland, adapted to the hot, dry climate and poor soils, is common throughout the lower interior foothills and forms a wide elevational vegetation zone

along the western base of the Sierra Nevada (Kuchler 1977). Blue oak is the dominant tree species, with digger pine, interior live oak, canyon live oak, and California buckeye being present on north-facing slopes above about 2,500 feet. Annual grassland is the most common vegetative component in the area. Historical grazing practices have greatly influenced grassland species composition, which includes mostly common introduced grasses, such as wild oats, bromes, annual fescue and Italian ryegrass. Native annual and perennial wildflowers and herbs are intermixed in the grasslands.

The riparian community within the project reach is confined to a relatively narrow band along the banks of the Kern River floodplain. Edison estimates that about 58 acres of riparian vegetation occur within the project area. Similar to many western Sierra streams, riparian development in the bypassed reach is limited by the narrow and incised floodplain, steep canyon slopes, low rainfall, rapid runoff, high stream gradient, and large boulder and bedrock dominated substrates (Harris 1988). Riparian development is slightly greater in some reach segments with more braided channels and slightly wider floodplains. Recreation use has influenced vegetation in these areas. Riparian species composition exhibits an elevational gradient, with the upper portion of the river near the diversion dam supporting narrow, broken strips of vegetation dominated by Fremont cottonwood, interior live oak, sycamore, willows and occasionally digger pine. Scattered pockets of mugwort, horsetails, nettle, Mexican rush and other opportunistic herbs are also present. The riparian community becomes less diverse and considerably less luxuriant farther downstream, consisting predominantly of an open and highly broken sycamore woodland. Associated species include cottonwood, willow, and an occasional buttonbush. Leaking flumes and water splashed over the flume edges form small pools beneath the flumes, which enhance vegetative diversity in these localized areas.

The project transmission line right-of-way (ROW) from the Kern River No. 1 powerhouse to the Edison intertie near the PG&E Kern Canyon powerhouse (about 1.9 miles) passes through annual grassland along the steep canyon slopes above Highway 178. Extensive bedrock outcrops are also present.

Wildlife

The habitats surrounding the project support a diverse assemblage of wildlife species. Site surveys documented the occurrence of 2 amphibian, 7 reptile, 40 bird, and 15 mammal species. The project vicinity is not considered to be an important waterfowl area. Several species of raptors, including red-tailed hawk, golden eagle, prairie falcon, and spotted owl, find suitable foraging and nesting habitats near the project.

The region's arid character makes water resources very important. Wildlife diversity and abundance was greater during the site surveys near the Kern River and in the wooded drainages south of the river and Highway 178 (such as Dougherty and Stark Canyons) than along the canyon walls. Water from leaking flumes provides a convenient and much used water source for wildlife.

b. Environmental Impacts and Recommendations

Leaking Flumes

Small puddles form under the project's flumes from both leaks and splashing over the edge. These puddles form micro-riparian habitats that are beneficial to vegetation and wildlife when the creeks dry up each year.

Edison proposes to monitor the leaking flumes annually and postpone any repairs until it becomes threatening to the structural integrity of the flumes. At such time, Edison would consult with the FS and the Commission prior to completing any flume repairs that would reduce present leakage.

We agree with Edison's proposal. These measures should be sufficient to prevent a failure of the system, while continuing to provide benefits to wildlife as long as possible.

Decommissioning

All flows released from Lake Isabella would pass over the dam, increasing flow in the bypassed reach by as much as 412 cfs over current conditions. Higher flows would increase the wetted perimeter of the channel, improving water availability for some riparian vegetation.

Improved water availability during the growing season could reduce moisture stress (Nilsson 1984) for streambank riparian vegetation. Outside the growing season (September through April) increased flows would have little benefit. Increased flows would not likely affect riparian vegetation composition or cover, however, because riparian development appears to be limited by available substrate and by the scouring effects created by the high stream gradient, high and variable irrigation flows, and floods. Scouring effects of irrigation flows would be amplified slightly in the absence of project diversions. Consequently, decommissioning would have minimal beneficial effects on riparian vegetation and associated wildlife.

c. Unavoidable Adverse Impacts

None.

4. Threatened and Endangered Species

a. Affected Environment

Federally listed species that the U.S. Fish and Wildlife Service (FWS) says may occur in the project area--Kern County, California, and surrounding U.S. Geological Survey 7.5 minute quadrangles--are listed in table 3 (letter from Joel Medlin, Field Supervisor, FWS, Sacramento, California, January 9, 1997).

Edison (1994a) conducted surveys for federal and state listed species, FS sensitive species, species of concern, and rare plants listed by the California Native Plant Society (CNPS) between June 17-19, 1992, for wildlife species, and between April 11-13, 1992, and May 9-10, 1992, for plants species. The survey area included areas adjacent to the project facilities and the entire length of the 1.9-mile-long transmission line.

Based on distribution, habitat requirements, and site survey results, we have determined that only the Bakersfield cactus, American peregrine falcon, bald eagle, and valley elderberry longhorn beetle may find suitable habitat present in the project area. These species are discussed below and our finding of project effects on these species is discussed in the Environmental Impacts and Recommendations section. Distribution, habitat requirements, and known occurrences relative to the project for the remaining federally listed species are described in Appendix A. Other FS sensitive species, state listed species, species of concern, and rare plants known to occur near the project from site surveys or California Natural Diversity Data Base (CNDB) occurrence records (CNDB 1996) are also listed in table 3 and discussed below.

Table 3. Federal listed species that may occur in the project area with their corresponding state and Forest Service status.

Species	FWS	FS	CAL	CNPS
				d
			c	
		b		
	a			
PLANTS				
Bakersfield cactus (Opuntia treleasei)	E	-	-	1b
California jewelflower (Caulanthus californicus)	E	-	E	1b
San Joaquin wooly-threads (Lembertia congdonii)	E	-	-	1b
Hoover's wooly-star (Eriastrum hooveri)	T	-	-	4

Species	FWS	FS	CAL	CNPS d
	a	b	c	
Kern mallow (<i>Eremalche kernensis</i>)	E	-	-	1b
Greenhorn adobe-lily (<i>Fritillaria striata</i>)	PT		T	1b
Piute Mountains navarretia (<i>Navarretia setiloba</i>)	PT		-	1b
San Joaquin adobe sunburst (<i>Pseudobahia peirsonii</i>)	T		E	1b
Kelso Creek monkeyflower (<i>Mimulus shevockii</i>)	PE	-	-	1b
Parish's alkali grass (<i>Puccinellia parishii</i>)	PE	-	-	1b
Calico monkeyflower (<i>Mimulus pictus</i>)	-	-	-	1b
Shevock's hairy golden-aster (<i>Heterotheca shevockii</i>)	-	-	-	1b
MAMMALS				
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	E	-	T	-
Tipton kangaroo rat (<i>Dipodomys n. nitratoides</i>)	E	-	E	-
Giant kangaroo rat (<i>Dipodomys ingens</i>)	E	-	E	-
Greater western mastiff bat (<i>Eumops perotis californicus</i>)	SC	-	CSC	-
Pale Townsend's big-eared bat (<i>Plecotus t. townsendii</i>)	SC	-	CSC	-
BIRDS				
Aleutian Canada goose (<i>Branta canadensis leucopareia</i>)	T	-	-	-
American peregrine falcon (<i>Falco peregrinus anatum</i>)	E	-	E	-
Least Bell's vireo (<i>Vireo bellii pusillus</i>)	E	-	E	-
Bald eagle (<i>Haliaeetus leucocephalus</i>)	T	-	E	-
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	E		E	-
Prairie falcon (<i>Falco mexicanus</i>)	-	-	CSC	-
California spotted owl (<i>Strix o. occidentalis</i>)	SC		CSC	-
REPTILES				
Blunt-nosed leopard lizard (<i>Gambelia silus</i>)	E	-	E	-
Giant garter snake (<i>Thamnophis gigas</i>)	T	-	T	-

Species	FWS	FS	CAL	CNPS d
		b	c	
	a			
Southwestern pond turtle (Clemmys marmorata pallida)	SC		CSC	-
California horned lizard (Phrynosoma coronatum frontale)	SC		CSC	-
AMPHIBIANS				
California red-legged frog (Rana aurora draytonii)	T		-	-
Kern Canyon slender salamander (Batrachoseps simatus)	SC	-	T	-
Yellow-blotched salamander (Ensatina eschscholtzi croceater)	SC	-	CSC	-
FISH				
Delta smelt (Hypomesus transpacificus)	T	-	T	-
Sacramento splittail (Pogonichthys macrolepidotus)	PT	-	-	-
INVERTEBRATES				
Kern primrose sphinx moth (Euproserpinus euterpe)	T	-	T	-
Longhorn fairy shrimp (Branchinecta longiantenna)	E	-	-	-
Valley elderberry longhorn beetle (Desmocerus californicus dimorphus)	T		T	-
Vernal pool fairy shrimp (Branchinecta lynchi)	T	-	-	-

- a Fish and Wildlife Service: E=Endangered; T=Threatened; PE=proposed endangered; PT=proposed threatened; SPC=species of concern.
- b Forest Service sensitive species, Region 5.
- c California Department of Fish and Game: E=endangered; T=threatened; CSC=species of concern.
- d California Native Plant Society: 1b=plants rare, threatened, or endangered in California and elsewhere; 4=plants of limited distribution, a watch list.

Federally Listed Species

Bakersfield cactus: The Bakersfield cactus occurs in chenopod scrub and valley and foothill grassland communities. It has been found on coarse or cobbly well-drained granitic sand on bluffs, low hills, and flats within grasslands at elevations of 500-1,800 feet (CNDB 1996). FWS (1990) says it occurs chiefly within annual grassland on sandy to sandy-loam soils, atop low hills northeast of Oildale, California and southeasterly along

the valley floor to the low hills of the Tehachapi Mountains. Oildale is about 15 miles west of the Kern Canyon. The closest known population to the Kern River No. 1 Project is at the mouth of Kern Canyon near the Rio Bravo powerhouse (CNDB 1996). The last 0.15 mile of the project transmission line is located near the mouth of the canyon, however, this area has been disturbed from past land use practices and appears too steep and rocky to support the cactus (Edison 1994a). Bakersfield cactus was not found during site surveys.

American peregrine falcon: Peregrines are present in western Sierra Nevada as spring and fall transients; they are not present in winter (Verner and Boss 1980). Peregrines require cliffs for nesting and perching, nearby lake or river, and abundance of bird prey (Verner and Boss 1980). Peregrines are not known to breed in the project area (Edison 1994a).

Bald eagle: No bald eagle nesting has been reported in the project area. Lake Isabella regularly supports between 7 and 10 wintering eagles, which have been observed flying up the North Fork Kern River and high above the Kern River No. 1 Project (Edison 1994a). Suitable foraging and roosting habitat in the project reach is limited (Edison 1994a).

Valley elderberry longhorn beetle: The valley elderberry longhorn beetle (VELB) is dependent on its host plant, elderberry (*Sambucus mexicana* and *S. racemosa*), which is most often associated with riparian and savannah habitats (Barr 1991). Adults feed on the foliage and their larva on the trunk and branch pith. When the adult emerges from the branch, it leaves a distinctive exit hole. The VELB is distributed patchily through the Central Valley from Redding (Shasta County) to Bakersfield (Kern County). Designated critical habitat and known VELB populations are all located in Sacramento, Yolo, and Merced counties (FWS 1980). In 1990, exit holes were found in plants within the Kern Canyon (about 3 miles into the Sequoia National Forest), but none were found in 1991 (Barr 1991). Edison (1994a) found elderberries growing at 18 locations within the project area, but no VELB exit holes were found.

Other Sensitive Species

Calico monkeyflower: This annual occurs in dry foothill woodland and riparian communities and cismontane woodlands (CNDB 1996). It is found on bare granitic soils around gooseberry bushes or granite rock outcrops at elevations of 330 to 4,265 feet (CNDB 1996). Two known locations are in Kern Canyon: the north side of Kern River opposite Democrat Hot Springs and near Richbar Day Use Area. Edison (1994a) did not find any plants around project facilities.

Shevock's hairy golden-aster: This perennial herb is known

only from the lower Kern Canyon (CNDB 1996; Semple 1996). It is found in ditches, rock crevices, and shallow sandy soils at elevations from 1,310 to 2,950 feet (CNDB 1996; Semple 1996). It occurs in many small interspersed populations in sandy areas along the Kern River from the canyon mouth to Lake Isabella, including along Highway 178 from Democrat Hot Springs to Live Oak Day Use Area (CNDB 1996).

Greater western mastiff bat: This bat's range includes much of southern California, but most of its historic roosts have disappeared (Edison 1994a; Barbour and Davis 1969). It prefers rugged rocky canyons and cliffs where crevices provide its favored daytime roosts (Barbour and Davis 1969). One of the largest colonies (23 bats) currently known in California roosts near the project intake area during the summer, but migrates to lower elevations during the winter (Edison 1994a). The roost site is accessed through Edison's locked gate to the project intake.

Pale Townsend's big-eared bat: This bat occurs throughout California and lives in a variety of habitats (Barbour and Davis 1969), but prefers mesic habitats with appropriate roosting, maternity, and hibernacula sites (CNDB 1996). It breeds and roosts in caves, tunnels, abandoned mine shafts, and sometimes in buildings (Barbour and Davis 1969; Verner and Boss 1980). Pale Townsend's big-eared bat are known to roost in a mine south of Democrat Hot Springs (CNDB 1996), and caves and other suitable habitat were located in the project area during site surveys (Edison 1994a).

California spotted owl: The California spotted owl is found throughout the entire Sierra province of California, where suitable habitat exists (Verner et al. 1992). Habitat used in the Sierra province includes foothill riparian/hardwood, Ponderosa pine/hardwood, mixed conifer forest, red fir forest, and eastside forest (Verner et al. 1992). Spotted owls are known to nest in some of the more forested areas above the project flowline and to forage in the wooded habitat in the project area (Edison 1994a). Protected activity centers are found at Prefidio Springs, Cow Flat, and Lucas Creek (letter from Linda Brett, District Ranger, FS, Bakersfield, California, January 20, 1994), more than 0.25 mile above the project flowline.

Prairie falcon: The range of the prairie falcon extends over much of the western United States. It nests on high cliff faces and requires open terrain for foraging (Verner and Boss 1980). A nest site with three young were observed in the upper part of Stark Canyon on June 19, 1992 (Edison 1994a). The project area provides excellent foraging habitat (Edison 1994a).

Southwestern pond turtle: The southwestern pond turtle inhabits fresh or brackish permanent and intermittent water

bodies, including marsh sloughs, ponds, and slow-moving portions of creeks and rivers from Monterey Bay south to northwestern Mexico (FWS 1993a). It is found in the Sierra foothills and in suitable habitats in forest up to 6,000 feet (Verner and Boss 1980), but mostly below 3,500 feet (FWS 1993a). Southwestern pond turtles were found at two locations on the Kern River: mouth of the Kern Canyon, about 3 miles east of the Kern River State Park, and in Cottonwood Creek near its junction with the Kern River (CNDB 1996). Both locations are outside the Kern Canyon. The southwestern pond turtle is also found in Lake Isabella (personal communication, Steve Anderson, District Biologist, FS, Porterville, California, February 10, 1997). The southwestern pond turtle often concentrates in side channels and backwater areas of rivers (FWS 1993). We believe that the swift and variable currents associated with irrigation releases and the limited amount of suitable emergent vegetation makes the project reach unlikely to support populations of the southwestern pond turtle.

Kern Canyon slender salamander: The Kern Canyon slender salamander is endemic to the Kern Canyon, where it occurs in canyons from about Democrat Hot Springs to about the Live Oak Day Use Area (CDFG 1992). They are found under rocks, fallen limbs, and leaf litter, chiefly along the cooler, moister, north- and east-facing slopes (CNDB 1996; Hart 1990, Edison 1994a). No salamanders were found during site surveys, but they are known to occur in the oak-pine woodlands in the project area, often where leaking flumes provide suitable habitat (Edison 1994a).

Yellow-blotched salamander: The yellow-blotched salamander is a forest dweller, found in a variety of habitats from chaparral to mixed conifer types (Verner and Boss 1980). It is found in Dougherty Canyon, a tributary that enters the Kern River just above the Upper Richbar Day Use Area. It is found around seeps and in drainages, usually under rocks or fallen debris, but is less likely to be found on talus slopes than is the Kern Canyon slender salamander (Edison 1994a).

California horned lizard: This lizard is found in a variety of habitats including coastal sage scrub, chaparral, broad-leaved woodlands, washes, and grasslands (Stebbins 1954). It requires loose sandy soils for burrowing and breeding, ants (primarily harvester ants) for forage, and escape cover (rocks or bushes) (Stebbins 1954). Horned lizard scat was observed during site surveys at several locations (Edison 1994a).

b. Environmental Impacts and Recommendations

FWS asked us to analyze direct and indirect project effects on endangered species throughout Edison's service area (an area served by a transmission grid network that encompasses the lower San Joaquin Valley east into Nevada and Arizona and south into

Mexico via lines not necessarily owned by Edison) as well as within the project boundary (letter from Joel Medlin, Field Supervisor, FWS, Sacramento, California, January 9, 1997).

We don't consider the service area in our analysis because: (1) the scope of this analysis would be too broad to provide a meaningful evaluation, (2) the effects attributable to the Kern River No. 1 Project could not be defined within such a broad context and would be insignificant due to the small amount of power contributed to the grid which serves numerous power facilities (gas, hydro, coal, etc), (3) no additional capacity is being proposed, and (4) the project's transmission line beyond the intertie with the grid at the Kern Canyon powerhouse is not within our jurisdiction and consequently any mitigation or enhancement measures could not be imposed within our FPA licensing authority.

Our analysis is therefore limited to the area occupied by and affected by operation and maintenance of the project facilities (diversion dam, flowline, penstock, powerhouse, and the 1.9-mile-long transmission line), and the Kern River and adjacent lands within the 10.2-mile-long bypassed reach. Our findings below take into consideration the direct and indirect effects of whitewater augmentation flows, recreation use and developments, continued project operation and maintenance, and decommissioning--the only measures we have identified that may affect endangered, threatened, FS sensitive, and rare species, and species of concern (sensitive species).

Following their review of the draft EA, the FWS determined that the project is not likely to adversely affect any federally listed species and that no further action pursuant to the Endangered Species Act of 1973, as amended, is necessary (letter from Wayne S. White, Field Supervisor, Fish and Wildlife Service, Sacramento, California, October 1, 1997).

Federally Listed Species

California jewelflower, Kern mallow, San Joaquin woolly-threads, Hoover's woolly star Greenhorn adobe-lily, Piute Mountains navarretia, San Joaquin adobe sunburst, Kelso Creek monkeyflower, Parish's alkali grass, San Joaquin kit fox, Tipton kangaroo rat, giant kangaroo rat, Aleutian Canada goose, least Bell's vireo, southwestern willow flycatcher, blunt-nosed leopard lizard, giant garter snake, California red-legged frog, Delta smelt, Sacramento splittail, Kern primrose sphinx moth, longhorn fairy shrimp, and vernal pool fairy shrimp: Because these species are not known to occur within the project area, the project operates run-of-river, and no suitable habitat exists within the project boundary, relicensing or decommissioning the project would not affect these species.

Bakersfield cactus: Bakersfield cactus may occur only in the last 0.15-mile of the project transmission line, but that is unlikely because the habitat is poor due to the steep and rocky canyon slopes. Any operation or maintenance related ground disturbance in the transmission line ROW that might affect this species would be restricted to the pole and tower sites. Because no Bakersfield cactus were found during site surveys (Edison 1994a), and because of the very limited potential habitat disturbance associated with transmission line maintenance activities, impacts to this species is highly unlikely. Moreover, Edison has in place an endangered species alert program, which includes training field personnel on threatened and endangered species identification, natural history, legal status, distribution, and impact avoidance (FERC and FS 1996). Provisions in Edison's endangered species program would ensure that all necessary measures would be taken to prevent ROW maintenance from having any adverse impacts on this species if found in the future. Because the transmission lines would be left under the decommissioning alternative, no habitat disturbance would occur. We therefore find that relicensing or decommissioning the project would not affect this species.

American peregrine falcon: Using Olendorff et al. (1981) raptor protection guidelines, Edison determined that the project transmission line is not considered hazardous to roosting raptors, but the distribution line is considered extremely hazardous. In 1995, Edison reconfigured poles along the distribution line that were considered hazardous. Edison proposes to install additional protective devices where necessary if monitoring of raptor mortality indicates that a significant hazard still exists (letter from C.E. Miller, Edison, Rosemead, California, April 10, 1995). We agree with Edison's proposal to provide additional raptor protection along the distribution line as necessary, but can't require it because the line is outside our jurisdiction. Given the limited use of the project area and transitory nature of any migrating birds and the agility of peregrine falcons, the project transmission line doesn't represent a collision hazard. Although the project transmission line would remain under the decommissioning alternative, impacts to peregrines are not expected for the reasons stated above. We, therefore, conclude that relicensing or decommissioning the project would not affect the peregrine falcon.

Bald eagle: Wintering eagles could be adversely affected if project measures reduced prey abundance, removed perch sites, or increased disturbance at roost and perch sites. Proposed minimum instream flows would protect any potential forage base, and increased flows from augmented boating flows and decommissioning would not improve the forage base. No winter roost sites are known to occur in the project area. Project maintenance practices are not expected to require vegetation clearing that could remove potential perch sites because project facilities are

either primarily underground or cross grasslands. Disturbance to wintering eagles would not likely result from construction of proposed recreation enhancements or from any increase in recreation use of the bypassed reach from whitewater boating flows or access improvements because these activities would likely occur during the summer when eagles are unlikely to be present. The project transmission line doesn't represent a collision or electrocution hazard for reasons discussed above for the peregrine falcon. Given the limited use of the project area, limited suitable foraging and roosting habitat, and likely transitory nature of the species in the project area, potential impacts are unlikely and would be insignificant. Consequently, relicensing or decommissioning the project would not affect the bald eagle.

Valley elderberry longhorn beetle: No VELB exit holes were found during site surveys. Most elderberry plants reported by Edison (1994a) were located more than 100 feet from existing project facilities, and all were growing above the high water line of the Kern River. Seven of the 18 sites containing elderberry plants could be affected if access roads or flume lines required repairs. Current operations don't appear to be affecting the growth of the elderberry plants. Variable and high velocity flows attributable to irrigation releases and the bedrock and boulder dominated substrate are likely the more limiting factors controlling riparian and elderberry vegetation development. Flow increases from augmented boating flows or decommissioning would not be expected to affect elderberry plants because of the small flow increase relative to existing irrigation releases. Upgrades to the recreation facilities at the day-use areas and at Democrat raft-take out would not remove any elderberry plants. Staff are not proposing recreation access improvements to the bypassed reach at this time, but may require them in the future (see section V.7, Recreation). Effects of any future recreation access improvements on VELB habitat would be considered and mitigated at the time of the proposal. Because the project would not affect any designated critical habitat or known VELB populations relicensing or decommissioning the project would not affect the VELB.

Other Sensitive Species

Southwestern pond turtle: Changes in flow for whitewater boating and decommissioning alternatives could affect both the quantity and quality of southwestern pond turtle habitat (FS sensitive), if present in the bypassed reach.

The degree of effect on potential southwestern turtle habitat is dependent on the change in flow and the geomorphic character of the stream reach. In narrow, constricted reaches, characteristic of most of the bypassed reach, increased flows would likely result in higher velocities and less sluggish water

habitat preferred by pond turtles. In reaches with more broad, open channels, such as that present near Richbar Day Use Area, increases in stream flow may increase the area of suitable habitat if substantial backwater pool and side channel habitat is created. In general, increased flows would likely reduce pond turtle habitat in the bypassed reach because of the incised and confined nature of the reach. Rapid changes in flow during ramping to augment streamflow could also adversely impact pond turtles. Western pond turtles have been observed moving across land in response to high flows in other rivers (Holland 1994). However, because irrigation flows are often high and variable throughout much of the turtles' active period, any turtles in the project area may be somewhat acclimated to changing habitat conditions.

Shevock s hairy-golden aster and calico monkeyflower: Increased recreational use and proposed recreation developments could affect the rare plants, Shevock's hairy-golden aster and calico monkeyflower, as a result of the increased likelihood of trampling or direct loss during construction of recreation facility upgrades. Present populations of Shevock s hairy-golden aster appear stable and able to withstand limited recreational disturbance; however increased recreational pressures could adversely affect these populations (personal communication, Dana York, Biologist, CALTRANS, February 28, 1997).

The proposed improvements at the day use areas and raft-take out would take place in areas already developed and experiencing heavy recreation use, would not be expected to increase use, would be limited to a small area (less than 2 acres), and would not be expected to remove a substantial amount of vegetation. Therefore, populations of Shevock s hairy-golden aster, which are found along the river near the day-use areas, would not be impacted. The calico monkeyflower would not be impacted for the same reasons.

Potential impacts on Shevock s hairy-golden aster and calico monkeyflower, as well as other sensitive species should be considered by Edison and others when proposing future access improvements. Such effects will be a part of the FS and Commission review when specific access improvements are proposed.

Decommissioning would not impact these plants because (1) recreation improvements would not be provided and project structures would be left in place, thus no habitat disturbance would result; and (2) recreation pressures would likely remain the same, thus the likelihood of trampling would be unchanged.

Kern Canyon slender and yellow-blotched salamanders: Leakage and spillage from project flumes may enhance habitat conditions for the Kern Canyon slender salamander (state threatened) and the yellow-blotched salamander (species of

concern). The temporary and periodic reduction in leakage that would result during augmentation of flows for whitewater boating would not significantly reduce the quality of these localized and isolated habitats for these salamanders. We do agree with Edison, however, that decommissioning, which would eliminate the leakage and spillage altogether, could reduce the quality of these habitats. However decommissioning wouldn't adversely affect the population because these salamanders, which evolved in the dry climate of the canyon, are found in other cool, moist habitats (Verner and Boss 1980, Hart 1990, CNDB 1996). Consequently, the salamanders are not dependant on the habitat created by the leaking flumes, even though they may use them and benefit from the conditions created by the leaking flumes. We recommend in this EA that Edison implement an annual inspection of the flumes and consult with the FS before making repairs that would reduce present leakage. These measures should continue to provide possible benefits to these species. Higher flows from boating augmentation and decommissioning wouldn't affect habitat conditions because these species prefer the moist, calmer environments of tributary canyons to the turbulent and fluctuating Kern River.

California spotted owls: California spotted owls (FS sensitive) are known to nest along the project flowline (Edison 1994a). Continued project operation and maintenance activities would neither remove nor alter suitable spotted owl habitat because most of the flowline is underground and well away (0.25 mile) from known nests. Impacts to spotted owls would not be expected unless major reconstruction of the flowline took place. In which case, Edison would be required to consult with the FS, the Commission, FWS, and CDFG, and to take appropriate mitigative actions.

Prairie falcon: None of the measures considered in this EA would alter or degrade existing foraging, nesting, or breeding habitat. Also, they would not result in increased human disturbances to foraging or breeding falcons because (1) the recreation improvements are not expected to significantly increase the already heavy recreation pressures, and (2) sufficient distance exists between the existing nest site and day-use areas to prevent disturbance to nesting falcons. No evidence or history of the project transmission lines representing a collision hazard for falcons has been provided.

Pale Townsend's big-eared bat: This species is coexisting with current project operation and management practices. Edison is not proposing any changes in operation or maintenance practices. None of the measures studied would result in disturbances to roosting bats or alteration of potential foraging habitat.

Greater western mastiff bat: Continued access control by

the project's locked fence at the intake would protect the greater western mastiff bat s (species of concern) summer roost site from human disturbance. Relicensing the project would not increase human disturbance. We don't recommend any additional measures.

California horned lizard: This species is also coexisting with current project operation and management practices. Horned lizard scat was observed at numerous locations during site surveys, and this species is believed to be present in sizeable numbers (Edison 1994a). Edison is not proposing any changes in operation or maintenance practices that would alter or destroy this species habitat. None of the measures studied would result in destruction of existing habitat.

No other sensitive species are known to occur in the project area. Edison's endangered species alert program and the biological evaluation or assessment procedures required by the FS's 4(e) conditions would ensure that any previously unknown sensitive species located in the project area are identified and protected, before any future actions that might adversely affect these species.

c. Unavoidable Adverse Impacts

None.

5. Aesthetic Resources

a. Affected Environment

Within the project vicinity, the characteristic landscapes are of two distinct types: (1) a narrow river canyon (in which the project is located) with vegetation along the river bank, granitic outcropping, and steep grass-covered slopes rising as much as 1,500 feet above the riverbed; and (2) downstream of the project area beyond the canyon mouth, open, rolling foothills vegetated with sparse grasses and a few commercial citrus groves. The FS has classified the lower Kern River and the surrounding landscape as distinctive because of the scenic interest created by perennial flowing water and riparian vegetation, as well as vertical canyon walls and prominent rock boulders and outcroppings.

b. Environmental Impacts and Recommendations

The projects facilities are a visible manmade intrusion on the landscape. The level of intrusion varies depending on the particular project feature and its location with respect to other structures, vegetation, and topography. The facilities can be seen from Highway 178, which traverses the project area. The most predominant features are the powerhouse, switchyard, and the adjacent transmission line on steel lattice towers. These facilities are located immediately adjacent to Highway 178. Because they are located on a curve on the highway, they are only viewed for a short distance.

Edison conducted an assessment of the visual compatibility of the project facilities and surrounding landscape with the FS's Visual Management System (VMS). The FS reviewed the assessment and concluded that the project facilities are compatible with the VMS (letter from Erik Ostly, Forest FERC Coordinator, FS, Porterville, California, September 28, 1994).

Edison proposes to consult with the FS on mutually agreeable colors when facilities require repainting to reduce contrast of the project facilities with the surrounding environment.

We agree with Edison's proposal to consult the FS before painting project facilities, and recommend that Edison do so. This will ensure that the project facilities remain compatible with FS VMS objectives and will improve views from Highway 178.

The FS's preliminary 4(e) conditions would require Edison to file a visual resource protection plan with the Commission before initiating any land-disturbing activities. We agree that a visual resource protection plan is necessary to ensure that future maintenance activities, such as minor facility modifications, are compatible with FS visual resource management

objectives. The visual resource protection plan also should be consistent with the Cultural Resources Management Plan discussed in the Cultural Resources section. We recommend that Edison consult with the FS in preparing the plan.

The project currently maintains a minimum flow of 15 cfs during the winter months and 50 cfs during the summer months in the project's bypassed reach. As discussed in the Aquatic Resources section releases from Lake Isabella typically maintain flows in the river during the summer recreation season (Memorial Day through Labor Day) at a significantly higher level. Flows between 1,100 cfs and 2,100 cfs would be representative of flows commonly occurring during this period in the bypassed reach in either a normal or wet year (Edison 1994b). At these flows, the rushing water has vitality and sound, and covers some of the rock boulders. During a representative dry year, however, the flows would be about 60 cfs (Edison 1994b), which provide an adequate visual experience for the visitors. At 60 cfs, most of the channel bed that has riffing is covered with water.

Flow levels in the lower Kern River are largely responsible for defining the river's character in terms of magnitude and sound. Variations in flow alter these characteristics, providing the visitor with a variety of visual experiences. Any of the alternatives being considered to augment flows for whitewater boating would have minor beneficial effects on the aesthetic quality of the lower Kern River over existing conditions. The visual differences between the augmented flows would be difficult for the public to discern.

Decommissioning

Under the decommissioning alternative no flows would be diverted from the bypassed reach. This alternative would have the most beneficial effect on the aesthetic resources of the river. But over time, the project structures could gradually deteriorate from lack of maintenance, which would be unsightly to the forest visitor.

c. Cumulative Impacts

Painting the project facilities, as it becomes necessary, with colors that reduce their contrast with the surrounding landscape would have a minor beneficial cumulative impact to the aesthetic resources of the lower Kern River.

d. Unavoidable Adverse Impacts

None.

6. Cultural Resources

a. Affected Environment

Edison conducted a cultural resources survey of the project (White and Taylor, 1984; Taylor, 1992). The Kern River No. 1 Historic District (District), consisting of 11 components of the existing project, is the only cultural resource site in the project's area of potential effect eligible for inclusion in the National Register of Historic Places.

Construction of the District facilities began in 1902 and was completed in 1907. The facilities have historical significance because they made large-scale use of technological innovations of the hydroelectric industry developed during the 1890's and early 1900's, including long-distance high-voltage transmission lines and steel transmission towers.

The California State Historic Preservation Officer (SHPO) and the Kawaiisu Band of Kern Valley Indians (Kawaiisu) concur with the survey's findings (letters from Steade Craigo, Acting State Historic Preservation Officer, California Department of Parks and Recreation, Sacramento, California, January 28, 1993; and Phyllis M. Hix, Law Offices of Phyllis M. Hix, Kernville, California, November 10, 1993). We concur as well.

b. Environmental Impacts and Recommendations

Edison's proposed cultural resources management plan ensures the District facilities would not be affected by continued operation of the project. The plan requires Edison to replace materials in-kind as repairs and maintenance work are necessary. The plan also has contingencies, which are consistent with the regulations of the Advisory Council on Historic Preservation (Advisory Council) for the National Historic Preservation Act (36 CFR 800), for treatment of effects of project modifications if determined necessary at a future date.

Specifically, Edison's proposed cultural resources management plan (Taylor, 1993) requires: (1) replacing materials of the District facilities in-kind when repairs and maintenance work are necessary, with minimal impact to the facilities; (2) consulting with the SHPO and the Advisory Council if major modifications to contributing elements and structures of the District are planned; (3) if major modifications must be made, recording, according to the standards of the Historic American Engineering Record and the Historic American Buildings Survey, would be undertaken prior to such actions; (4) if equipment to be modified is removed and not preserved by Edison, offering the equipment to the Smithsonian National Museum of American History, or other appropriate museum with collections in the field of hydroelectric and/or California history; and (5) prior to actions

constituting an effect on contributing elements of the District, notifying the SHPO of the action and the proposed treatment. Upon the SHPO's concurrence or the passage of 30 days, Edison would proceed with the planned treatment. If the SHPO does not agree, Edison would consult with the Advisory Council concerning the effect and appropriate treatment.

The SHPO concurs the project would have no effect on the historical integrity of the project if Edison's cultural resources management plan is implemented (letter from Steade Craigo, Acting State Historic Preservation Officer, California Department of Parks and Recreation, Sacramento, California, January 28, 1993). The Kawaiisu say the project would not affect cultural resource sites if the plan and measures to protect sites discovered during project operation are implemented (letter from Phyllis M. Hix, Law Offices of Phyllis M. Hix, Kernville, California, November 10, 1993). The FS preliminary 4(e) conditions requires measures to assess and mitigate impacts to cultural resources discovered during project operation (letter from G. Lynne Sprague, Regional Forester, FS, Pacific Southwest Region, San Francisco, California, November 12, 1996).

We recommend Edison implement its proposed cultural resources management plan and measures to protect cultural resources discovered during project operation.

Decommissioning

This alternative would have an adverse effect on the historical integrity of the District's facilities because historical operation of the project would cease with decommissioning. Modifications to secure the facilities, such as the removal or alteration of generating equipment, would likely have adverse effects as well. The Commission staff would need to consult with the Advisory Council on the effects and the transfer of management responsibilities to another management entity after decommissioning, pursuant to the Advisory Council's regulations. A memorandum of agreement pursuant to the Advisory Council's regulations would need to be prepared and signed by the Advisory Council, the SHPO, the Commission staff, and the managing entity concerning the effects of the action, the implementation of a cultural resources management plan, and acceptance of responsibilities by the managing entity.

c. Unavoidable Adverse Impacts

None.

7. Recreation

a. Affected Environment

Recreational use in the project area is strongly water-oriented, and includes fishing, whitewater boating, viewing scenery, picnicking, recreational mining, wading, and swimming. Fishing occurs year-round. A creel survey, conducted from April through September 1992, documented 2,971 anglers using the project's bypassed reach. Angling sites are scattered throughout the bypassed reach where highway turn-outs are available to provide access to the river.

The Kern River is one of the most used whitewater boating rivers in the state. Although the project bypassed reach

13

receives little use, the Kern River above the project diversion receives considerable use. The whitewater boating season is generally from June through August, when streamflows and air temperatures are high. The FS issues free boating permits to individuals and allows commercial rafting companies to operate under Special Use Permits. Boaters put in at Keysville near Lake Isabella, and take out about 19.5 miles downstream, at Democrat Raft Take-Out, just above the project diversion dam.

Other dispersed recreation opportunities in the project vicinity include equestrian trails, off-road vehicles, mountain-biking, and hiking. To accommodate these uses, there are three trails along State Highway 178, and several trails and primitive roads in the vicinity of the project area.

There are no project recreation facilities. The FS, however, owns and operates four recreation areas in the immediate project vicinity: Live Oak Day Use Area, Upper Richbar Day Use Area, and Lower Richbar Day Use Area within the project's bypassed reach; and Democrat Raft Take-out at the project's impoundment (figure 2). The developed sites have restrooms, picnic tables, barbecues, paved roads, and paved parking areas. The Upper Richbar site also has an "overflow area" that the FS opens on holiday weekends to provide additional parking and picnicking sites. Numerous recreational facilities also exist farther upstream along the lower Kern River between Democrat Raft Take-out and Lake Isabella, around Lake Isabella, and upstream of Lake Isabella along the North and South Forks of the Kern River.

The FS has determined that the lower Kern River, from Isabella dam to the canyon mouth above Bakersfield, meets Wild

13/ WRC-Environmental (1996) estimated that the current annual use rate is only 25 to 100 visits despite an average of about 120 usable days per year. WRC-Environmental (1996), based on study results and interviews with boaters, attributed the low use to the previous belief by boaters that the FS closed this portion of the river to boating, the level of expertise needed to run many of the rapids, and limited access.

and Scenic eligibility requirements and, if found suitable, would be an appropriate addition to the National River System. The reach between Democrat dam and the National Forest boundary (Segment 3), where the project is located, was determined to be eligible as a Recreation River because of its remarkable wildlife, scenic, and recreation values including: (a) known habitat for the Kern Canyon slender salamander; (b) first views (coming from the San Joaquin Valley) of the dramatic Kern Canyon--a spectacular change in scenery from the flat, dry agricultural valley to steep, rocky canyon walls and flowing water; and (c) sufficient flows for river oriented recreation and respite from the hot valley.

b. Environmental Impacts and Recommendations

Wild and Scenic River Status

The criteria for Recreation River classification includes existing impoundments and diversions, as long as the waterway remains generally natural and riverine in appearance. None of the alternatives analyzed in this EA include proposals, such as constructing new impoundments or reducing flows in the bypassed reach, that would detract from the current condition and the outstanding remarkable values on which the FS determined the eligibility of the lower Kern River. Thus, issuing a new license for the project would not affect the river's eligibility for Wild and Scenic River status, nor, would additional measures be necessary to mitigate effects on outstanding remarkable values.

Developed Recreation

Edison proposes to enhance existing recreation facilities in the project area (letter from C.E. Miller, Manager of Hydro Generation, Southern California Edison, Rosemead, California, March 27, 1997). The FS requires in their preliminary 4(e) conditions the recreation enhancements proposed by Edison and some additional measures (table 4). Both proposals rehabilitate the existing sites by upgrading the toilets and picnic sites to be fully accessible for people with disabilities, by improving parking, and by improving beach access for disabled persons at these facilities.

The Upper Richbar, Lower Richbar, and Live Oak Day Use Areas serve the public recreating in the project bypassed reach. The Democrat Raft Take-Out, located at the project's impoundment, serves as a take-out for the boaters rafting upstream of the project and as a put-in for boaters fishing the impoundment. FS capacity estimates for the day use areas indicate that in general each site is used to capacity on weekends, each is over-capacity on holiday weekends, and each receives low use on weekdays.

Table 4. Proposed enhancements at the developed recreation sites.

FACILITY	EDISON S PROPOSAL	FS PRELIMINARY 4(e) CONDITIONS
Live Oak Day Use Area	* remove existing toilet and replace with one accessible double unit SST (sweet-smelling) vault	Same as Edison s proposal
	b toilet * install two accessible picnic tables and barbeques * provide two parking stalls for people with disabilities * paint parking strips * relocate wheel stops * pave parking area and pathways * install accessibility signs * plant trees	
Lower Richbar Day Use Area	* install one accessible double unit SST vault toilet	Same as Edison s proposal
	* install one accessible picnic table and barbeque * improve existing parking area * provide one parking stall for people with disabilities * paint parking strips * install wheel stops * pave parking area and pathways * install accessibility signs	

a		
FACILITY	EDISON S PROPOSAL	FS PRELIMINARY 4(e) CONDITIONS
Upper Richbar Day Use Area	<ul style="list-style-type: none">* remove existing toilet and install one accessible double unit SST vault toilet* install one accessible picnic table and barbeque* provide two parking stalls for people with disabilities* pave parking area and pathways* install accessibility signs	<p>Same as Edison s proposal with the following additions:</p> <ul style="list-style-type: none">* install one additional, accessible, double unit SST vault toilet
Democrat Raft Take-Out	<ul style="list-style-type: none">* install one accessible double unit SST vault toilet* pave pathways	<p>Same as Edison s proposal with the following additions:</p> <ul style="list-style-type: none">* install one accessible picnic table and barbeque* provide accessible parking stall and accessible path from parking area to toilet* paint parking strips* install accessibility signs

a All facilities (i.e. toilets, picnic tables, paths) would be accessible to people with disabilities.

b Edison, in its March 27, 1997, letter, incorrectly referred to the toilets to be installed as comfort stations with plumbing. The estimated costs reflect providing vault toilets, as does the information included in their November 7, 1997, additional information filing.

Given the high demand on the facilities within the project bypassed reach, we agree that the FS's measures are needed and would substantially improve public use of the area through improved access by individuals with disabilities for fishing and other shore-based activities. The improvements would help attain FS recreation management objectives defined in the Sequoia National Forest Land and Resource Management Plan (see section VIII, Consistency with Comprehensive Plans). Because these enhancements affect project costs (see Developmental Analysis section), we make our final recommendation in the Comprehensive

Development section.

Whitewater Boating

Project diversions reduce flows available for whitewater boating in the bypassed reach by up to 412 cfs. To evaluate the project's effect on whitewater recreation opportunities and the effect of any potential whitewater recreation enhancement opportunities on other resources, Edison conducted a whitewater boating study. The study examined a range of flow releases in the project's bypassed reach to determine the minimum boatable flows, as well as flow levels that would provide higher quality whitewater boating opportunities. The 10.2-mile-long study reach was divided into 4 study sections: Upper (2.9 miles), Lucas (1.5 miles); Richbar (3.1 miles); and Cataracts (2.7 miles). The field evaluation was conducted using kayaks, inflatable kayaks, rafts (paddle and oar), and catarafts.

The bypassed reach contained a total of about 65 rapids ranging in difficulty from Class I to VI (classified according to AWA's International Scale of River Difficulty). WRC-Environmental (1996) classified the Upper study section as Class (C)-IV-V+; the Lucas section as C-IV+; the Richbar section as C-III/IV; and the Cataracts as C-V+.

As a result of the study, FOR/AWA recommend the following measures to enhance whitewater boating:

When flows are available from Lake Isabella, provide a set schedule of 14 days of augmented flows of 1,250 to 2,350 cfs on weekends, holidays, and special recreation dates from June through August during the hours of 10 a.m. to 7 p.m.

Provide a mechanism to provide information on hourly flow releases in the bypassed reach.

Enhance access for boaters and general recreationists by improving: (1) access for kayakers at the Upper Study section; (2) access for kayakers and rafters at the start of the Lucas Study section; (3) the portage around Lucas Falls; (4) access upstream of the Cataracts Study section; and (5) access to, or just upstream of the Kern River No. 1 Project powerhouse.

The FS doesn't recommend any whitewater flow augmentation. No other agency has recommended whitewater boating flows or access improvements. In their comments on the draft EA, the North Kern Water Storage District (Kern Water Storage District) strongly opposed any re-regulation of flows to accommodate recreationists (letter from C.H. Williams, Engineer-Manager, North Kern Water Storage District, Bakersfield, California, August 21, 1997).

Edison doesn't propose any additional flow for whitewater boating. Edison believes that sufficient flows are available. Edison also contends that because it has control over a relatively small amount of water compared to the large releases from Lake Isabella, the resulting unpredictability of releases from Lake Isabella would mean that augmented flows would be set on a very short time scale, and would not be useful for boaters planning a trip.

Flow Augmentation for Whitewater Boating: Our analysis of Edison's study results indicates that 500 cfs is the "minimum" flow for most craft in the majority of areas that were tested.

Suitable flow conditions were between 700 cfs and 950 cfs and between 1,750 cfs and 2,350 cfs. Flows providing "optimum" boating conditions were between 950 cfs and 1,750 cfs.

Based on these results we chose to study three flow regimes: 700 (suitable), 950(optimum), and 1,250 cfs. We chose 1,250 cfs because its within the optimum range and corresponds to FOR/AWA s lower recommended flow. We looked at the flow records from 1970 through 1990 for the period of June through August (peak boating season) and June through October (entire boating season) to determine how often these flow conditions are available under present operations and potentially with augmentation from power flows. We also looked at how often each of the flows are available on weekend days during the June-August time period to evaluate how often FOR/AWA s proposed augmentation schedule might be provided.

Under existing operating conditions, suitable flows are present between June and August and June and October an average of 59 and 73 days per year, respectively; optimum flows 51 and 62 days, respectively; and flows ≥1,250 cfs 40 and 44 days, respectively. Augmenting flows to 700 cfs from June through August and from June through October would increase the average number of boatable days per year by 15 and 21, respectively; to 950 cfs by 14 and 19, respectively; and to 1,250 cfs by 13 and 21, respectively (see table 5).

Table 5. Comparison of the average number of days flow in the Kern River No. 1 bypassed reach equals or exceeds 700 cfs, 950 cfs, and 1250 cfs under existing and augmented flow conditions.

Flow Alternative	Average Number of Days Flow in the Bypass 1 Equals or Exceeds the Stated Flow						
	Jun	Jul	Aug	Sep	Oct	Total Jun-Aug	Total Jun-Oct
700 cfs (existing)	20	22	17	7	7	59	73
700 cfs (augmented)	25	28	21	11	9	74	94
950 cfs (existing)	17	19	15	5	6	51	62
950 cfs (augmented)	22	24	19	8	8	65	81
1250 cfs (existing)	12	16	12	2	2	40	44
1250 cfs (augmented)	17	20	16	6	6	53	65

1
Based on 20 years of daily flow records (1970 - 1990)

On average, about half of the weekend days had flows that were 01,250 cfs (table 6). On average, augmenting the flow would increase the number of weekend days that flows of 1,250 cfs would be available by 3.

Table 6. Comparison of the average number of days flows in the Kern River No. 1 bypassed reach equal or exceed 700 cfs, 950, and 1,250 cfs under "existing" and "augmented" flow conditions during the weekend period only.

Flow Alternative	Average Number of Days Flow in the Bypass 1 Equals or Exceeds the Stated Flow on Saturday and Sunday			
	Jun	Jul	Aug	Total
700 cfs (existing)	6	6	5	17
700 cfs (augmented)	7	8	6	21
950 cfs (existing)	5	5	4	14
950 cfs (augmented)	6	7	5	18
1250 cfs (existing)	4	4	3	11
1250 cfs (augmented)	5	5	4	14

1

Based on 20 years of daily flow records (1970 - 1990)

Flow augmentation would occur more frequently when the flows in the lower Kern River are slightly below average than in years when flows are above or below average. This is because flows in wet years typically equal or exceed preferred boatable flow limits (2,350 cfs). Conversely, during dry years project flows would be insufficient to attain suitable boating conditions. For example, for flow conditions of 700 cfs and 950 cfs, most augmentation would occur when flows in the lower Kern River are between 500 cfs and 1,000 cfs. These conditions occurred in approximately 7 of the years between 1970 and 1990. Figures 7 and 8 depict flows in the bypassed reach from June through October (1970-1990), and show when augmentation would be necessary to attain flows of 700, 950, and 1,250 cfs.

While increasing the number of days that higher flows are available would improve the quality of the boating experience, it may also adversely affect other recreational users that prefer lower flows. For example, angling, swimming, wading, and recreational mining, which are popular during the peak boating season, desire lower flows. Flows between 100 cfs and 300 cfs are good for angling; angler satisfaction declines gradually at flows up to about 800 cfs and drops off sharply at flows above 1,000 cfs (WRC-Environmental 1996). The best flow conditions for swimming are generally between 200 to 1,000 cfs, but swimming does occur in the bypassed reach with flows up to 2,500 cfs. Wading occurs in conditions up to 1,000 cfs, but conditions are best at the lower stream flows (100 to 300 cfs range) due to increased beach size and area of wadable water (WRC-Environmental 1996).

Flow records from 1970 through 1990 indicate that lower flow conditions (100-300 cfs) that might be preferred by some users are present under existing operation on average less than 9 percent of the time (8 days per year) between June and August, and less than 10 percent (15 days) between June and October. While the available data are inconclusive as to the degree that higher flows would degrade the recreational experiences of other users, augmenting flows for whitewater boating would subject other recreational users to higher and potentially less than desirable flows more frequently (table 5). FOR/AWA's proposal of a set schedule of 14 days of augmented flows during June through August has the least impact of the flow augmentation alternatives on other recreational users, but it would still increase the number of days of higher flows by as much as 14 above existing conditions.

The North Kern Water Storage District states that frequent, daily fluctuations that would result from flow augmentation for whitewater boating would also affect water supply to downstream

irrigators. The Kern Water Storage District doesn't elaborate on how or to what degree such fluctuations would affect the water supply.

Conclusion: We believe that the available data indicates that current flow conditions allow for a reasonable balance for all the recreation users. On average, suitable and optimum whitewater boating conditions are available 64 (59 days) and 55 (51 days) percent of the time between June and August, respectively; and 48 (73 days) and 41 (62 days) percent of the time between June and October, respectively. Flows of 1,250 cfs, are available, on average, 11 of the 14 days recommended by FOR/AWA, or about 45 percent of all weekend days during June through August. In contrast, flows (100-300 cfs) that might be

Graphic can be found on hard copy in public file.

Graphic can be found on hard copy in public file.

Figure 7. Kern River bypassed reach flows for the months of June-October, augmented to 700 cfs (top) and 950 cfs (bottom) with power flows when possible (Source: Staff).

Graphic can be found on hard copy in public file.

Figure 8. Kern River bypassed reach flows for the months of June-October, augmented to 1,250 cfs with power flow when possible (Source: Staff)

desired by other recreational users are present about 9 percent (8 days) and 10 percent (15 days) of the time between June and August and June and October, respectively. Given the existing annual use of about 25 to 100 visits and the availability of about 120 usable days a year (WRC-Environmental 1996), it appears that existing whitewater boating use is not significantly limited or constrained by the project's present operation. We don't believe that flow releases for whitewater boating are needed at this time.

Monitoring of recreation use in the project bypassed reach, by activity, would help to determine if future changes in use patterns warrant a different flow regime. FOR/AWA predict use will increase with better knowledge of the available resource and improved access. FS staff has estimated that an annual whitewater boating demand of 500 visits is not likely to be exceeded in the near future. The whitewater boating study estimated that the potential user demand, with augmented flows, on a long-term (30-year) annual average would be between 336 and 465 additional visits (WRC-Environmental 1996).

We believe that immediate changes in use from improved knowledge of the resources should become apparent in the first five years of the license. Therefore, we recommend that Edison develop and implement a 5-year monitoring plan that monitors

recreation uses by activity in the bypassed reach, and at the end of the five year period file a report along with any recommendations to change the flow regime. The monitoring plan should focus on resources that may be directly influenced by flows (fishing, whitewater boating, wading, swimming, recreational mining, etc). Monitoring should document, at a minimum, the numbers of people participating in each activity, flow levels during the survey, and the recreation experience achieved at those flow levels and the factors affecting that experience. Any recommended flow modification should evaluate the potential effects on conflicting recreation, irrigation, and power uses and needs of the waterway.

We discuss the costs of the proposed augmented flows for whitewater boating and the recreation monitoring in the Developmental Analysis section, and make our final recommendations in the Comprehensive Development section.

Access Improvements for Whitewater Boating: The steep canyon walls and the narrowness and sinuosity of Highway 178 limit the amount of parking and trailheads that can be safely provided. These conditions limit access to the river in the project area, affecting all recreational uses.

FOR\AWA stated that lack of access inhibits recreational opportunities and recommended enhancing access for boaters and general recreationists in the bypassed reach. FOR\AWA recommends improving access in the following areas in the Kern River No. 1 reach: (1) access for kayakers at the start of the Upper Study section; (2) access for kayakers and rafters at the start of the Lucas Study Section; (3) a portage around Lucas Falls for both kayaks and small rafts; (4) access just upstream of the Cataracts Study Section; and (5) access to, or just upstream of the Kern River No. 1 powerhouse (letter from Truman Burns, Representing FOR, San Francisco, California, November 8, 1996).

The project doesn't affect access, but it does reduce flows in the bypassed reach which affects recreational experiences of boaters and other users. We agree that access improvements, where they can be safely provided, would enhance recreational opportunities of all recreational users. Edison's participation in improving access would help mitigate the effects of altered flows.

Consideration must be given to pedestrian and traffic safety, threatened, endangered and other sensitive species and their habitat, and the appropriate type and level of recreation use in the bypassed reach when considering where and what access improvements should be provided.

Commission staff, therefore, recommends that Edison file an access improvement plan with the Commission that, as a minimum,

assesses the feasibility of providing safe access improvements, and includes a construction plan and an implementation schedule for any recommended portage, trail, trailhead, or parking area construction or improvement or modification of existing areas in the project s bypassed reach. At a minimum the study should evaluate the feasibility of providing access improvements at the 5 areas suggested by FOR/AWA. The plan should also address, as a minimum, the following factors: safety, traffic congestion and other conflicts, FS management objectives, effects on other resources, and cost and the entity responsible for constructing and maintaining the facilities. The FS supports the development of the plan.

We discuss the costs of developing the access plan in the Developmental Analysis section, but don t estimate the cost of implementing the plan because the needed measures are unknown. We make our final recommendations in the Comprehensive Development section.

Flow Information: FOR/AWA recommend that Edison establish a mechanism such as a flow phone that would provide hourly release information to recreational users. Currently, every morning, the Lake Isabella Watermaster provides the FS, Bureau of Land Management (BLM), local Chambers of Commerce, and other entities information on the flow releases for that day. The FS, BLM, and local Chambers of Commerce post the information on bulletin boards and provide it to people calling by telephone (personal communication with Patty Bates, Acting District Ranger, FS, Bakersfield, California, January 9, 1997).

Operation of the project can vary the flows within the bypassed reach by 412 cfs from those flows released from Lake Isabella. Commission staff believe that providing reliable information on flows in the bypassed reach would assist all recreational users, not just the boaters, in planning activities and would enhance their recreational experiences. Edison in their comments on the draft EA, suggest that the information source compliment the existing information services. Commission staff agree, and recommend that Edison file a plan with the Commission to implement a mechanism to provide flow information to the public, as long as that information is readily available to the public (such as a 1-800 telephone number) and provides, at a minimum, information specific to the daily flows in the Kern River No. 1 bypassed reach.

We discuss the costs of providing the information in the Developmental Analysis section, and make our final recommendations in the Comprehensive Development section.

Decommissioning

Under the decommissioning alternative, no flows would be

diverted from the bypassed reach. The higher flows that would result from decommissioning would not provide the best flow conditions for angling or the other water contact and streamside uses that currently occur in the project area. With the project operating, the desired flows for these activities occurred less than 10 percent of the time during the main use periods of June through early September between 1970 and 1991. Flow conditions for whitewater boating, however, would be improved. The number of days of "suitable" (700 cfs) and "optimum" (950 cfs) boating conditions during the peak use period (June - October) would increase by an average of 21 and 19 days, respectively; the same as would occur with flow augmentation.

c. Cumulative Impacts

The Borel, Kern River No. 1, Kern Canyon, and Rio Bravo Projects reduce flows released from Lake Isabella through each project's bypassed reach by their respective plant capacities (see table 1). The altered flows and the presence of the dams cumulatively affect whitewater boating experiences through much of the lower Kern River. Licenses for the Borel Project and Kern Canyon Project expire on February 28, 2005, and April 30, 2005, respectively. Our recommended recreation monitoring study for the Kern River No. 1 Project would coincide with the pre-filing application studies for the Borel and Kern Canyon Projects. A coordinated recreation monitoring study would provide a comprehensive view of the recreational benefits of any recommended whitewater augmentation flows, and would allow us to make coordinated recommendations for all three projects that would benefit whitewater and other recreation uses on about 32 miles of the lower Kern River. Therefore, we recommend that Edison coordinate, to the extent practicable, the recreation monitoring study for the Kern River No. 1 Project with the recreation studies that will be developed for the Borel Project and PG&E's Kern Canyon Project.

The recreation enhancements recommended in this EA, in conjunction with any recommended measures developed through the recreation use monitoring and access plan also recommended in this EA, would substantially improve recreation opportunities along the lower Kern River. With these enhancements the Kern River No. 1 Project will have a beneficial cumulative effect on the recreation resources of the lower Kern River.

d. Unavoidable Adverse Impacts

Under the decommissioning alternative, increased flow conditions would have minor adverse impacts on angling, water contact and other streamside uses in the lower Kern River.

8. Socioeconomic Considerations

a. Affected Environment

The Kern River No. 1 Project is located in Kern County, California, about 17 miles northeast of Bakersfield and about 20 to 25 miles southeast of the cities of Lake Isabella and Kernville, respectively (figure 1). In 1996, the county population was 624,695 and is projected to reach 1,310,000 by 2020. In January 1997, the unemployment rate in Kern County was 14.4 percent, almost double the state rate of 7.3 percent (personal communication, Employment Development Department, Labor Market Information Division, Sacramento, California, March 6, 1997).

FOR/AWA, in their comments on Edison's whitewater boating study, says that the Kernville-Lake Isabella economy is locally depressed and recreation is a valuable source of income (letter from Truman Burns, representing FOR, San Francisco, California, July 9, 1996).

Travel expenditures in Kern County in 1992 were \$704 million. Recreation expenditures accounted for \$69.2 million (10 percent) of this amount, accommodations \$88.5 million (13 percent), retail sales \$154.2 million (22 percent), eating and drinking \$153.5 million (22 percent), and ground transport \$176.9 million (25 percent).

In 1991, Edison paid \$59,109 in taxes and \$5,937 in FS user fees for the Kern River No. 1 Project. The taxes are sources of revenue for local governments.

b. Impacts and Recommendations

FOR/AWA contend that a new license for the Kern River No. 1 Project would have a profound economic impact on the Kern Valley community and recommend that Edison be required to conduct a thorough study of the socioeconomic effects of continued operation (letter from Truman Burns, Representing FOR, San Francisco, California, November 8, 1996). FOR/AWA provide no basis for their concern in their November 8, 1996, comments. We assume, based on FOR's July 9, 1996, letter, that FOR/AWA is primarily concerned with how continued operation would affect whitewater recreation and the out-of-pocket expenditures and economic development this industry provides to the local economy.

Edison proposes no new construction that might create additional jobs, nor do they propose any specific measures to enhance socioeconomic conditions of the Kern Valley.

Relicensing the project would result in the continuation of

local, state, and federal taxes and FS user fees paid by Edison and the employment of plant operators, administrators, and project managers. These expenditures would continue to provide economic benefits to Kern County.

Project operation affects flow in the Kern River by as much as 412 cfs, which could influence recreational use and attraction to this part of the lower Kern River and concurrently the economic benefits the lower Kern Valley might receive from secondary expenditures of the recreating public (i.e. food, lodging, gas). Our recommended recreational enhancements (developed recreation sites, flow information, and access improvement studies) would improve experiences of all recreational users in the project area, which can be expected to positively affect the local economy through secondary expenditures and by maintaining already high levels of use. While augmenting flows for whitewater boating would enhance boating experiences in the bypassed reach, we don't believe that existing boating use is presently limited or constrained by the project's flow regime (see Recreation, section V.7). Moreover, augmenting flows for whitewater boating would adversely impact other recreationists, which represent a larger portion of the recreating public that are also contributing to the local economy. Consequently, local economic benefits may not increase from project flow releases for whitewater boating.

Our recommended recreation monitoring provides for reconsidering flow changes to accommodate future increases in whitewater boating use. If whitewater recreation increases as FOR/AWA predicts, the local economy may benefit through additional secondary expenditures or increased bookings by commercial outfitters. The degree of benefit to the Kern Valley local economy from these factors is difficult to estimate for a number of reasons: (1) the methods of evaluation and associated

14

assumptions are varied and provide variable results; (2)

- 14/ WRC-Environmental (1996) used a unit-day valuation method (benefit transfer approach) to estimate the incremental values of the whitewater boating day directly attributable to augmented flows: long-term (30-year) average annual visit values ranged from \$16,275 to \$32,085 when flows of 750 cfs were met, and \$11,865 to \$23,391 when flows of 950 cfs were met. FOR estimated annual recreational boating values for incremental new visits using unit-day costs based on local commercial market values: annual recreational boating values ranged from \$21,855 to \$118,575 when flows of 750 cfs were met and \$15,933 to \$86,445 when flows of 950 cfs were met (letter from Truman Burns, Representing FOR, San Francisco, California, July 9, (continued...))

expenditures associated with other recreational activities (fishing, swimming, mining, etc.), for which information is not available for analysis, would also be influenced by any changes in use that may result from whitewater augmentation; and (3) how much the Kern Valley local economy may directly benefit from secondary expenditures is uncertain given the proximity of the project to Bakersfield, which has a more diverse and abundant supply of restaurants, gas stations, and hotels, and is easier to access than Lake Isabella and Kernville from the project area. For these reasons, we don't attempt to place a dollar value on whitewater recreation, but recognize that any benefit to the local economy would be important. We don't believe, however, that additional studies are needed because our recommended measures would enhance all recreational experiences and the economic benefits from these experiences would follow.

Decommissioning

Decommissioning would result in the loss of taxes, salaries, and fees paid by Edison, with a concurrent loss of associated benefits derived by the state and local governments and the National Forest. No recreation enhancements would be provided that would improve recreational experiences in the area. Decommissioning would add a maximum of 412 cfs flow to the bypassed reach. Economic benefits from the additional flow in the bypassed reach are difficult to estimate for the same reasons discussed previously regarding flow augmentation for whitewater boating.

c. Unavoidable Adverse Impacts

None.

D. NO-ACTION ALTERNATIVE

Under the no-action alternative, Edison would continue to operate the project under the terms of the original license. The environmental enhancements proposed by Edison or that we recommend would not occur.

VI. DEVELOPMENTAL ANALYSIS

In this section, we analyze the project's use of the available water resources to generate hydropower, estimate the economic benefits of the project, and estimate the cost of various environmental enhancement measures and the effects of these measures on project operation. Edison is not proposing any modifications to project facilities, but it is proposing to

14/ (...continued)
1996).

upgrade some of the recreation facilities.

In addition to an economic analysis of alternatives for continued project operation, we look at the potential cost of decommissioning the Kern River No. 1 Project and the effects decommissioning would have on Edison's and the region's power resources.

A. POWER AND ECONOMIC BENEFITS OF THE PROJECT

The main purpose of the project is to provide power for Edison's customers. Edison does not propose to increase the project's installed capacity or to upgrade the hydraulic capacity of the flowline, which would be needed to fully utilize the existing 26.3-MW installed capacity. Edison has investigated these options and found that they are not economically feasible. We concur.

Based on the 15-year period from 1977 through 1991, the project generates an average of 178,585 MWh annually. We use this average annual generation and Edison's 4.2-MW dependable

15

capacity rating for the Kern River No. 1 Project as the basis for our analysis of project economic benefits. We base the value of project power benefits on the current cost of replacement, assuming the power would most likely be replaced by a gas-fueled combined cycle combustion turbine. In a recent year (1992) Edison's 55 gas-fired generation units provided about 24 percent of its system energy needs; coal accounted for 14 percent; and non-utility purchases amounted to 32 percent of total energy requirements. Whether Edison would actually provide the power itself, or buy from the market, combustion turbine technology is the most likely technology to be used for new capacity. Its cost, therefore, is a reasonable proxy of project value for the purposes of our economic studies, which are: (1) to provide a basis for measuring the economic benefits of continued project operation, and (2) to provide a basis for estimating the cost of replacing power for any environmental enhancement alternatives that would reduce project generation and/or capacity.

By using current costs, no assumptions are made concerning future escalation or de-escalation of the various cost components included in the cost of project power or alternative power. Although we do not explicitly account for the effects inflation may have on the future cost of electricity, the fact that hydropower generation is relatively insensitive to inflation compared to fossil-fueled generators is an important economic consideration for power producers and the consumers they serve. This is one reason project economics is only one of the many

15/ The project's dependable capacity is based on the capacity at a flow of 70 cfs, the lowest recorded flow.

public interest factors the Commission considers in determining whether or not, and under what conditions, to issue a license.

The current cost economic analysis is not entirely a first-year analysis in that certain costs, such as major capital investments, would not be expended in a single year. The maximum period we use to annualize such costs is 30 years. Also, some future expenses, such as tax depreciation expenses, are known and measurable, and are, therefore, incorporated in our cost analysis.

We base our analysis of the project's net benefits on the following:

Capital costs		16
Net investment	\$5,307,000	
Annual costs		17
Annual (O&M)	\$ 583,000	
Discount rate	10 percent	
Period of analysis	30 years	
Term of financing	20 years	
Power value		18
Alternative energy value	19.60 mills/kWh	
		16
Capacity value	\$104/kW-year	

Based on this information, the existing project (without any enhancements) annually generates an average of 178,585 MWh of electricity; has an annual power value, based on the current costs of alternative power sources, of \$3,945,000 (about 22 mills/kWh); and costs \$1,279,000, annually to operate, resulting in a positive annual net benefit of \$2,666,000 (about 15 mills/kWh). As described below, Edison's proposed enhancement measures would not change the amount of generation, but would increase the cost of operation (and, therefore, decrease the net benefits) by about \$30,000 annually, producing a positive net annual power benefit of \$2,635,000 (14.7 mills/kWh). The additional enhancements required by the FS and the state water quality certification and recommended by staff would increase the cost of electricity production by an additional \$58,000 annually, reducing the total annual net benefits to \$2,577,000 (14.4

- 16 Undepreciated total capital investment as of December 31, 1993 (rounded).
- 17 Estimate by Edison for 1996 (Edison 1994a).
- 18 Staff estimated the energy and capacity values based on the cost of combined cycle combustion turbines and regional natural gas fuel cost and alternative capacity cost using a heat rate of 10,000 Btu/kwh.

mills/kWh).

B. COST OF ENVIRONMENTAL ENHANCEMENT MEASURES

Any measures proposed or recommended by the applicant, agencies, and staff would affect project economics as a result of the cost of these measures or their effect on power generation. These costs include capital (construction) costs, operation and maintenance (O&M) costs, and reduced power generation.

In this EA, we consider the following measures that could reduce the economic benefits of the project: bypassed reach water temperature modeling and monitoring, recreational facilities improvements, supplemental whitewater boating flows for the 10.2-mile-long bypassed reach, monitoring recreation patterns in the bypassed reach, providing flow information service to the public, developing an access improvement plan, and studying the adequacy of the FS-required minimum flows for protecting and enhancing the smallmouth bass fishery in the project bypassed reach.

1. Bypassed Reach Water Temperature Monitoring

The SWRCB's Section 401 WQC conditions would require Edison to develop and calibrate a water temperature model to determine what, if any, operational changes may be needed to meet the water temperature standards for the project bypassed reach. Based on information provided by Edison, we estimate it would cost \$60,000 to develop the model and \$25,000 a year for three years to obtain the data needed for model calibration. This is equivalent to an annual cost of about \$14,500 over the 30-year period of our analysis.

The SWRCB's Section 401 WQC conditions also require Edison to maintain the "cold" water beneficial use and/or the thermal objective in the bypassed reach. We note that this measure could result in a reduction in power benefits, if minimum flow releases are increased to meet the temperature criteria, but we are unable to assign a cost to this measure because we don't know the frequency of occurrence or magnitude of the flows to be released.

2. Recreational Facilities Improvements

Edison proposes to provide recreational facilities improvements (picnic tables, toilets, and access improvements) at the Upper Richbar, Lower Richbar, and Live Oak Day Use Areas, and at the Democrat Raft Take-out area. FS preliminary 4(e) conditions require these improvements, plus additional improvements at the Upper Richbar Day Use Area and the Democrat Raft Take-out Area (see Recreation and Land Use, section III.b.7 for details).

Table 7 shows the estimated capital costs for these recreation facility enhancements and the equivalent annual costs, levelized over the 30-year period of analysis. None of these enhancements would affect project generation or power value. The total annual cost for all of these measures is \$38,560 over the 30-year period of analysis.

Table 7. Estimated cost of recreation enhancements required by the Forest Service (Source: Edison and Forest Service, with staff modification).

ITEM	ESTIMATED COST	LEVELIZED ANNUAL COST
Edison's Proposed Enhancements for Upper Richbar Day Use Area	\$ 84,000	\$ 11,000
FS's Additional 4(e) Requirements for Upper Richbar Day Use Area	\$ 50,000	\$ 6,600
Edison's Proposed Enhancements for Lower Richbar Day Use Area	\$ 50,000	\$ 6,600
Edison's Proposed Enhancements for Live Oak Day Use Area	\$ 60,000	\$ 7,900
Edison's Proposed Enhancements for Democrat Raft Take-Out	\$ 46,000	\$ 6,000
FS's Additional 4(e)	\$ 3,500	\$ 460

3. Supplemental Whitewater Boating Flows

FOR/AWA recommend that Edison provide supplemental flows to enhance whitewater boating opportunities within the project bypassed reach. In the recreation section (section 7), we discuss the benefits of providing flow levels required for various boating conditions. Edison's whitewater boating flow studies conclude that the minimum flow for "suitable" boating conditions is 700 cfs and the minimum flow for "optimum" boating conditions is 950 cfs. FOR/AWA recommend a minimum flow of 1,250 cfs be provided on a set schedule of weekend and holiday days during the months of June through August.

Edison can only augment flows by up to 412 cfs, the maximum hydraulic capacity of the Project flowline. Table 5 (section 7) shows the average number of days, by month (June - October), each of the three target flows would be met, with and without augmentation. Table 5 is based on daily historic streamflow records for the 21-year period, 1970 through 1990.

Table 8 shows the average amount and current value of the energy that would be lost, if Edison changed its operation to provide the specified flow, when available.

Table 8. Average annual reduction in generation and associated revenue loss for alternative flow augmentation levels.

Flow Alternative	Period	Energy Lost (kWh/YR)	Current Value (\$/YR)
700 cfs	June - August (10am - 7pm)	2,085,000	\$40,870
700 cfs	June - October (10am - 7pm)	3,233,000	\$63,370
950 cfs	June - August (10am - 7pm)	2,291,000	\$44,910
950 cfs	June - October (10am - 7pm)	2,865,000	\$56,160
1250 cfs	14 Days, June - August (10am - 7pm)	572,000	\$11,220

The energy losses given in table 8 are based on providing the full augmentation flow for a twelve-hour period each day to account for ramping the flows up and down to provide 8 to 10 hours of full-flow conditions each day. Because of the travel time in the 10.2-mile-long bypassed reach, reducing the flow through the powerhouse to increase the flow down the bypassed reach would cause a temporary reduction of flow in the river below the powerhouse while the increased flow in the bypassed reach travels the 10.2 miles to the powerhouse. These periods of reduced flow could last for several hours (based on the travel time) before and after each period of flow augmentation.

4. Flow Information, Recreation Monitoring, and Access Improvement Plan

In the Recreation and Land Use section, we discuss the staff alternatives of providing a flow information service to inform callers of the flow in the bypassed reach; monitoring boating and other recreational use in the bypassed reach for five years, without augmenting the flow; and developing a plan for improving access to the river. The need to augment flow in the bypassed reach would be determined on the basis of the monitoring results and, if found to be consistent with the best comprehensive use of the waterway as required by the FPA, would be implemented by means of a license amendment. We estimate the flow information service would cost Edison about \$15,000 to consult with the agencies, prepare and implement a plan; and \$1,200 a year to operate for a total equivalent annual cost of about \$2,000 over the 30-year period of analysis. We estimate it would cost Edison \$20,000 annually to monitor recreation use in the bypassed reach for five years and \$18,000 to prepare a report at the end of the

five years for a total equivalent annual cost of \$9,500 over the 30-year period of analysis. We estimate the boating access plan would cost Edison \$10,000 which is equivalent to \$1,300 annually

19

over the 30-year period of analysis. These estimates are based on conducting the monitoring and providing the flow-information service for a five-month period each year. After five years, the recreation monitoring requirement would stop.

5. Adequacy of the FS-required minimum flows for protecting and enhancing the smallmouth bass fishery in the project bypassed reach..

In the Fisheries section, we discuss the relationship between WUA and streamflow. Other factors, such as excessive fishing pressure, available food supplies, water temperature, large flow fluctuations, and natural channel structure also affect a stream's fish productivity. Because the relationship between WUA and fish production is theoretical, we recommend that Edison develop and implement a plan to study the adequacy of the FS required minimum flows for protecting and enhancing the smallmouth bass fishery in the 10.2-mile-long project bypassed reach. We estimate it would cost Edison about \$5,000 to develop the plan, and about \$2,500 a year for five years to implement the plan for an equivalent annual cost of \$1,700 over the 30-year period of analysis.

C. DECOMMISSIONING

The following are the actions and associated costs likely to be included in the decommissioning without dam removal alternative.

1. Since most of the project structures and equipment, except for the generator exciters, which were recently replaced, are contributing elements of the Kern River No. 1 Project historic district, we assume this equipment would be left in place. Studies and plans would be required to determine what, if any, equipment to salvage, and how to secure and make safe the structures and equipment to be left in place. We estimate these studies would cost Edison \$200,000.
2. The site-specific costs for implementing the study recommendations cannot be predicted at this time. For purposes of this analysis and from information available for other projects where decommissioning has

19/ Our cost estimates are based on information filed by Edison in its August 29, 1997, letter to the Commission, commenting on the Draft Environmental Analysis.

been considered, we assume additional costs of \$750,000 would be required to make the project dam, water conveyance facilities, transmission facilities, powerhouse and equipment secure and safe.

3. Some entity would need to be found to oversee and maintain the project facilities. We estimate an annual cost of \$75,000 for the materials and labor required for these purposes.
4. Edison says it would be necessary to spend about \$1,700,000 for transmission line work that would be needed to provide backup electric service to portions of its service area that now rely on the project for back-up service.
5. In addition to the above costs, Edison would be required to replace the relatively inexpensive project power with a more costly alternative. On the basis of current costs, the combined cycle combustion turbine alternative would cost \$3,945,000 (about 22 mills/kWh)
20
annually.
6. All of the flow in the river would pass over the project dam and flow through the natural river channel. There would be no need to monitor water temperature and the recreation facility improvements would not be provided by the licensee. Edison would, therefore, avoid the costs of these mitigation/enhancement measures.

The total levelized annual cost of decommissioning the project facilities would be about \$920,000 (items 1-4, above, levelized over the 30-year period of analysis). Adding to this the cost of replacing the project power (\$3,945,000) with an equivalent amount of power using the combined cycle combustion turbine alternative, gives a total estimated annual cost of \$4,865,000 for the decommissioning (without dam removal) alternative.

D. NO-ACTION ALTERNATIVE

The no-action alternative would be the continued operation of the project under the terms and conditions of the existing license, with no new environmental protection, mitigation, or enhancement measures. This alternative is the baseline for measuring the incremental environmental and economic effects of

20

Replacing the project's hydroelectric power with natural-gas-fired turbine-driven generators would result in a net increase in air pollution emissions.

other alternatives.

Table 9 is a summary of the costs, benefits, and net benefits for each of the alternatives. Since the no action alternative represents the status quo condition for the project and resources affected by it, we use the no action project economics as the baseline against which to compare the other alternatives. The proposed project alternative is the project as proposed by Edison. It includes the recreation improvements Edison agreed to provide during consultation with interested parties; no other changes in the operation or facilities are proposed by Edison. The staff recommended alternative is the proposed project with mandatory conditions required by the FS and the state s Water Quality Certification, as well as, the following staff-recommended enhancements: (1) monitor and report on recreational patterns for five years; (2) provide a information service to advise river recreationists of the flow rate in the bypassed reach; (3) develop a plan for improving access to the river; (4) develop and implement a study to determine the adequacy of the required minimum flows for protecting and enhancing the smallmouth bass fishery. The decommissioning without dam removal alternative includes replacing the project power with an equivalent amount of power using the most likely alternative for new resources--a combined cycle combustion turbine plant. Although the cost of replacement power is equal to and offset by the power benefits, and, therefore, does not affect the net benefits of the decommissioning alternative, we include this cost in table 9 to show the total effect of decommissioning on the cost of power. In the Comprehensive Development and Recommended Alternative section that follows, we discuss both the economic and environmental basis for the staff-recommended alternative.

Table 9. Summary of the developmental costs, benefits and net benefits for all alternatives. (Source: staff)

ALTERNATIVE	COST	BENEFITS	NET BENEFITS
	\$1,000/YEAR (mills/kWh)		

Baseline (No Action)	\$1,279 (7.14)	\$3,945 (22.04)	\$2,666 (14.90)
Proposed Project	\$1,310 (7.32)	\$3,945 (22.04)	\$2,635 (14.72)
Staff recommended alternative	\$1,369 (7.65)	\$3,945 (22.04)	\$2,577 (14.39)
Decommissioning	\$4,865	\$3,945	- \$ 920

VII. COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE

Sections 4(e) and 10(a)(1) of the FPA require the Commission to give equal consideration to all uses of the waterway on which the project is located. When the Commission reviews a hydropower project, the recreational, fish and wildlife, and other nondevelopmental values of the involved waterway are considered equally with its electric energy and other developmental values. In determining whether, and under what conditions, to license a project, the Commission must weigh the various economic and environmental tradeoffs involved in the decision.

Following is the basis for, and a summary of, our recommendations to the Commission for the relicensing of the Kern River No. 1 Project. We weigh the costs and benefits of our recommended alternative against other proposed measures below.

A. RECOMMENDED ALTERNATIVE

Based on our independent review and evaluation of the proposed project, the proposed project with our additional recommended environmental measures, decommissioning, and the no-action alternative, we have selected the proposed project with our additional recommended environmental measures as the preferred alternative.

We recommend this alternative because: (1) issuance of a new license would allow Edison to continue to operate the project as a dependable source of electric energy for its customers; (2) the 24.8-MW project would avoid the need for an equivalent amount of fossil-fueled fired electric generation and capacity, continuing to help conserve these nonrenewable energy resources and reduce atmospheric pollution; and (3) the recommended environmental enhancement measures would improve water quality, protect fish and terrestrial resources, improve management and public use of recreation facilities and resources, improve aesthetics, and maintain and protect project historic facilities.

We recommend the following environmental measures be included in any license issued by the Commission for the Kern River No. 1 Project:

- (1) Prepare a soil erosion and sediment control plan, a solid waste and waste water control plan, a hazardous substances control plan, a spoil disposal plan, and a visual resource protection plan before soil-disturbing activities.
- (2) Release a minimum instream flow of 50 cfs from June 1 through September 30 and 15 cfs from October 1 through May 31 of each year, or inflow, whichever is less.
- (3) Develop a water temperature model for the area between the diversion dam and the powerhouse, as required by the water quality certification. The study results would be used to determine if the project can meet the state's cold freshwater habitat objective and if any operation changes would be necessary.
- (4) Prepare a plan to study the adequacy of the minimum flows for protecting and enhancing the smallmouth bass fishery in the project bypassed reach.
- (5) Monitor leaking flumes annually and postpone repairs that would reduce leakage until it becomes threatening to the structural integrity of the flumes to maintain puddles important to wildlife.
- (6) Implement Edison's cultural resource protection plan.

- (7) Prepare a recreation plan that includes FS recommended enhancements to Live Oak, Upper Richbar, and Lower Richbar Day Use Areas and Democrat Raft Take-out (see Recreation, section V.7).
- (8) Prepare a plan to evaluate recreational activities in the project bypassed reach to determine changes in recreation patterns and to improve access in the bypassed reach.
- (9) Implement a mechanism to provide flow information to recreational users in the bypassed reach.

Because our recommendations for water temperature monitoring, recreation improvements, recreational use monitoring, flow information, and access improvement studies, and smallmouth bass fishery study represent trade-offs between developmental and non-developmental resources, our justification for these measures and a comparison of the alternatives are provided below.

1. Water Temperature Model

The state water quality certification adopts Edison's water temperature study plan to evaluate the projects' effect on water temperatures in the bypassed reach and to determine what, if any, operational changes would be necessary to meet the state's water temperature criteria. Based on information provided by Edison, we estimate it would cost \$60,000 to develop the temperature model and \$25,000 a year for three years to obtain the data needed for model calibration. This would reduce the project's net annual benefits by about \$14,500 over the 30-year period of our analysis. Until the results of the monitoring and modeling are known, we are unable to determine how much lost generation, if any, may result from changes in operation to maintain SWRCB's water quality standard. Water temperature studies suggest, however, that additional flow releases are likely to be necessary infrequently, if at all. We believe that the water temperature study plan, required by the water quality certification, will adequately demonstrate the attainment of the beneficial uses and compliance with basin plan temperature objectives for the Kern River. Because the condition is included in the water quality certification, it will be included in the license.

2. Recreation Facility Improvements

Edison's proposed enhancements to toilets, barbeques, pathways, and parking facilities at the Upper Richbar, Lower Richbar, and Live Oak Day Use Areas and at Democrat Beach Raft Take-out would reduce the project's net annual benefits by \$31,000. The FS preliminary 4(e) conditions would require similar additional improvements at Upper Richbar and Democrat Raft Take-out (see Recreation, section V.7 for details) that

would reduce the project's net annual benefits by about \$7,060 more than Edison's proposed measures. The recreational facilities to be improved are within the bypassed reach or at the project's reservoir pool. Project operations can directly affect the recreational experience at these facilities which are generally at or exceeding capacity, particularly on weekends and holidays. We believe that the FS's proposed measures would substantially enhance public use of the project area, improve access for people with disabilities, and would ensure the continued benefit of the recreation facilities throughout the license term. We conclude that the public benefits of these recreation enhancements are substantial, needed, and justify their cost. We recommend implementing the FS's required measures.

3. Supplemental Whitewater Boating Flows, Recreation Use Monitoring Plan, Flow Information, and Access Improvement Plan

FOR/AWA recommend augmenting flows on a set schedule during June through August, providing flow information to the public, and improving access to enhance whitewater boating opportunities in the bypassed reach.

The annual loss of power benefits from augmenting flows ranges from \$11,220 to \$63,390. We don't recommend augmenting flows for whitewater boating at this time because: (1) augmentation could adversely affect a large number of other water contact and streamside users (anglers, swimmers, waders, recreational miners) that prefer lower flows that are available less frequently than the proposed boating flows, and (2) existing boating use is low compared with the other recreational activities in the project area, despite the fact that flows are frequently available for either the suitable or optimum boating conditions. We believe that the available data indicates that current flow conditions allow for a reasonable balance of all recreation uses and that existing whitewater boating use is not significantly limited or constrained by the project's present operation. Therefore, the benefits of augmenting flows for whitewater boating would not be worth the loss in power and other resource benefits.

Instead of augmenting flows, Commission staff recommend monitoring recreation use to determine if future changes in use patterns warrant a different flow regime. Monitoring would provide better information on the number and types of recreational users and insight on the factors that may be limiting boating use, such as lack of knowledge of the resource, access, safety, and rapid difficulty. We believe the cost of the monitoring plan, estimated to be \$20,000 a year for a period of 5 years plus \$18,000 at the end of five years for a report (equivalent to about \$9,500 levelized over the 30-year period of

analysis), is justified because the monitoring plan would ensure that recreation in the bypassed reach continues to meet the immediate needs of all users and that a more informed decision can be made on how best to meet future recreation demands. We, therefore, recommend that within 9 months of license issuance Edison prepare a plan to monitor recreation uses, by activities that may be directly influenced by flows (fishing, whitewater boating, wading, swimming, recreational mining, etc), every year for 5 years and at the end of the 5-year period file a report with the Commission, that includes, as a minimum, the monitoring results, an evaluation of the need for revisions to the flow regime to accommodate recreation interests, and recommendations for any future monitoring efforts. Any recommended flow modification should consider the potential effects on conflicting recreation, irrigation, and power uses and needs of the waterway. The recreation monitoring plan, which would be implemented upon Commission approval, should be developed in consultation with FS, CDFG, CALTRANS, Kern River Watermaster, Kern County Search and Rescue, FOR, AWA, Kern River Alliance, Kern River Outfitters, Kernville and Lake Isabella Chambers of Commerce, and other recreation interest groups. The plan should also be developed in coordination with the relicensing studies for the PG&E Kern Canyon Project and Edison's Borel Project.

Commission staff also recommends that Edison provide a mechanism to inform the public of flows in the bypassed reach. Because project operation can vary flows in the bypassed reach by up to 412 cfs from those released at Lake Isabella, this information would assist all users, including boaters, in planning activities, which would enhance their recreational experience. We believe the benefits of this measure justify its estimated annual cost of \$2,000. We recommend that Edison, after consulting with the FS, BLM, Kern River Watermaster, FOR, AWA, other special interest groups, and the local Chambers of Commerce, file a plan with the Commission to implement a mechanism to provide flow information to the public.

We don't have sufficient information to make a specific access improvement recommendation at this time because a variety of factors must be considered, including the interests of the various users, impacts to sensitive species, safety along Highway 178, and cost. We believe that Edison should participate in providing access improvements where they can be safely provided. The cost to the project for developing the access plan, estimated to be \$10,000, is justified because safe access improvements would enhance public use of the project area throughout the license term. We recommend that within 1 year of license issuance, Edison file an access improvement plan with the Commission that, as a minimum, assesses the feasibility of providing safe access improvements, and includes a construction plan and an implementation schedule for any recommended portage, trail, trailhead, or parking area construction, improvement, or

modification of existing areas in the project's bypassed reach. The access improvement plan, which would be implemented upon Commission approval, should be developed in consultation with FS, CDFG, CALTRANS, Kern River Watermaster, Kern County Search and Rescue, FOR, AWA, Kern River Alliance, Kern River Outfitters, Kernville and Lake Isabella Chambers of Commerce, and other recreation interest groups.

In summary, the best available information suggests that FOR/AWA's proposal to augment flows would enhance whitewater boating opportunities to the potential detriment of other resource uses and without evidence that other factors, some of which are beyond the control of the licensee, are responsible for the limited use of the bypassed reach for whitewater boating. Our recommended measures would adequately enhance whitewater boating opportunities as well as other recreational uses and would provide for changing project operation to accommodate whitewater boating needs if changes in use patterns warrant different flow regimes in the future.

4. Mitigation Fund

FOR/AWA recommend that any new license issued include a mitigation fund based on a percentage of Edison's projected revenues (letter from Truman Burns, Representing FOR, San Francisco, California, November 8, 1996). Funds would be dedicated to the acquisition of riparian land and water rights, improving public access, and the existing fishery and recreational use of the lower Kern River. Edison would initially provide \$500,000 to the fund, with annual supplements provided by Edison and public subscription. The fund would be managed by a Lower Kern Advisory Board composed of representatives from, but not limited to: Edison, FS, AWA, FOR, the Kernville and Lake Isabella Chambers of Commerce, the Kern River Alliance, the Kern River Flyfishers, the CDFG, FWS, and Bureau of Land Management.

FOR/AWA didn't provide any rationale for the mitigation fund other than to account for Edison's "free" use of the public waterway for the last 89 years, nor do they provide details on what specific measures would be funded.

During this relicensing proceeding, we have evaluated and recommended herein, specific protection and enhancement measures as appropriate. For example, we are recommending that monitoring of recreation use patterns be conducted and access needs evaluated with a work group that includes members from the proposed advisory board. In addition, if during the term of the license there is a need for other mitigation, protection, or enhancement measures, the license can be reopened through certain standard articles placed in any license issued. For the reasons stated above, we don't recommend that a mitigation fund be required.

5. Smallmouth Bass Fishery Study

Over 40 individuals recommended that a smallmouth bass population study be conducted to determine if our recommended flows would be adequate to support smallmouth bass populations. The relationship between WUA and fish production is theoretical. In addition, other factors such as excessive fishing pressure, available food supplies, water temperature, large flow fluctuations, and natural channel structure affect a stream's fish productivity. For these reasons, we recommend that Edison develop and implement a plan to study the adequacy of the FS-required minimum flows for protecting and enhancing the smallmouth bass fishery in the project bypassed reach.

B DECOMMISSIONING

FOR/AWA recommend that we evaluate a decommissioning alternative that would leave project structures in place, after taking appropriate steps necessary to make them safe. FOR/AWA also suggest that environmental benefits be taken into consideration when evaluating costs.

We estimate that decommissioning the project facilities would cost Edison about \$920,000 annually over our 30-year period of analysis (table 8). Considering the lost power benefits (\$3,945,000 annually), this alternative would cost \$4,865,000, about \$3,514,000 more than the cost of the staff recommended alternative. This alternative would also result in greater air pollution from the burning of fossil fuels.

FOR/AWA contend that the value of environmental externalities associated with free flowing streams may outweigh the benefits of power generation. FOR/AWA quote values of a Bonneville Power Administration (BPA) study that concluded free-flowing streams are worth \$260,000/mile, riparian habitat \$4,000/ac, and resident trout \$14/fish. FOR/AWA estimate that the free flowing value of the Kern River using these numbers would be over \$2,600,000.

The Kern River is not managed as a free-flowing system. Management of Lake Isabella for flood control and irrigation dictate flows in the bypassed reach to a larger degree than Edison, which has control of only 412 cfs of flow. Our analysis indicates that decommissioning would provide little to no benefit to riparian vegetation and may result in negative effects on smallmouth bass production. Because values of environmental externalities are difficult to determine and burdened with a plethora of assumptions and because project decommissioning would have little to no benefit to fish and riparian resources in the context of this managed river system, we don't attempt to estimate the value of affected resources.

We believe that the value of the existing project with the recommended protection and enhancement measures would continue to be economically beneficial when compared with the alternative costs of fossil-fuel generation, and that the environment is adequately protected and enhanced with our recommended measures.

FOR/AWA also recommend in its letter of November 8, 1996, that a decommissioning fund be established should a new license be granted to Edison.

On December 14, 1994, the Commission issued a policy statement on project decommissioning at relicensing (18 CFR

21

2.24). In that statement, the Commission said that it would determine whether to require decommissioning funding on a case-by-case basis, taking into account the condition and expected lifespan of the project in question and the applicant's financial ability to fund such an action at the end of any license issued.

If licensed with staff's recommended mitigation and enhancement measures, the project would be physically sound and would not result in significant adverse environmental impacts. The record does not indicate that Edison would lack the financial resources to decommission the project. A decommissioning fund, therefore, is not warranted in the circumstances of this case.

C CONCLUSION

Based on our independent analysis of the Kern River No. 1 Project, we conclude that continued operation of the project with the recommended protection and enhancement measures would improve environmental conditions in the project area and would continue to be an economically beneficial use of the resources.

VIII. CONSISTENCY WITH COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA requires the Commission to consider the extent to which a project is consistent with federal and state comprehensive plans for improving, developing, and conserving waterways affected by the project. Under Section 10(a)(2), federal and state agencies filed 35 plans that address various resources in California. We identified five plans that

22

address resources relevant to the Kern River No. 1 Project. We

21/ 60 FR 347 (January 4, 1995).

22/ (1) Forest Service. 1988. Sequoia National Forest Land and Resource Management Plan, Department of Agriculture, Porterville, California. March 1988, as amended by the Sequoia National Forest Mediated and Management Plan 1990 Settlement Agreement. July 1990.
(continued...)

also reviewed and addressed measures identified in two water

23

quality plans not filed with the Commission. No conflicts were found with the plans.

FOR/AWA recommend that Edison be required to comply with the goals, management emphasis, prescriptions, and standards and guidelines established in the Sequoia National Forest Land and Resource Management Plan (Forest Plan). Specifically, FOR/AWA recommend that Edison comply with the FS s no more than 50 percent diversion prescription on a year round basis (letter from Burns, attorney for FOR, San Francisco, California, November 8, 1996). We discuss consistency with the Forest Plan below.

SEQUOIA NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN

The Forest Plan divides the forest into management areas and provides direction for management activities in these areas. The Forest Plan also provides specific standards and guidelines to be used in managing each area to achieve forest goals.

The Kern River No. 1 Project is in management area B02, which emphasizes protection and improvement of water-oriented recreation in blue oak savanna. Standards and guidelines relevant to the project focus on developed recreation, dispersed recreation, fish and wildlife, and the watershed.

Developed Recreation: The Forest Plan sets the following priority of developing picnic grounds and campgrounds when need increases: rehabilitate existing, expand existing, develop new.

22/ (...continued)

- (2) California Department of Water Resources. 1983. The California water plan: projected use and available water supplies to 2010. Bulletin 160-83. Sacramento, California. December 1983. 268 pp. and attachments.
- (3) California Department of Water Resources. 1994. California water plan update. Bulletin 160-93. Sacramento, California. October 1994.
- (4) California State Water Resources Control Board. 1975. Water quality control plan report. Sacramento, California.
- (5) California - The Resources Agency. Department of Parks and Recreation. 1983. Recreation needs in California. Sacramento, California. March 1983. 39 pp. and appendices.

23/

- (1) California Regional Water Quality Control Board, Central Valley Region (CRWQCB). 1995. Water quality control plan for the Tulare Lake Basin. Second Edition - 1995.
- (2) State Water Resources Control Board (SWRCB). 1993. California inland surface waters plan. 93-4 WQ. May 1993.

Elderly and handicapped standards should be considered during construction, rehabilitation, and reconstruction of facilities. It also sets a standard and guideline of establishing trails that provide for access between developed facilities and water/streamside. Our recommended alternative rehabilitates and improves picnic, toilet, and paths at Upper Richbar, Lower Richbar, and Live Oak Day Use Areas and the Democrat Take-out, and improves access for people with disabilities. These improvements are consistent with the Forest Plan.

Dispersed Recreation: Relevant standards include: (1) develop and manage opportunities for increasing public enjoyment and benefits with emphasis on driving for pleasure and viewing scenery in Rural class areas, and (2) maintain and develop trails to meet user needs and protect resource values. The project facilities are compatible with the FS's Visual Management System (VMS) (letter from Erik Ostly, Forest FERC Coordinator, FS, Porterville, California, September 28, 1994). We recommend that Edison continue working with the FS and other interested entities to define trail and other access improvements in the bypassed reach. To require such improvements now may result in conflicts with other natural resources and public safety, which would be inconsistent with the Forest Plan. Similarly, any requirement to augment flows for whitewater boating would result in conflicts among recreational users (i.e. swimmers, recreational mining, fishing), which would not be consistent with the Forest Plan forest-wide goals. We conclude that our recommended measures are consistent with the Forest Plan.

Fish and Wildlife: Forest-wide standards and guidelines for fish and wildlife are applied to the B02 management area, which includes the following relevant to the Kern River No. 1 Project: (1) maintain habitat to insure all native fish, wildlife, and plant species will have adequate population levels and distribution to provide for their continued existence throughout their current range; (2) protect sensitive, proposed for listing, and California species of special concern with the long-term objective for removal from Federal listing or to prevent them from being listed; and (3) within riparian area, protect stream courses and adjacent vegetation to maintain or improve overall wildlife and fish habitat, water quality, and recreational opportunities.

The Forest Plan also sets as a forest-wide standard and guideline the protection of fishery streams by specifying minimum flows necessary to maintain fisheries habitat and allowing removal of no more than 50 percent of the flow at any time. FOR/AWA contend that such a measure would protect the Kern's fishery, riparian habitat, and endangered species.

The Kern River is managed for a self-sustaining smallmouth bass fishery, and is stocked with catchable-sized rainbow trout.

Based on the results of an IFIM study, conducted in consultation with fish and wildlife management agencies and the FS, Edison's proposed continuation of established minimum flows would protect and maintain habitat conditions for these fish and would meet FS management objectives. Additional flows would not likely improve riparian vegetation because these resources are controlled more by the magnitude of irrigation flows and floods and by the limited substrate suitable for riparian establishment than project diversions. The Kern Canyon slender salamander (a FS sensitive species), referenced by FOR/AWA as one of the species potentially benefiting from a "no more than 50 percent diversion" management prescription, is not likely to occur in the mainstem Kern River because of the turbulent water and high velocities and would not benefit by such a flow prescription.

The Kern River No. 1 Project existed at the time the Forest Plan was developed and is a recognized and accepted use of the national forest lands. The "no more than 50 percent diversion" standard and guideline is just that, a guideline established to direct future activities such as diversions on streams when drafting water for dust abatement during timber and road management activities (personal communication, Erik Ostly, Forest FERC Coordinator, FS, Porterville, California, January 7, 1997).

Our analysis indicates that the minimum instream flows and provisions for evaluating the effects of future project activities fully protect natural resources and our recommendation is fully consistent with the Forest Plan.

IX. RECOMMENDATIONS OF FISH AND WILDLIFE AGENCIES

Under the provisions of Section 10(j) of the FPA, as amended by the Electric Consumers Protection Act of 1986, each hydroelectric license issued by the Commission shall include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, and enhancement of such resources affected by the project, where those conditions are not inconsistent with the purposes and requirements of the FPA or other applicable law.

No federal or state fish and wildlife agency filed recommendations pursuant to Section 10(j) of the FPA.

X. FINDING OF NO SIGNIFICANT IMPACT

With our recommended enhancement measures, minimum flows would be provided to protect fish resources in the bypassed reach, cultural resources would be maintained, and comprehensive recreation plans that benefit all users would be developed. Implementing the enhancement measures described in this EA would ensure that the environmental effects of continued operation would remain insignificant. A few of the smaller game and

nongame fish species would continue to be entrained into the project flowline and killed, but the number is insignificant.

Based on this analysis, issuance of a license for the project with our recommended environmental measures would not constitute a major federal action significantly affecting the quality of the human environment.

XI. LITERATURE CITED

- Barbour, R.W. and W.H. Davis. 1969. Bats of America. University Press of Kentucky, Lexington, Kentucky. 286pp.
- Barr, Chreyl B. 1991. The distribution, habitat, and status of the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus* Fisher). U.S. Fish and Wildlife Service, Sacramento, California. 134p.
- Beamish, F.W. 1978. Swimming capacity. In: Fish Physiology, Volume VII, Locomotion. W.S. Hoar and D.J. Randall, editors. Academic Press, New York, pp 101-187.
- Brusven, M.A., and K.V. Prather. 1974. Influence of stream sediments on distribution of macrobenthos. J. Entom. Soc. British Columbia. 71:25-32.
- California Department of Fish and Game (CDFG). 1987. Fish and game operations manual. Section 5355. June 1987.
- _____. 1992. Annual report on the status of California state listed threatened and endangered animals and plants. State of California, The Resources Agency. Sacramento, California.
- California Natural Diversity Data Base (CNDB). 1996. Natural diversity data base. California Department of Fish and Game, Natural Heritage Division. September 15, 1996.
- California Regional Water Quality Control Board. Central Valley Region (CRWQCB). 1995. Water quality control plan for the Tulare Lake Basin. Second Edition - 1995.
- Cherry, D.S., K.L. Dickson, J. Cairnes, and J.R. Stauffer. 1977. Preferred, avoided, and lethal temperatures of fish during rising temperature conditions. Journal of the Fisheries Research Board of Canada 34:239.
- Christenson, D.P. 1975. Case history - Kern River fish population control 1972. In P. Moyle, Trout/Non-Gamefish Relationships in Streams. Cal. Trout/AFS Symposium. , Sacramento, California.

- Dahlberg, M.L., D.L. Shumway, and P. Doudoroff. 1968. Influence of dissolved oxygen and carbon dioxide on swimming performance of largemouth bass and coho salmon. Journal of the Fisheries Research Board of Canada. 25(1): 49-70.
- EA Engineering, Science, and Technology, Inc (EA). 1986. Kern River Hydroelectric Project instream flow study and fish population characterization. Prepared for Southern California Edison Company, Rosemead, California. December 1986.
- Edison (Southern California Edison Company). 1994a. Application for New License for Major Project - Existing Dam. Kern River No. 1 Water Power Project. FERC No. 1930. Rose Mead, California. April 1994.
- _____. 1994b. Additional Information for Application New License. Kern River No. 1 Water Power Project. FERC No. 1930. Rose Mead, California. November 7, 1994.
- Eicher Associates, Inc. 1987. Turbine-related fish mortality: review and evaluation of studies. EPRI AP-54580. Prepared for Electric Power Research Institute, Palo Alto, California. November 1987.
- Entrix, Inc. 1996. Response to the Federal Energy Regulatory Commission's request for additional information concerning sediment in the lower Kern River. Prepared by Entrix, Inc. for Southern California Edison, Rosemead, California. April 26, 1996.
- Federal Energy Regulatory Commission and USDA Forest Service. 1996. Environmental Assessment for Hydropower License, Kern River No. 3 Hydroelectric Project, FERC Project No. 2290. April 2, 1996.
- _____. Scoping Document I, Kern River No. 1 Hydroelectric Project, FERC Project No. 1930. January 19, 1995.
- _____. Scoping Document II, Kern River No. 1 Hydroelectric Project, FERC Project No. 1930. May 26, 1995.
- Flow Science, Inc. 1988. Kern River temperature modeling study. Prepared for Southern California Edison Company, Rosemead, California. March 1988.
- Forest Service. 1988. Sequoia National Forest land and resource management plan, Department of Agriculture, Porterville, California. February 1988; as amended by the Sequoia National Forest Mediated and Management Plan 1990 Settlement Agreement. July 1990.

- Harris, R.R.. 1989. Riparian communities of the Sierra Nevada and their environmental relationships. in D.L. Abell (eds) Proceedings of the California riparian systems conference: protection, management, and restoration for the 1990s; September 22-24, 1989, Davis, CA. General Technical Report PSW-110. Pacific Southwest Forest and Range Experiment Station, Forest Service. 544p.
- Harris, R.R., C.A. Fox, and R.J. Riser. 1987. Impacts of hydroelectric development on riparian vegetation in the Sierra Nevada Region, California. Environmental Management 11:519-527.
- Hart, S. 1990. California's Wild Heritage, Threatened and Endangered Animals in the Golden State. California Department of Fish and Game, California Academy of Sciences, Sierra Club Books.
- Holland, D.C. 1994. The western pond turtle: habitat and history. Oregon Department of Fish and Wildlife report. prepared for U.S. Department of Energy, Bonneville Power Administration. DOE/BP-621371. BPA, Portland, Oregon. August 1994. 605pp.
- Kuchler, A.W. 1977. Natural vegetation of California. Map in appendix to Terrestrial vegetation of California. Barbour and Major (eds). 1977. John Wiley & Sons, Inc., New York.
- Macgee, J.P., T.E. McMahon, and R.F. Thurow. 1996. Spatial variation on spawning habitat of cutthroat trout in a sediment-rich stream basin. Transactions of the American Fisheries Society 125:769-779.
- Nilson, C. 1984. Effects of stream regulation on riparian vegetation. Pages 93-106 in A. Lillehammer and S. J. Saltveit, eds. Regulated rivers. Columbia University Press, New York, New York.
- Olendorff, R.R., A.D. Miller, and R.N. Lehman. 1981. Suggested practices for raptor protection on powerlines: the state of the art in 1981. Raptor Research Report No. 4, Raptor Research Foundation, Inc., University of Minnesota, St. Paul, Minnesota. 110pp.
- State Water Resources Control Board (SWRCB). 1993. California inland surface waters plan. 93-4 WQ. May 1993.
- Semple, J.C. 1996. A revision of *Heterotheca* sect. *Phyllotheca* (Nutt.) Harms (Compositae: Astereae): the prairie and montane goldenasters of North America. WAT Herbarium, University of Waterloo, Waterloo, Ontario. 148-150pp.

- Stebbins, R.C. 1954. Amphibians and reptiles of western North America. McGraw Hill, New York.
- Taylor, T. 1992. Archeological survey report, Kern River No.1 transmission line from the powerhouse to tower 1-4, Kern County, California. Environmental Affairs Division, Southern California Edison Company, Rosemead, California.
- _____. 1993. Cultural resources management plan for Southern California Edison Company's Kern River No. 1 hydroelectric project, Kern County, California, FERC Project No. 1930. Environmental Affairs Division, Southern California Edison Company, Rosemead, California.
- Tuskes, P. and J.F. Emmel. 1981. The life history and behavior of *Euproserpinus euterpe* (Sphingidae). Journal of the Lepidopterous Society. 35:27-33.
- U. S. Corps of Engineers (Corps). 1953. Isabella Lake, Kern River, California, Reservoir Regulation Manual. Department of the Army, Sacramento District, Corps of Engineers, Sacramento, California. Amended January 1978.
- U. S. Fish and Wildlife Service (FWS). 1980. Listing the valley elderberry longhorn beetle as a threatened species with critical habitat. Federal Register 45(155):52803-52807. August 8, 1980.
- _____. 1990. Endangered and threatened wildlife and plants; Determination of Endangered or Threatened Status for five plants from the Southern San Joaquin Valley. Federal Register 55:29361-29370. July 19, 1990.
- _____. 1993. Endangered and threatened wildlife and plants; notice of 1-year petition finding on the western pond turtle. Federal Register 58:42717-42718. August 11, 1993.
- _____. 1995. Endangered and threatened wildlife and plants; final rule determining endangered status for the southwestern willow flycatcher. Federal Register 60:10694-10715. February 27, 1995.
- Verner, J. and A.S. Boss, technical coordinators. 1980. California wildlife and their habitats: western Sierra Nevada. Pacific Southwest Forest and Range Experiment Station. Gen. Tech. Rep. PSW-37. 439pp.
- Verner, J., K.S. McKelvey, B.R. Noon, R.J. Gutierrez, G.I. Gould, Jr., and T.W. Beck (Technical Coordinators). 1992. The California spotted owl: a technical assessment of its current status. Gen. Tech. Rep. PSW-GTR-133. Albany, CA: Pacific Southwest Research Station, Forest Service. 285pp.

White, D. and T. Taylor. 1984. An inventory and evaluation of archeological and historic resources along the Kern River in the vicinity of Democrat Hot Springs, Kern County, California. Environmental Affairs Division, Southern California Edison Company, Rosemead, California.

WRC-Environmental. 1996. Kern River whitewater boating study, Kern River No.1 Project: FERC No. 1930. Prepared for Southern California Edison Company, Rosemead, California. July 10, 1996.

XII. LIST OF PREPARERS

David Turner - EA Coordinator, Terrestrial Resources, Threatened and Endangered Species, and Socioeconomic (Wildlife Biologist; M.S., Zoology)

John Costello - Visual Resources, Recreation, Land Use (Landscape Architect; BLA, Landscape Architecture and Environmental Planning).

Charles R. Hall - Need for Power and Developmental Resources (Engineer, M.S., Civil Engineering).

Gaylord Y. Hoisington - Geology and Soils (Soil Conservationist; B.S. Recreation)

Michael H. Henry - Aquatic Resources (Fishery Biologist; B.S., Fisheries).

Edwin Slatter - Cultural Resources (Archeologist; Ph.D. Anthropology)

APPENDIX

A. THREATENED AND ENDANGERED SPECIES NOT LIKELY TO OCCUR IN THE PROJECT AREA

The following federal listed species are not likely to occur in the project area because of lack of suitable habitat and range limits. Consequently, relicensing the project would not affect these species. Distribution, habitat requirements, and known occurrences relative to the project are described below to support our conclusion.

California jewelflower, Kern mallow, San Joaquin wooly-threads and Hoover's wooly-star: These four herbs are restricted to grassland with reduced grass cover, and adjacent plant communities (valley sink scrub, valley saltbush scrub, and juniper woodlands) in the southern San Joaquin Valley, and neighboring foothills and valleys (FWS 1990). California jewelflower was historically confined to the valley floor of the Tulare Lake Basin; only one introduced population now occurs in Kern County (FWS 1990). Kern mallow is restricted to the eastern base of the Temblor Range, within valley saltbush scrub in Kern County (FWS 1990). San Joaquin wooly-threads are associated with valley saltbush scrub, and found in the San Joaquin Valley and adjoining foothills from Panoche Pass (San Benito County) southeast to Caliente Creek, east of Bakersfield (FWS 1990). Hoover's wooly-star was historically distributed in the Temblor Range, Cuyama Valley, and discontinuously within valley saltbush and valley sink scrub from Fresno County south in the San Joaquin Valley (FWS 1990). Valley sink scrub, valley saltbush scrub, and juniper woodlands don't occur in the project area. CNNB (1996) has no records of these plants occurring near the project. Project facilities are not located within the known or historical distribution of these plants, and none were found in the area (Edison 1994a).

Greenhorn adobe-lily, Piute Mountains navarretia, and San Joaquin adobe sunburst: These three herbs are found in heavy adobe clay soils in either nonnative grassland and blue oak woodlands (Greenhorn adobe-lily and San Joaquin adobe sunburst) or blue oak, digger pine, or juniper woodlands between 1,000 to 3,200 feet (Piute Mountains navarretia) (FWS 1994a; FWS 1997). Adobe soils are mainly distributed in the valleys and flats near the foothills of the southeastern San Joaquin Valley (FWS 1997). Fourteen populations of Greenhorn adobe-lily are known from Kern County; six populations of Piute Mountains navarretia are known from northern Kern County; and San Joaquin adobe sunburst is known from northeast of Bakersfield, in Kern County. While blue oak woodlands and grassland are the predominate community types in the project vicinity, soils in the area are from the Cienega-

Rock outcrop complex, which consists of excessively drained, permeable, pale brown coarse sandy loam about 12 inches deep formed from granitic rock. Suitable habitat for these species is not present and no plants were found during site surveys (Edison 1994a).

Kelso Creek monkeyflower: This desert annual occurs predominately in loamy, coarse sands on alluvial fans and deposits of granitic origin within the Joshua tree or California juniper xeric woodlands of the high desert (CNDB 1996, FWS 1994). Suitable habitat doesn't occur in the project area.

Parish's alkali grass: This ephemeral annual grass occurs in small, widely disjunct populations in California, Arizona, and New Mexico, occupying very specific desert habitat of alkaline springs and seeps at elevations of 2,300 to 6,000 feet (FWS 1994c). Suitable habitat for this species doesn't occur in the project area.

San Joaquin kit fox: The San Joaquin kit fox prefers grasslands and desert saltbush communities, but may also occur in oak woodland, alkali sink scrubland, and vernal pool and alkali meadow communities (ARCO 1996a; CDFG 1995; Brown et al. 1997). The San Joaquin kit fox's range extends roughly from the southeastern Contra Costa County south along the eastern flanks of the Interior Coast Range to the southern San Joaquin Valley, including major portions of western Kern County and the valleys, foothills, and plains on the western side of the Interior Coast range (CDFG 1995). The closest known location to the project is east of Highway 99 and north-northeast of Bakersfield (CNDB 1996), well outside the Kern Canyon. The project area is located on the margin of the fox's range, and provides only marginally suitable habitat (agricultural lands and grasslands). Consequently, it is not expected to occur in the project area and would not be impacted by relicensing of the project.

Tipton kangaroo rat and Giant kangaroo rat: The Tipton kangaroo rat was distributed historically in Tulare Lake Basin of the San Joaquin Valley, encompassing portions of Fresno, Kings, Tulare and Kern Counties, California (FWS 1988). Valley saltbush scrub and valley sink scrub communities provide habitat for the Tipton kangaroo rat. State Route 99 forms the eastern boundary of the Tipton kangaroo rat range (FWS 1988), well west of the project area. Preferred habitat of the giant kangaroo rat is native annual grassland with sparse vegetation, good drainage, fine sandy-loam soils, and a slope of less than 10 percent (FWS 1987). Its range is known to have extended from southern Merced County, through the San Joaquin Valley, to southwestern Kern County and northern Santa Barbara County (Hall 1981). It now survives in only a few areas at the southern edge of the original range. Both of these rats are essentially confined to the grassland of the San Joaquin Valley, and are not expected to

occur in Kern Canyon. The project doesn't occur within the range of these species and suitable habitat is not present.

Aleutian Canada goose: The Aleutian Canada goose breeds on the Alaska Aleutian Islands, but winters mostly in California's Sacramento and San Joaquin Valleys (Springer et al. 1977, Ehrlich et al. 1992). With the exception of Lake Isabella, about 20 miles to the east, the project area doesn't support large lakes, marshes, and agricultural lands preferred by Canada geese.

Southwestern willow flycatcher: This small, migratory, insectivorous bird occurs in riparian habitats along rivers, streams, and wetlands, where a dense growth of willows, arrowweed, buttonbush or other plants are present, often with a scattered overstory of cottonwood (FWS 1995). Its breeding range includes southern California, southern Nevada, southern Utah, Arizona, New Mexico, and western Texas. Narrower riparian zones, with great distances between willow patches and individual willow plants, are not selected for nesting or singing perches (FWS 1995). No southwestern willow flycatcher was observed during site surveys (Edison 1994a). Habitat within the project reach is not well suited for this species because of the limited riparian habitat.

Least Bell's vireo: This migratory song bird inhabits dense, willow-dominated riparian habitats with lush understory vegetation in the immediate vicinity of water courses (FWS 1986). They forage in the riparian habitat and adjoining chaparral habitat. Once abundant throughout the Central Valley and other low-elevation riverine valleys, its historic breeding range extended from interior northern California to northwestern Baja California, Mexico. It has apparently been extirpated from the Sacramento and San Joaquin Valleys (51 FR 16474, May 2, 1986).

Blunt-nosed leopard lizard: The blunt-nosed lizard formally occupied much of the San Joaquin Valley and Sierra foothills from Stanislaus County southward to the Tehachapi Mountains in Kern County (Sandoval et al. 1996). This lizard prefers sparsely vegetated areas on gentle topography on lower portions of the foothills, alluvial fans, valley floors and flat-bottom washes (ARCO 1996b). They are found in non-native grassland and alkali sink scrub communities of the valley floor, which are marked by poorly drained, alkaline, and saline soils, and in foothill chenopod communities in the southern San Joaquin Valley and Carrizo Plain, associated with non-alkaline, sandy soils (Sandoval et al. 1996). They are absent from areas with steep slopes and dense vegetation, or are subject to frequent flooding (Sandoval et al. 1996). Habitat in the project area is unsuitable for this species.

Giant garter snake: The giant garter snake is endemic to valley floor wetlands in the Sacramento and San Joaquin Valleys (FWS 1993). It requires slow to still waters such as marshes,

sloughs, ponds, small lakes, and low gradient streams (FWS 1993). The project area is outside the known range of this species. The swift flows of the high-gradient Kern River and lack of emergent vegetation needed for foraging habitat and escape cover (FWS 1993) makes habitat in the project reach unsuitable for giant garter snake.

California red-legged frog: The California red-legged frog occupies distinct riparian and aquatic habitats. The adults are found in dense, shrubby or emergent riparian vegetation closely associated with deep (23 feet) still or slow moving waters (FWS 1996, Stebbins 1951). They attach their eggs to vertical emergent vegetation such as bulrushes and cattails (FWS 1996). The California red-legged frog is now found primarily from wetlands and streams in coastal drainages of central California (FWS 1996). Its historical range included the Kern River up to Lake Isabella, but areas where it once occurred in the valley near Rio Bravo have been revisited and habitat found to be destroyed (personal communication Steve Anderson, District Biologist, FS, February 19, 1997). The red-legged frog is believed to be extirpated from the Central Valley floor (FWS 1996), including the Kern River. Only one drainage in the Sierra foothills is known to support California red-legged frogs (FWS 1996). Surveys pursuant to Fish and Wildlife Service protocol have not been completed for the project area. However, suitable habitat is not present in the project reach because of the swift and variable river flows and limited emergent vegetation. We believe that red-legged frog is not likely to occur in the project reach because of the lack of habitat and their limited distribution in the Sierra foothills.

Delta smelt and Sacramento splittail: The Delta smelt and Sacramento splittail are species currently found in the upper Sacramento-San Joaquin estuary in central California. Reductions in estuary outflows, especially in dry water years, due to water diversions is listed as the most important cause of the decline of these species (USDI 1996).

The Kern River drains into Tulare Lake, located about 40 miles northwest of Bakersfield, California. In recent times, water from the Kern River has not entered the Sacramento-San Joaquin Delta (personal communication, Chuck Williams, Kern River Watermaster, Bakersfield, California, February 21, 1997). In addition, the Kern River No. 1 Project operates as a run-of-river project, without storing any significant water. Continued operation of the project would not impact any listed or proposed threatened and endangered fish species.

Kern primrose sphinx moth: The Kern primrose sphinx moth is known only from the Walker Basin area (elevation 4,500 feet), where it occurs on sandy soils wherever its larval foodplant, *Camissonia contorta epilobiodes*, grows (Tuskes and Emmel 1981).

The larval foodplant typically grows in dry, disturbed, or gravelly cismontane areas below 5,000 feet in elevation (Munz and Keck 1973). Surveys of the project area were conducted between April 14-18, 1993 (Edison 1994a). No larval food plants were found in the project area (Edison 1994a). Consequently, the Kern primrose sphinx moth is expected to occur in the area and would not be affected by continued operation of the project.

Longhorn fairy shrimp and Vernal pool fairy shrimp: These two fairy shrimp are restricted to vernal pools, an ephemeral freshwater habitat (FWS 1994b). They are not known to occur in riverain waters (FWS 1994b). No vernal pools exist in the project area.

Literature Cited

- Atlantic Richfield Company (ARCO). 1996a. San Joaquin kit fox. Coles Levee Ecosystem Preserve. at URL
<http://www.arco.com/AWE/clep/spkitfox.htm>.
- Atlantic Richfield Company (ARCO). 1996b. Blunt-nosed leopard lizard. Coles Levee Ecosystem Preserve. at URL
<http://www.arco.com/AWE/clep/spbnlzd.htm>.
- Brown, N.L., C.D. Johnson, P.A. Kelly, and D.F. Williams. 1997. San Joaquin kit fox profile. The Endangered Species Recovery Program: Endangered Species Profile, California State University, Stanislaus Foundation at URL
<http://arnica.csustan.edu/esrpp/sjkfprof.htm>. February 1, 1997.
- California Natural Diversity Data Base (CNDB). 1996. Natural diversity data base. California Department of Fish and Game, Natural Heritage Division. September 15, 1996.
- California Department of Fish and Game (CDFG). 1995. San Joaquin kit fox. Bay-Delta and Special Water Projects Division at URL
<http://www.delta.dfg.ca.gov/species/kitfox.html>. revised August 16, 1995.
- Edison (Southern California Edison Company). 1994a. Application for New License for Major Project - Existing Dam. Kern River No. 1 Water Power Project. FERC No. 1930. Rose Mead, California. April 1994.
- Ehrlich, P.R., D.S. Dobkin, and D. Wheye. 1992. Birds in Jeopardy. Stanford University Press, Stanford, California. 259pp.
- Hall, E.R. 1981. The Mammals of North America. John Wiley and

Sons, Inc., New York, 2 vols.

Munz, P.A. and David D. Keck. A California flora with supplement. University of California Press, Berkeley, California. 1681pp. plus sup.

Sandoval, T.M., C.D. Johnson, and D.F. Williams. 1996. Blunt-nosed leopard lizard profile. The Endangered Species Recovery Program: Endangered Species Profile, California State University, Stanislaus Foundation at URL <http://arnica.csustan.edu/esrpp/bnll.htm>. December 19, 1996.

Springer, P.F., G.V. Byrd, and D.W. Woolington. 1977. Reestablishing Aleutian Canada goose. in Endangered Birds: Management Techniques for Preserving Threatened Species. S.A. Temple (ed.). University of Wisconsin Press, Madison, Wisconsin. pp:331-338.

Stebbins, R.C. 1954. Amphibians and reptiles of western North America. McGraw Hill, New York.

U.S. Department of Interior (USDI). 1996. Recovery plan for the Sacramento/San Joaquin Delta native fishes. U.S. Fish and Wildlife Service, Region 1. Portland, Oregon. November 1996.

U. S. Fish and Wildlife Service (FWS). 1986. Endangered and threatened wildlife and plants; determination of endangered status for the least Bell's vireo. Federal Register 51(85):16474-16482. May 2, 1986.

_____. 1987. Endangered and threatened wildlife and plants; determination of endangered status for the giant kangaroo rat. Federal Register 52:283-288. January 5, 1987.

_____. 1988. Endangered and threatened wildlife and plants; determination of endangered status for the Tipton kangaroo rat. Federal Register 53:25608-25611. July 8, 1988.

_____. 1993. Endangered and threatened wildlife and plants; determination of threatened status for the giant garter snake. Federal Register 58:54053-54066. October 20, 1993.

_____. 1994a. Endangered and threatened wildlife and plants; Proposed Endangered for the plant *Puccinellia parishii* (Parish's alkali grass). Federal Register 59:14378-14382. March 28, 1994.

_____. 1994b. Endangered and threatened wildlife and plants; determination of endangered status for the conservancy fairy shrimp, longhorn fairy shrimp, and the vernal pool tadpole shrimp; and threatened status for the vernal pool fairy

shrimp. Federal Register 59:48136-48140. September 19, 1994.

_____. 1994c. Endangered and threatened wildlife and plants; Proposed Endangered or Threatened Status for 10 plants from the foothills of the Sierra Nevada Mountains in California. Federal Register 59:50540-50550. October 4, 1994.

_____. 1996. Endangered and threatened wildlife and plants; determination of threatened status for the California red-legged frog. Federal Register 61:25813-25832. May 23, 1996.

_____. 1997. Endangered and threatened wildlife and plants; Determination of Endangered Status for *Pseudogahia bahiifolia* (Hartweg's golden sunburst) and threatened status for *Pseudobahia peirsonii* (San Joaquin adobe sunburst), two grassland plants from the Central Valley of California. Federal Register 62:5542-5551. February 6, 1997.

APPENDIX

B. COMMENTS FROM AGENCIES, GOVERNMENTS, AND NON-GOVERNMENTAL
ORGANIZATIONS ON THE DRAFT EA AND STAFF RESPONSES

Copy can be found on hardcopy in public file.

APPENDIX

C. PUBLIC COMMENTS ON THE DRAFT EA AND STAFF RESPONSES

Copy can be found on hardcopy in public file.

Document Content(s)

00070751-66E2-5005-8110-C31FAFC91712.TIF	1
P-1930.00I.WPD	67
3124956.TXT	241