

55 F.P.C. 2237, 1976 WL 15758

PACIFIC GAS AND ELECTRIC COMPANY,

PROJECT NO. **2735** AND 1988
ORDER ISSUING MAJOR LICENSE AND AMENDING LICENSE FOR CONSTRUCTED **PROJECT**
May 18, 1976*

***2237** LICENSE (MAJOR); AMENDMENT OF LICENSE; **PUMPED STORAGE; PROJECT** BOUNDARY

1 Before Commissioners: Richard L. Dunham, Chairman; Don S. Smith, John H. Holloman III and James G. Watt. Pacific Gas and Electric Company (Applicant or PGandE) of San Francisco, California, filed on September 24, 1973, an application for major license under Section 4(e) of the Federal Power Act (Act), [16 U.S.C. § 797\(e\)](#), to authorize the construction, operation, and maintenance of the **Helms Pumped Storage Project No. **2735**. Supplements and revisions to the application were filed on December 18 and December 29, 1973; January 14, March 1, August 5, August 8, September 16, September 26, October 4, October 9, October 15, October 21, and November 18, 1974; and January 17, February 18, February 28, March 6, May 13, May 27, October 9, and October 14, 1975. The **project** will utilize the Courtright and Wishon reservoirs, respectively, of the existing North Fork Kings River Rproject No. 1988 as the upper and lower reservoirs of the proposed **pumped storage** facility. Applicant therefore also seeks to amend its license for **Project** No. 1988 to reflect the construction of the **Helms project**.

Project No. **2735**, excluding transmission lines, will be located in Fresno County, California, in the vicinity of the towns of Fresno, Clovis, and Herndon, on the **Helms** Creek and the North Fork Kings River, the latter a navigable water of the United States,¹ and on lands of the United States in the Sierra National Forest. A 230 kV transmission line will extend from the **project** switchyard to PGandE's proposed Gregg Substation in Madera County, California, a distance of 60 miles. Portions of the line will occupy lands of the United States under the jurisdiction of the Bureau of Reclamation, Department of the Interior, and other United States lands under the jurisdiction of the Forest Service.

***2238** Public notice of the filing of the application was issued November 28, 1973, with January 28, 1974, given as the last day for filing protests or petitions to intervene. Notice was published in the *Federal Register* on December 5, 1973, [38 Fed. Reg. 33534 \(1973\)](#).

On January 10, 1974, the State of California through its Department of Fish and Game filed a petition to intervene in the instant proceeding. Intervention was granted by **order** issued February 8, 1974.

On January 24, 1974, a protest regarding the proposed location of **project** transmission lines was filed by Lucy Lowrance on behalf of the residents of Bonadelle Ranchos, Madera, California.

On January 28, 1974, the Kings River Water Association (Association), and the Northern California Power Agency (NCPA), each filed a petition to intervene. Intervention was granted to the Association by Commission **order** issued March 4, 1974, and on April 1, 1976, NCPA was also granted intervention. The issues raised by intervenors and protestants are discussed hereinafter.

2 By this **order we issue a major license for the **Helms Pumped Storage Project** No. **2735**, subject to the terms and conditions hereinafter discussed and enumerated.

DESCRIPTION OF THE PROPOSED **PROJECT**

The **Helms Project** will have a total installed capacity of 1,050 MW. Applicant plans to connect the Courtright and Wishon reservoirs with about 3 miles of power tunnels and a powerhouse. The intake-discharge structure will be located in each

reservoir. From the Court-right intake, a 4,175-foot long, 38.5-foot diameter horseshoe-section tunnel will lead to Lost Canyon, which will be crossed by 150 feet of 22-foot diameter pipe. A control gate will be located about 1,200 feet from the Courtright intake. From Lost Canyon, the 38.5-foot horseshoe-section tunnel will extend 8,436 feet to the penstock. A surge chamber will be located on this portion of the tunnel. The penstock, connecting the tunnel to the powerhouse, will be 4,200 feet long and will vary in diameter from 26 to 9 feet.

The **Helms** powerhouse will be located entirely underground. It will contain three reversible **pump**-turbine motor-generator units, each rated at 350,000 kW in the generating mode. Adjacent to the powerhouse will be a transformer chamber with four 2/230 kV transformers (one to be a spare). From the powerhouse, a 3,838-foot long, 38.5-foot diameter horseshoe-section tailrace tunnel will lead to the intake-outlet structure in Wishon reservoir. A second surge chamber will be located on this tunnel, near the powerhouse.

A 230 kV switchyard will be constructed above the powerhouse at ground level. A 60-mile long double circuit 230 kV transmission line will extend from the switchyard westerly to the non-**project** Gregg substation, near Herndon, California.

*2239 Applicant will also construct, as part of the **Helms project**, access roads, recreation facilities, and other appurtenant facilities, more fully described hereinafter.

Project No. 2735 will be connected with Applicant's interconnected transmission and distribution system. Power generated by the **project** will be distributed and sold in the central and northern parts of California. In 1973 dollars, total **project** cost is estimated to be \$186,500,000. Applicant proposes to finance construction with treasury funds on hand, cash available from internal sources, and short-term bank loans and the sale of additional securities, as required.

ALTERNATIVES TO THE **HELMS PROJECT**²

We have considered the alternatives to **Project** No. 2735 of no **project**, alternative types of generation, purchase of power by PG&E, electric energy conservation and rate restructuring measures, and alternative **project** sites. We find that PG&E's need for power to satisfy future system demands renders the 'no **project**' alternative unacceptable; that of the alternative sources of power, a **pumped-storage** facility is the most desirable; and that of the **pumped-storage** sites available to PGandE, the **Helms** alternative is the most feasible.

3 The **Helms Project will commence operation in 1981 or 1982, barring unforeseen construction problems. Applicant's available resources to meet its **projected** 1982 summer peak demand are estimated at 22,616 MW. PGandE's forecasted 1982 summer peak load responsibility will be 18,430 MW, yielding a reserve margin of 4,186 MW, or 22.7 percent, if the capacity of the **Helms Project** is included. Without the **Helms** capacity, PGandE's reserve margin would be reduced to 17 percent. Staff has calculated that in **order** to assure the reliability of PGandE's system, it should maintain a reserve margin of between 18 and 22 percent. Thus, without the **Helms Project**, reserve margin would fall below that considered acceptable by Staff. Moreover, in all likelihood the estimate of 1982 resources available to PGandE to meet its forecasted load responsibility is over-optimistic. For example, that estimate includes 800 MW of capacity from an unsited thermal station and a contribution of capacity from other utilities. However, the thermal station has yet to be sited, and due to extended construction time will not be in commercial operation until after 1982. As to contributions from other utilities, one of them, the Sacramento Municipal Utility District, has reported³ that construction of its 1,100 MW Rancho Seco No. 2 nuclear unit has been deferred indefinitely. Therefore, PGandE's estimated 1982 resources and concomitant reserve margin must be reduced accordingly. We conclude that unless power demand can be *2240 reduced or power can be obtained from other sources, PGandE's need for power to ensure reliable and economical operation of its system obviates the 'no **project**' alternative.

Most conservation of electric energy measures to date have been voluntary, and implemented by public education and Federal programs (primarily via advertising). Consumers have been encouraged to use major appliances in off-peak hours, lower

thermostat settings on heating units, and raise thermostat settings on air conditioning units. Such conservation measures have had some effect upon energy consumption, but available data show that there has been little effect on peak demand.

The California Public Utilities Commission (CPUC) recommended in 1975 that PGandE perform a study to test the effectiveness of 'time of use' metering to shift consumption from peak usage to off-peak periods. PGandE proposed several possible experiments to the CPUC, but has not carried out any such studies. Therefore, the effectiveness of peak-load pricing or other rate restructuring to lower demands during peak-use periods is untested. Although we endorse conservation measures, the present uncertainty surrounding their effectiveness in reducing peak demand would make unwise our reliance upon them as a reasonable alternative to the **Helms Project**.

Peaking power of 1,050 MW will not be available to PGandE from other sources in 1981-1982, including sources in the Pacific Northwest. Even if it were, it is doubtful that PGandE's transmission system could handle such additional load during peak-use periods, due to other commitments for bulk-power transmission through the system.

****4** Alternative peaking facilities include simple-cycle combustion turbines, combined cycle turbines, and peaking steam facilities. Of these, the most attractive would be installation of gas turbines. The advantages of such turbines include relatively small physical size per kilowatt of capacity, permitting installation at existing plants; no cooling water requirements, allowing siting flexibility; short lead time for construction; low capital cost; and relatively short time from cold start to full load.

Despite these advantages, **pumped storage** facilities, and the **Helms Project** in particular, are inherently superior alternatives. The visual effects of the gas turbines' necessary fuel tanks and the noise produced by their operation are negative impacts. Also, gas turbines would likely burn distilled petroleum fuel, a limited natural resource which has experienced dramatic price increases during the past several years. During the initial years of operation (1981-2000), the **Helms project** would have an estimated total financial present worth advantage over combustion turbines of \$268,500,000.

In terms of air pollution, gas turbines release combustion by-products during operation. **Pumped-storage** facilities are supplied **pumping** energy during off-peak hours by base-load plants. If the base-load plant is fossil-fueled, air pollution will be increased by an amount which is almost linearly proportional to the increase in energy output attributable to the ***2241 pumping** energy fraction of load. However, base-load plants generally employ more effective pollution-control equipment than gas turbine installations, and if off-peak **pumping** energy is derived from nuclear generation, the **pumped-storage** peaking alternative will cause less air pollution than a gas turbine alternative.

Pumped storage plants have other favorable characteristics in terms of system operation, such as long life, low maintenance and operation costs, and low outage rates. The use of off-peak energy for **pumping** improves the plant factor of the system's base-load thermal units, with a resulting improvement in their efficiency and life expectancy.

The site of the **Helms Project** is compared in Staff's environmental impact statement with four alternative sites which met certain basic criteria. The primary, and important, advantage of **Helms** over the alternative sites is that it will utilize existing reservoirs. Thus, no land, roads, commercial or residential buildings, or other facilities will be inundated by **Helms**, as they would by the alternatives, and there will be no adverse effect on wildlife occasioned by construction of the **Helms** power facilities except for short-term impacts of construction of the underground tunnel and powerhouse.⁴

ENVIRONMENTAL CONSIDERATIONS

Commission Staff's Draft Environmental Impact Statement (DEIS), was issued for comments in June, 1975, with public notice of availability given in the *Federal Register* on June 18, 1975, [40 Fed. Reg. 25719 \(1975\)](#). Comments on the DEIS were received from 17 agencies, organizations, and individuals. Notice of availability of Staff's Final Environmental Impact Statement (FEIS), was given on November 24, 1975, [40 Fed. Reg. 54469 \(1975\)](#). In addition, a supplement and erratum to the FEIS was made available on April 2, 1976, and notice published, [41 Fed. Reg. 14217 \(1976\)](#).

****5** Construction of the **Helms Project** will not entail construction of dams or inundation of land by **project** waters, for the reason that the upper and lower reservoirs were constructed some twenty years ago. The **project's** powerhouse and power tunnels will be for the most part located underground. We have reviewed Staff's FEIS and conclude that, apart from construction of the transmission line (discussed *infra*) and local disturbances to be occasioned by construction activities, the deleterious environmental effects of **Project No. 2735** will be remarkably few. Rather than summarizing the various discussions contained in the FEIS, we turn our attention to the significant issues identified by the Statement and the comments thereon.

1. Spoil Areas

Approximately 1,720,000 cubic yards of solid material will be excavated in building the **project** power tunnels and underground powerhouse. ***2242** Applicant proposes to dispose of this spoil as follows: 80,000 cubic yards in Courtright reservoir near the dam, below the minimum operating water level; 40,000 cubic yards in Wishon reservoir near the intake-outlet structure, below minimum operating level; 900,000 cubic yards in the Wishon dam quarry area, where rock was excavated for use in building the Wishon dam; and 700,000 cubic yards in the north end of Lost Canyon, near the penstock crossing.

The spoil to be placed in the reservoirs will have no visual impact and will have no effect on **project** operation.⁵ Applicant's plan to place spoil in the Wishon quarry will be beneficial, for the unsightly quarry will be filled, after which Applicant proposes to grade and landscape the area for development as a recreational area.

The disposition of spoil and construction of the penstock in Lost Canyon, however, will have significant effects. The existing small pond at the north end of the Canyon will be displaced by the spoil. As stated in Staff's FEIS, the pond 'provides a quiet, restful area in a region of panoramic views.'

On the other hand, access to Lost Canyon in its present state is difficult, and very limited numbers of persons have visited the area. Lost Canyon already contains large natural deposits of talus. None of the vegetation identified in Lost Canyon to be affected by construction is listed in the California Native Plant Society's list of rare and endangered plant species.

Applicant commented on the possibility of excavating the power tunnel under Lost Canyon, in lieu of crossing it with the proposed 22-foot diameter penstock. This alternative would require, *inter alia*, an extra year of construction time at the additional cost of \$7.5 million; the draining or lowering during construction of Courtright reservoir for five years, rather than two years, with resulting loss of recreation; lowering of both reservoirs during the last two years of construction; substantial increases in tunnel-driving costs; the loss of 434 acre-feet of **storage** capacity by deposit of spoil in Courtright reservoir, rather than at Lost Canyon; and the establishment of a construction camp at Courtright.

****6** We do not find the underground alternative feasible, and accordingly approve the penstock crossing proposed by Applicant. However, the Forest Service recommended that the **Project No. 2735** license include an article requiring PGandE to submit a plan to rehabilitate both the Wishon and Courtright quarry areas, utilizing tunnel spoil, and providing for revegetation and screening to reduce the visual impact of the spoil deposits. Licensee's response to a similar proposal in the DEIS was that refilling the Courtright quarry would not be feasible economically, and that the visual impact of fresh spoil deposits would be more dramatic at the Courtright quarry than at the reservoir bottom or remote Lost Canyon. We believe that ***2243** the plan deserves further study, and by Article 60 require Applicant to submit a study, prior to commencement of construction, respecting the rehabilitation of the Courtright quarry.⁶

In other comments relating to Applicant's disposition of tunnel and other spoil, Interior, Forest Service, and the Environmental Protection Agency each expressed concern that spoil deposits may cause turbidity in **project** waters. The Forest Service also suggested that settling basins should be employed to remove sediment wherever runoff from construction operations is expected to enter surface waters. Article 49 provides for these concerns.

2. Clearing

In the vicinity of the reservoirs, Applicant will clear land for access roads, spoil areas, construction camps, the switchyard, and other access areas. Timber loss will be minimal at proposed construction camp locations and from construction activities on the existing McKinley Grove, Courtright, and Black Rock roads. The Lost Canyon and Powerhouse access roads would require some timber removal, and the switchyard road will require clearing of significant amounts of commercially harvestable timber, but at the same time will benefit the timber harvest at adjacent areas by affording better access. The switchyard facility itself will require removal of about 1 1/2 acres of timber and understory vegetation.

The Forest Service commented that commercial timber would be cleared in constructing the switchyard road, and in clearing at Lost Canyon. Any timber cut by Applicant should be utilized for its commercial value, and Applicant should be responsible for disposing of slash and debris. Sale or other disposal of timber would not relieve Applicant from the responsibility of clearing and disposing of such debris. The loss of timber-producing lands due to **project** construction should also be compensated. License Article 38 requires a payment of annual charges for use of government lands within the **project** boundary, and Article 26 imposes other requirements pursuant to the recommendations of the Forest Service concerning timber and related matters.

The Forest Service also stated its view that Applicant should utilize special construction techniques to protect vegetation, and that Applicant should be required to consult and cooperate with the Forest Service and other appropriate agencies to insure the continued protection and development of natural resources in the **project** area. We agree with the Forest Service's recommendations, and believe that clearing should be kept to a minimum, that **project** facilities should be so located as to minimize ***2244** adverse effects on vegetation, and that Applicant should consult and cooperate with Forest Service and other agencies in planning for and implementing such measures. Special Articles 56 and 57 so provide.

3. Rare and Endangered Species

****7** Staff's FEIS identified various rare and endangered plant and wildlife species that exist in the area of the **project**. Among these are the *Carpenteria californica*, a taxonomically unique species of shrub, limited to a small area in California; the Giant Sequoia; the wolverine; the California condor; the southern bald eagle; and the American peregrine falcon. Of these, only the *Carpenteria californica* is thought to exist within the **Project No. 2735** boundary. Most stands of the shrub are found six more miles north of the transmission line right-of-way (Route A, as discussed *infra*), but individual plants may be located within the right-of-way. The nearest representatives of the Giant Sequoia are found at McKinley Grove, about two miles from the transmission line right-of-way.

The last verified sighting of a California condor in the Sierra National Forest was in 1971, near Balch Camp. No part of **Project No. 2735** will be within the condor's critical habitat, as defined in the U.S. Fish and Wildlife Service's proposed determination.⁷ As to the other species, they are rarely sighted in the vicinity of the proposed **project**.

The Forest Service commented that there should be a license condition requiring surveys and appropriate action to protect rare and endangered species, pursuant to the Endangered Species Act of 1973. Applicant has indicated that it plans to conduct a professional pre-construction survey of all areas proposed for clearing, including transmission line right-of-way, spoil sites, roads, laydown areas, and construction camps. Article 58 of the license for **Project No. 2735** makes such a survey a requirement, and provides for the development and implementation of a mitigation plan should the survey reveal that any rare or endangered species would be adversely affected by Applicant's activities.

4. Wildlife and Fisheries

Applicant has conducted extensive studies of existing wildlife resources in the **project** area, in consultation with the Forest Service, California Department of Fish and Game, Department of the Interior, and the Audubon Society. The studies have located raptor nesting areas, migration staging areas, and prime wintering areas.

Applicant's Exhibit S indicated that a wildlife habitat plan would be prepared in consultation with appropriate agencies, incorporating the findings of the study. Few wildlife problems are expected as a result of construction around the reservoirs; most mitigation efforts will be directed toward a habitat plan for the transmission corridor.

Both reservoirs will be lowered at various times during construction to *2245 allow placement of the intake-discharge and other **project** facilities. Applicant proposes to capture and remove fish from Courtright, which will provide no habitat for fish or other aquatic organisms when drained. Depressions in the reservoir bottoms which might trap fish during **pumped-storage** operation will be located when the reservoirs are drawn down, and either filled or drained with ditches to provide an escape route for fish.

8 Fish passing through the **project's turbines will experience some injury or death, but the injury and mortality rates are unknown. Applicant has indicated that it would pay for the stocking of fish to replace those lost, and has conducted studies to supply base data for use in designing a mitigation plan.

The Department of the Interior, Forest Service, and California Resources Agency each recommended that Applicant be required to develop and implement a plan to conserve, develop, protect, and/or improve fish and wildlife resources to be affected by the **project**. Special Article 47 requires Applicant to conduct further studies and within three years to file a revised Exhibit S, to include detailed plans respecting fish and wildlife mitigation and enhancement.

The Forest Service also observed that it will be difficult to determine the effect of **project** operation on the survival of fish until after the **project** has commenced operation. Forest Service recommended that Applicant conduct post-operational studies to assess such effects. Article 47 provides for a review of Applicant's Exhibit S at the end of two years following the commencement of **project** operation, and standard license Article 15 provides for such changes in **project** operation or additional construction as may be found appropriate. These conditions are also in accordance with the Resources Agency's recommendation regarding post-operational studies.⁸

5. Water Quality

Pursuant to Section 401(a)(1) of the Federal Water Pollution Control Act Amendments of 1972,⁹ Applicant on October 14, 1975, filed a water quality certificate issued by the California State Water Resources Control Board. Copies of the water quality certificate were sent to the Regional Administrator, Environmental Protection Agency, on November 18, 1975.

Project operation will likely disturb sediments at the north end of Wishon reservoir, causing turbidity with resultant inhibition of algal growth. Deposition of suspended sediment could reduce or eliminate areas providing habitat for benthic organisms and, possibly, spawning areas for trout.

Applicant has proposed to prevent disturbance caused by operation by constructing a discharge channel to direct release away from sediment *2246 deposits. We believe this to be a reasonable measure, but we also agree with the Resources Agency that Applicant should implement a water-sampling program to assess the effectiveness of the preventive measure, and to determine whether modifications are needed to prevent significant increases in turbidity. Applicant currently monitors turbidity in Wishon reservoir and downstream in the North Fork Kings River. Article 48 requires that Applicant maintain its monitoring program until five years after the **project** commences operation, and provides for changes in **project** operation to maintain or improve the aquatic environment.

Changes in the thermal characteristics of the two reservoirs are expected to result from **pumped storage** operation. Some increase in the temperature of the North Fork Kings River below Wishon Dam may also occur. However, these temperature changes should not affect the trout fishery in either Wishon reservoir or the river downstream. Applicant has proposed to lower the elevation of the Wishon intake-discharge structure to permit transfer of hypolimnal waters between the two reservoirs,

thereby minimizing thermal disturbances. We believe that Applicant should continue to investigate this matter, and Article 48 provides for a comprehensive water quality monitoring program.

****9** Due to the nature and shallowness of soils around the **project** reservoirs, and the steepness of the terrain, it is questionable whether Applicant's proposed sewage disposal facilities are appropriate. Nutrient accumulation in surface waters and contamination of potable water supplies could occur. To ensure that this does not happen, Article 50 requires that Applicant review, in consultation with the California Regional Water Quality Control Board, the proposed methods of effluent disposal and the siting of each facility. Relocation and alternate facilities should be considered, as appropriate.

6. Air Quality

Deterioration of air quality will be an unavoidable short-term consequence of **project** construction. The total amounts of suspended particulate matter in the air will increase as dust and hydrocarbons are released by operation of trucks, heavy equipment, and other equipment, by blasting, excavation, and general construction activities, and by burning of combustible construction debris. Special Article 53 requires that Applicant take all reasonable precautions to protect air quality.

TRANSMISSION LINES

Project transmission lines will extend 60 miles from the switchyard, at ground level over the powerhouse, to the Gregg substation, to be constructed about 12 miles northwest of Fresno. At the substation, power output of the **project** would be fed into PGandE's interconnected transmission system. We find that the transmission line, as hereinafter ***2247** described, is a 'primary line' within the meaning of Section 3(11) of the Act,¹⁰ and should therefore be included as part of the **Project** No. **2735** license.

Applicant considered three alternative transmission line routes (see Figure 1). Route A extends from the switchyard in a westerly direction until it passes Fresno, where it turns south to the substation. Route A is generally situated between recreation areas to the north and the Pipe Flat recreation area to the south, and is the most direct route. Route B extends from Wishon along the North Fork Kings River to Balch Camp, and thence northwest to join Route A near Cats Head Mountain. Route B would be six miles longer than Route A. Route C follows Route B to Balch Camp, but then parallels an existing transmission corridor to the vicinity of Piedra, where it turns northwest to join Route A. Route C would be approximately 8 miles longer than Route A.

We believe that Route A is the most desirable of the three alternatives. As discussed in Staff's EIS and in the Forest Service's analyses of the alternative routes, Route A would remove more land from commercial timber production, but is to be preferred from the standpoint of less adverse effects on wildlife habitat. As to effects on fisheries, Route A crosses 10 stream fisheries, as opposed to 15 for Route B and 14 for C; Route A thus has the least potential for damage to fisheries through construction. Route A is also preferable for its superior compatibility with visual quality standards. Although all three routes will have an adverse visual impact in the immediate vicinity of Wishon Reservoir, due to the undeveloped nature of the area and the resulting number of persons visiting it specifically for its scenic quality, Route A affects fewer visually sensitive areas, as designated by the Forest Service, than Routes B or C. Moreover, Route A crosses more streams and roads at right angles—a visually desirable attribute—than do the other two alternatives. Finally, because Route A is a more direct route from the **project** to the substation, it will require approximately 50 percent fewer angle and tangent towers than the other routes. Cost savings are approximately \$2,278,000 over Route B and approximately \$3,766,000 over Route C.

****10** The transmission lines will consist of two 230 kV circuits, each capable of carrying two-thirds of the plant's capacity to enhance reliability. From the **project** switchyard to a transition point near the Haslett Basin, each circuit would be carried on separate towers to protect the circuits from the severe winds and snow loadings to be experienced in that high-altitude area. From Haslett Basin to the Gregg substation, a distance of 44.3 miles, where the line will be exposed to less hazardous weather and more favorable topography, the circuits will be carried on a single line of towers.¹¹ We ***2249** believe that Applicant's

proposed combination of single and double lines of towers is desirable so as to provide reasonable assurance of system reliability and continuity of service.

Figure 1

The transmission lines have the greatest potential for adverse visual impacts of all the proposed **project** structures, even though Applicant's Route A avoids scenic areas to the greatest extent possible. Applicant proposes to use lattice type towers throughout the transmission line. In rural and wooded areas, such towers are suitable because the open spaces of the lattice work blend readily with highly textured backgrounds of vegetation. These towers also require less extensive foundation excavation and clearing, and can be placed in sections by helicopter or vehicle.

We believe, however, that Applicant should consider the use of the more visually pleasing ornamental towers where the transmission line will be located adjacent to roads, or near heavily settled or other highly visible areas. The western portion of the line will traverse flat, open agricultural lands where the towers will be highly visible, and at several points will be near residential subdivisions or communities. Article 56 of this license requires Applicant to submit a plan detailing, *inter alia*, proposed measures to mitigate the **project's** disturbance of natural and scenic values; in preparing this plan, Applicant should consider the use of ornamental towers to mitigate adverse visual impact, where appropriate.

On January 24, 1974, a protest was filed by certain residents of Bonadelle Ranchos, a subdivision in Madera, California. The residents protested Applicant's plan to locate the transmission line through a portion of the subdivision.

In Exhibit W of its license application, PGandE indicated that a 'deviation' in transmission Route A was being considered. The deviation would cause the line to pass through certain lots in the Bonadelle Ranchos. However, Applicant's Exhibit K maps, which show preferred Route A, indicate that the line will pass approximately one mile south of the subdivision. We emphasize here that in approving Applicant's Exhibit K maps, which by this **order** we do, we approve of the line as shown in Exhibit K.

We believe that Applicant should utilize planting of vegetative screens and right-of-way vegetation management to further mitigate adverse visual impacts of the transmission line. The Forest Service recommended that these techniques be required as a license condition. Article 55 so provided. Furthermore, Article 47 provides that Applicant shall file for Commission approval a comprehensive plan to mitigate effects of **project** construction on wildlife, including the construction of the transmission line; Article 57 provides that Applicant shall consult regularly with certain agencies during **project** operation to ensure the continued protection and development of natural resource values in the **project** area; and Article 59 provides that Applicant shall conduct a pre-construction survey to determine the extent *2250 of archeological survey and salvage that may be necessary within the **project** boundary, with provision for the financing of such salvage operations. We find that these conditions, in concert with the others discussed above, are sufficient to mitigate optimally the adverse impacts of, and in some respects to enhance the effect of, the proposed transmission line.

RECREATIONAL DEVELOPMENT

****11** Existing recreational facilities at Wishon and Courtright reservoirs have been developed either by the Forest Service or by private interests.¹² In Exhibit R of its **Project** No. **2735** license application, PGandE proposes to develop recreational facilities at both reservoirs. To facilitate analysis, each reservoir's existing and proposed facilities will be set forth separately, followed by a discussion of the issues associated with the Exhibit R.

1. *Courtright Reservoir*

At Courtright (see Figure 2), existing facilities include privately-owned Courtright Lake Village, located on the west side of the reservoir; a pack station located just south of Courtright dam, operated under a Forest Service special use permit; the 20-unit Voyager Rocks Campground, developed by the Forest Service on the east side of the reservoir; Marmot Rock Campground, with

20 units, near the spillway on the south end of the reservoir; an old dam construction road, which serves as a parking area and boat ramp; and a primitive road across the dam, providing access to Voyager Rocks and the area to the east of Courtright Lake.

Recreation us of Courtright includes boating, fishing, camping and hiking. In addition, a large number of recreational visits are attributable to parties entering or leaving the John Muir Wilderness, located to the east of the reservoir,¹³ and the Dinkey Lakes Roadless Area, which surrounds the Courtright reservoir and is to the north and east of Wishon.¹⁴ The John Muir Wilderness Area attracts backpackers from throughout the United States.

Figure 2

The primitive nature of the road east of Courtright dam limits vehicular access to the area east of the reservoir to four-wheel drive vehicles, some two-wheel trucks, and some automobiles. Accordingly, many backpackers park at or near the dam. The combination of trail-head parking, pack-station parking, car and boat trailer parking, and camping overflow *2252 from Marmot Rock has caused severe congestion of the area at the south end of the reservoir during periods of peak use. At the same time, Voyager Rocks campground receives light use, due to the difficulty of access to the reservoir's east side.

PGandE has based its proposal for public recreation, as embodied in its Exhibit R, on the concept of low density occupation and development. PGandE believes that the **project** area primarily attracts persons seeking recreation based on enjoyment and use of the natural environment, as opposed to socially oriented activities. PGandE also states that the high elevation environment of the **project** area has limited tolerance of high density occupancy because of shallow soils, fragile vegetative cover, and a short growing season.

At Courtright Lake, PGandE proposes to develop a new 30-unit campground on the west shore, with the ultimate addition of 40 more units; to convert the Marmot Rock Campground to a 10-unit picnic area; to improve the boat ramp at the south end of the lake and to expand the associated parking area to accommodate 50 vehicles initially, and 80 ultimately; and to rehabilitate Voyager Rocks Campground by installing internal roads, traffic control barriers, and domestic water supply. As can be seen by Figure 1, PGandE proposes to leave **project** and non-**project** lands to north and, with the exception of Voyager Rocks, the east of Courtright in a natural, undeveloped state. Voyager Rocks, even with improvements, would continue to be operated as a semi-primitive campground.

2. Wishon Reservoir

**12 Existing facilities at Wishon (see Figure 3) are the Wishon Village Resort, which includes a store, restaurant, bar, 50-unit trailer park, 25-unit campground, boat rental, and dock;¹⁵ the Forest Service's 10-unit Lily Pad Campground; an old construction road used as a boat ramp; three undeveloped fishermen-parking areas with sanitation facilities; a pack station; and trailhead parking near the Wishon dam's spillway.

Figure 3

At Wishon, Applicant proposes to rehabilitate Lily Pad Campground by installing water supply and traffic barriers. Applicant will develop parking and fishermen access facilities near the powerhouse access tunnel entrance and at Shorthair Creek, with the latter also to include a 10-unit picnic area with ultimate expansion to 20 units. The Wishon quarry site would be partially filled with spoil from the tunnel excavation, graded, and landscaped. The quarry area would then be developed with a boat ramp and self-adjusting dock, an overview structure with sanitary facilities, parking space for 50 vehicles, and ultimately, 10 picnic units. Near the downstream toe of Wishon dam, PGandE would develop a primitive group camp with a capacity of 50 people at one time. This development would include *2254 improvement of the existing parking area to provide 15 spaces for campers and/or fishermen using the river below the dam.

3. Discussion

Several issues were developed in comments from interested agencies and individuals on the proposed recreation plan. Because those issues can be best resolved by Applicant's further study and consultation with appropriate public agencies, we are requiring Licensee to file a revised Exhibit R within one year of the issuance of this license. We believe, however, that discussion at this point will serve to clarify the points at issue and offer some guidance for Applicant's revised filing.

The Forest Service prepared five alternatives for recreation development at Courtright reservoir. The plan of development considered best by the Forest Service would eliminate overcrowding at Courtright by improving access to the east side of the reservoir. The improved access road would cross the dam and extend around the east side of the lake to Voyager Rocks Campground, which would be expanded and adapted to vehicle access, and on to Chamberlain's Camp (see Figure 2), where a 100-space parking trailhead and packing station would be developed. The concept of providing improved access to the east side of the reservoir is also supported by the Department of the Interior and the owners of several lots at Courtright Lake Village, on the lake's west side.

Applicant responded to the comments of Forest Service and Interior by stating that it had originally considered improving access to, and further developing, the east side of Courtright, but was concerned about the adverse impacts upon the John Muir Wilderness and the meadow areas to the north and east of the reservoir. Applicant stated its view that because the west shore of Courtright has already been developed, any new facilities should more appropriately be added to that side. Applicant indicated that it was supported in this view by the Fly Fishermen for Conservation (Fresno Branch), Fresno County Sportsmen, and the California Department of Fish and Game.

****13** In comments on the Draft EIS, the Sierra Club (Tehipite Chapter), the California 4WD (Four Wheel Drive) Clubs, Inc., the Sportsmen's Council of Central California, the California Resources Agency, and several individuals supported Applicant's concept of retaining limited access and the primitive nature of the east side of Courtright. In addition, Staff's Final EIS concurred with Applicant that development of Courtright's east

We agree with Staff and Applicant that development of Courtright's east side should be in keeping with its current primitive character. Moreover, we believe that providing improved and continuous access across the Courtright dam might interfere with **project** operation. We also recognize, however, that the views of the Forest Service, with jurisdiction over National Forest lands surrounding Courtright, are entitled to great weight. ***2255** Therefore, we believe the better course would be for PGandE to study **project** recreation needs further in cooperation with appropriate Federal, State, and local agencies and file, within one year from issuance of the license, a revised Exhibit R for Commission approval.

Applicant's revised Exhibit R should cover other points raised by comments on the application. Both the Forest Service and Interior voiced concern that Applicant's schedule for construction of recreational facilities was subordinate to construction of other **project** facilities; both agencies recommended that, because recreation facilities at peak use are crowded at present, Applicant should develop initial facilities during construction. Applicant concurred in such development, where possible, and has offered to provide a detailed schedule for development of recreational facilities after plans for **project** power construction facilities have been completed. Article 43 provides that such a detailed schedule be included with the revised Exhibit R to be filed for Commission approval. This schedule should include provision for temporary facilities to replace those to be affected during **project** construction (such as parking and the Courtright pack station).

Interior commented that Applicant's proposed recreation facilities are inadequate because Applicant used a figure of 5 persons per unit (occupancy), rather than 3.5 or 4 persons, as is accepted practice. If the lower figure is used, more units would be required to accommodate expected demand. In the same vein, Forest Service Commented that Applicant apparently plans to achieve its low-density development concept simply by limiting the number of available facilities. The Forest Service noted that overcrowding should be controlled by proper management and administration, and recommended that further studies be carried out to determine optimum development.

We agree with Interior's analysis of use per site, and also agree that Applicant should further study the **project** area to determine whether it can propose a plan which would provide for more recreational opportunity, consistent with its concept of low density development. Article 43 provides that PGandE shall consult with Forest Service and Interior in this task.

****14** Another issue raised by Interior and Forest Service is that the Exhibit R filed with the **Project** No. **2735** application made no statement as to who will assume responsibility for operation and maintenance of recreation facilities, once constructed. Applicant states in its comments on the Draft EIS that it was negotiating a Memorandum of Agreement to govern responsibility for operation and maintenance of recreation facilities. Such agreement may appropriately be included in the revised Exhibit R to be filed pursuant to Article 43.

Other comments on Applicant's Exhibit R related to *inter alia*, such items as boat docks, boat ramps, and sanitary facilities. PGandE will have the benefit of such comments in preparing its revised Exhibit R.

***2256** In its comments on Staff's DEIS, the Sierra Club suggested that PGandE should consider the possibility of converting **project** construction campsites near the reservoirs to recreational facilities. Along the same lines, the Forest Service recommended that the **project** boundary be expanded to include the proposed headquarters camp near Wishon reservoir. Forest Service stated that this site is the only parcel adjacent to the lake which is suitable for replacing camping facilities to be displaced or destroyed by construction of the powerhouse access road.

We believe that these suggestions have merit. The construction camp sites will have access roads, water supply, sewage treatment facilities, garbage disposal, and a variety of structures. Although we are aware that the construction camps are for the most part intended to be temporary facilities, we believe that the possibility of integrating the services and/or structures of the construction camps into future recreation facilities deserves further study, and Article 43 so provides.¹⁶ Such further study should include the contingency of including camps, if any, to be converted to recreation sites, within the **project** boundary.

One other item relating to **project** recreation was raised by comments on the application. Forest Service and Interior noted that the extreme vertical fluctuation in water levels at the **project** reservoirs occasioned by **pumped storage** operation will have adverse impacts on the visual qualities of the reservoirs and on boating use. Applicant's present mode of operation is to collect spring runoff and slowly release water throughout the summer, with the major drawdown occurring in mid-September, after the peak recreation use season at the **project**. Applicant proposes to establish a pattern of **pumped-storage** operation of releasing water during the week and storing it in Wishon. Some **pumping** will take place on weeknights, but the bulk of **pumping** will be done on weekends, which means that fluctuation will be greatest on weekends, the period of peak recreation use. We believe that Applicant should, to the extent consistent with efficient **project** operation, utilize any available **pumping** energy on weekdays (or nights) to **pump** water from Wishon into Courtright reservoir, in **order** to minimize vertical fluctuation of water levels on weekends, when the greatest number of persons are using the area. Special Article 44 imposes this requirement.

****15** Because we authorize no recreational development by this **order**, a discussion of the environmental effects of such development is not appropriate herein.

***2257 PROJECT** NO. 1988

In *Philadelphia Electric Company*, **Project** No. 2355 (*Muddy Run*),¹⁷ we considered the problems contingent upon licensing a **pumped storage** facility which proposed to use as its lower reservoir the reservoir of an existing, conventional, hydroelectric **project**. In that case, we defined the **project** boundary of the **pumped storage project** as including a portion of the existing **project's** area. Thus, the **project** boundaries of the two **projects** overlapped to the extent of joint use. We also provided in that case that compensation be paid by the Licensee for the **pumped storage project** to the joint Licensees for the existing **project**, for the former's use of the reservoir.

In the instant case we follow *Muddy Run*. **Project** No. **2735** shall include within its **project** boundary the Courtright and Wishon reservoir; thus, to a large extent the two **projects'** boundaries will be coincident. The significant differences will be that **Project** No. **2735** will include the **pumped storage** power facilities, the transmission lines, and the **project's** recreational facilities proposed in the revised Exhibit R.

Article 61 provides that in the event the licenses for **Projects** Nos. **2735** and 1988 become vested in different entities, the two licensees shall negotiate an agreement, to be filed for Commission approval, providing for compensation to be paid by the owner of **Project** No. **2735** to the owner of **Project** No. 1688, for the use of Courtright and Wishon reservoirs. An identical Article (Article 44) is added to the **Project** No. 1988 license by this **order**. In addition, Article 45 is added to the **Project** No. 1988 license to provide that the Licensee for **Project** No. **2735** is authorized to use the **Project** No. 1988 reservoirs in coordinated operation.

In its comments on Staff's DEIS, the Forest Service expressed the view that minimum flow conditions should be maintained in the license for **Project** No. 1988. Applicant proposed to maintain the present releases at Wishon and to increase by .5 cfs the releases from Courtright reservoir from December to May, and to eliminate reduction in flows during dry years. Amended Article 40 provides for these minimum releases. The minimum releases prescribed by Article 40 shall continue during construction of the **Helms project**.

In comments on the application, the California Resources Agency stated that the State Department of Fish and Game was conducting negotiations with PGandE respecting flow releases into **Helms** Creek and the North Fork Kings River, and the effect of such releases on downstream fishery resources. Article 43 is added to the **Project** No. 1988 license to require Applicant's evaluation, in consultation with the Department of Fish and Game, of the minimum releases from Courtright and Wishon. Finally, Article 46 is added to the license in conformance with similar Article 44 of the license for **Project** No. **2735**.

*2258 MISCELLANEOUS COMMENTS

****16** The Corps of Engineers commented on the application by letter dated January 31, 1974. The Corps stated that the **project** would have no appreciable effect on navigation, and that no special terms or conditions in the interest of navigation were necessary. The Corps also stated that should power generation facilities be installed at the Corps' Pine Flat **Project**, located downstream on the Kings River, then operation of PGandE's Kings River Basin **projects** should be coordinated with that of Pine Flat, in **order** to maximize overall benefits. Article 10 of Form L-6 makes provision for such coordination. Finally, the Corps recommended that a condition be imposed in any license issued requiring that during flood periods the **project** should not be operated so as to cause stream flow below Wishon exceeding that which would occur in the absence of the **project**. Article 32 of Applicant's license for **Project** No. 1988 contains provisions that meet the Corps' recommendation.

Interior recommended that Applicant should record flows at the **Helms** powerhouse during both the **pumping** and generating modes. Article 8 of Form L-6 requires this.

The Forest Service recommended: that the articles contained in Standard Forms L-1 or L-2 be included in the license; that an article requiring the installation of safety devices be included; that a requirement be imposed that Applicant shall not chemically treat soil, water, animals, or vegetation on National Forest lands without written approval from the Forest Service; and that Applicant should be required to prepare, in consultation with appropriate agencies, and file for Commission approval, a solid waste disposal management plan. The articles contained in Standard Form L-6, and Special Articles 45, 51, and 52, respectively, provide for the Forest Service's concerns and recommendations.

The California Resources Agency stated that Chapter 70 of the Uniform Building Code should be used as a minimum standard for all grading work and for all potential foundation problems relating to slope stability, soil erosion, drainage control, and rehabilitation measures. Responding to the Resources Agency, Applicant noted that except for construction camps and transmission lines, most construction work will be in rock or underground. Applicant stated that, where applicable, Chapter 70

of the Uniform Building Code will be followed. We believe that Special Articles 49 and 56 adequately provide for erosion and sediment control, and rehabilitation of construction sites.

Other comments not discussed or otherwise dealt with in this **order** were considered in Staff's FEIS.

ISSUES RAISED BY INTERVENORS

In its petition to intervene, the State of California, acting through its Department of Fish and Game (Fish and Game), stated that construction and operation of **Project** No. **2735** could materially affect natural and ***2259** recreational resources, including trout fisheries in **Helms** Creek and North Fork Kings River and wildlife populations in the **project** area. The petition stated that Fish and Game was conducting field studies with PGandE; that conditions should be imposed on the **Project** No. **2735** license in **order** to protect fishery, recreational, and wildlife habitat resources; and that Fish and Game planned to negotiate with PGandE concerning conditions which should be included in the license. Fish and Game, through the California Resources Agency, has commented of Staff's Draft Environmental Impact Statement. Fish and Game shall be consulted by Applicant in the preparation of a revised Exhibit S and also during operation of the **project**. General issues respecting the **project's** effect upon fish and wildlife resources are discussed elsewhere in this **order**.

****17** The Kings River Water Association (Association), intervened in this proceeding to protect its interests in various agreements between it and PGandE governing the Association's use of waters of the Kings River and PGandE's reservoir **storage** capacity.¹⁸ The Association sought a condition providing that **Project** No. **2735** be constructed, operated, and maintained subject to and in accordance with all agreements respecting water rights entered into between the Association and PGandE.

In its answer to the Association's petition, PGandE stated that it did not object to the Association's participation in this proceeding, and would not object to a condition in the **Project** No. **2735** license as proposed.

When application was made by PGandE in 1948 to amend its license for **Project** No. 175, and for major license for **Project** No. 1988, both located on the North Fork Kings River, PGandE was required to file with the Commission 'satisfactory evidence of an agreement between (PGandE) and the local irrigation interests for use by (PG and E) of the waters involved * * *'¹⁹ Such an agreement, signed by the Association and its members, was filed and found to be satisfactory by the Commission.²⁰

On February 12, 1973, PGandE filed an 'Agreement Supplementing and Amending Agreement * * * Dated December 20, 1954.' This document, dated January 18, 1972, and signed by PGandE, the Association and its members, amends the original agreement to provide specifically for construction and operation of the **Helms Pumped Storage Project**. We find this agreement to be satisfactory evidence of PGandE's agreement with local irrigation interests respecting the use of the waters involved in the application for **Project** No. **2735**. We do not, however, find it necessary or ***2260** appropriate to approve the agreement, which essentially involves contractual commitments among the parties, or to condition the license in the manner suggested by the Association.²¹

Northern California Power Agency (NCPA), filed a lengthy petition to intervene in this proceeding, the bottom line of which was that PGandE enjoys monopolistic and anticompetitive control over generation and transmission facilities in northern and central California. PGandE's answer argued that NCPA's allegations are irrelevant to the Commission's consideration of the **Project** No. **2735** license application, and asked that the petition be denied in its entirety.

By **order** issued April 1, 1976, we granted intervention to NCPA, provided for hearing on the issues raised by its petition, and noted that should a license for **Project** No. **2735** be issued prior to or during the hearing provided for by that **order**, we would reserve the authority to impose such further conditions in the license as may be found appropriate as a result of the hearing. Article 62 makes provision for such further imposition of license conditions. In wording Article 62 as we do, we imply nothing about the possible scope of such conditions; the issues of whether further conditions are appropriate, what they shall require,

and the Commission's authority to impose specific conditions must await hearing.²² Our finding with respect to Article 62 is merely that the license for **Project** No. **2735** meets the Section 10(a) standard only upon the condition, *inter alia*, that we reserve authority to impose such further requirements as may be found appropriate at and after hearing.

SAFETY AND ADEQUACY

****18** The use of Courtright and Wishon reservoirs as the upper and lower reservoirs of a **pumped storage** facility has been evaluated, and we conclude that they are safe for such use. Two items respecting the **project's** plans require further attention. There is insufficient information to evaluate the adequacy of the surge chambers for the power tunnels; Article 39 requires Applicant to perform model studies to verify the design of the surge chambers and submit the designs for Commission approval prior to construction. In addition, because there are no other **pump**-turbine units in operation in this country at the 1600-foot head proposed for the **Helms project**, Article 40 requires that a model study prepared by the units' manufacturer be submitted for our review prior to installation.

Article 41 requires that the Applicant retain an independent Board of Consultants to review all aspects of the **project's** safety and adequacy, and to report on the Board's findings.

***2261** COMPREHENSIVE DEVELOPMENT

Construction and operation of **Project** No. **2735** will develop the unused head between Courtright and Wishon reservoirs. The **project** will, in addition to normal **pumped-storage** operation, utilize the natural run-off stored in Courtright reservoir for generation, and during periods of high run-off when surplus water is normally spilled at Wishon will **pump** all or part of the surplus water to Courtright reservoir for **storage**, to the extent that **storage** space in Courtright reservoir and **pumping** energy are available. Such operation will increase the energy generated at downstream hydro plants without an increase in their capacity.²³

There are no applications for license or preliminary permit before us which conflict with **Project** No. **2735**. The proposed **project** will not affect a government dam. We find that the **Helms Project** No. **2735** as hereinafter described, and subject to the terms and conditions hereinafter **ordered**, is best adapted to the comprehensive development of **Helms** Creek and the North Fork Kings River for the use or benefit of interstate and foreign commerce, for the improvement and utilization of water power development, and for other beneficial public uses, including recreational purposes, in accordance with Section 10(a) of the Act, 16 U.S.C. § 803(a).

With respect to the application for license for **Project** No. **2735**, *the Commission finds*:

- (1) The **Helms Project** No. **2735** will be located on a navigable water of the United States, and will affect public lands of the United States.
- (2) Applicant is a corporation organized under the laws of the State of California and has submitted satisfactory evidence of compliance with the requirements of all applicable state laws insofar as necessary to effectuate the purposes of a license for the **project**.
- (3) Public notice of the filing of the application for license for **Project** No. **2735** was given on November 28, 1973. Timely petitions to intervene filed by the State of California through its Department of Fish and Game on January 10, 1974, the Kings River Water Association on January 28, 1974, were granted by Commission **orders** issued February 8, 1974, March 4, 1974, and April 1, 1976, respectively.

****19** (4) Neither the Department of Fish and Game nor the Kings River Water Association have presented disputed facts or facts which have not been accepted as true for the purposes of this **order**. Therefore, an evidentiary hearing respecting matters raised by their petitions is neither warranted nor in the public interest.

(5) A public hearing respecting matters raised by the Northern California Power Agency in its petition to intervene was **ordered** by the Commission on April 1, 1976.

***2262** (6) No competing application is before the Commission.

(7) Subject to the terms and conditions hereinafter imposed, the **project** will not adversely affect a government dam, nor will the issuance of a license as hereinafter provided affect the development of water resources which should be undertaken for public purposes by the United States.

(8) Subject to the terms and conditions hereinafter imposed, the **project** will be best adapted to a comprehensive plan for improving or developing a waterway for the use or benefit of interstate or foreign commerce, for the improvement and utilization of waterpower development, and for other beneficial public uses, including recreational purposes.

(9) Subject to the terms and conditions hereinafter imposed, the plans and **project** structures affecting navigation have been approved by the Corps of Engineers.

(10) Applicant has submitted satisfactory evidence of its financial ability to construct, operate, and maintain the proposed **project**.

(11) The estimated cost of developing the **project** compared to the estimated cost of developing suitable alternative sources of power is reasonable.

(12) The installed horsepower capacity of the **project** for the purpose of computing the capacity component of the administrative annual charge is 1,400,000 horsepower. The amount of annual charged based on such capacity to be paid under the **project** license for the cost of administration of Part I of the Act is reasonable.

(13) For the purpose of recompensing the United States for the use of public lands within the **project** boundary, the annual charge is hereinafter authorized to be \$468.43 for lands exclusive of the transmission line right-of-way, and \$287.84 for lands in the transmission line right-of-way. These charges are reasonable and may be readjusted in the future pursuant to Section 10(e) of the Act.

(14) The term of the license hereinafter authorized is 50 years, which term is reasonable.

(15) The exhibits designated and described in Paragraph (B) below conform to the Commission's Rules and Regulations and should be approved as part of the license for the **project**.

With respect to the application to amend the license for constructed **Project** No. 1988, *the Commission finds:*

It is appropriate for purposes of the Federal Power Act and in the public interest to amend the license for constructed **Project** No. 1988 as hereinafter provided.

With respect to **Project** No. **2735**, *the Commission orders:*

****20** (A) This license is hereby issued to Pacific Gas and Electric Company of San Francisco, California (hereinafter Licensee) under Section 4(e) of the Federal Power Act for a period of 50 years, effective the first day of the ***2263** month in which the

license is issued, for the construction, operation, and maintenance of the **Helms Pumped Storage Project** No. **2735**, located on **Helms** Creek and the North Fork Kings River, a navigable water of the United States, and affecting lands of the United States under the jurisdiction of the Bureau of Reclamation and other such lands in the Sierra National Forest, subject to the terms and conditions of the Act and subject to such rules and regulations as the Commission has issued or prescribed under the provisions of the Act.

(B) The **Helms Project** consists of:

(i) all lands constituting the **project** area and enclosed by the **project** boundary or the licensee's interests in such lands, the limits of which are otherwise defined, the use and occupancy of which are necessary for the purposes of the **project**; such **project** area and **project** boundary being shown and described by certain exhibits which form part of the application for license which are designated and described as follows:

Exhibit J **FPC** No. **2735** Showing

Sheet 1 21 General Map

2 2 General Map

Exhibit K **FPC** No. **2735** Showing

Sheet 1 22 Courtright Lake

2 23 Plan and Profile

of Tunnels and

Powerhouse

3 24 Lake Wishon

4 25 Transmission Line

5 26 Transmission Line

6 8 Transmission Line

7 9 Transmission Line

8 10 Transmission Line

(ii) **project** works consisting of: (1) an intake-discharge structure in each of the reservoirs of **Project** No. 1988; (2) a 4175-foot long, 38.5-foot diameter horseshoe-section tunnel from the Courtright intake to Lost Canyon crossing including a control gate located about 1200 feet from the intake; (3) 150 feet of 22-foot diameter pipe crossing the bottom of Lost Canyon; (4) an 8436-foot long, 38.5-foot horseshoe-section tunnel from Lost Canyon to the penstock including a surge chamber; (5) a penstock, about 4200 feet long, varying in diameter from 26 to 9 feet; (6) an underground powerhouse containing three **pump**-turbine motor-generator units, each rated at 350,000 kW in the generating mode; (7) a transformer chamber adjacent to the powerhouse

containing four 20/230 kV transformers (one to be a spare); (8) a 230 kV switchyard above the *2264 powerhouse; (9) a 3838-foot long, 38.5-foot diameter horseshoe section tailrace tunnel from the powerhouse to the Wishon intake-outlet structure, including a surge chamber near the powerhouse; (10) an access tunnel (about 3600 feet long) to the powerhouse; (11) a 1.9-mile long access road to the powerhouse; (12) a 2.6-mile long access road to the switchyard; (13) a 1.1-mile long access road to the Lost Canyon tunnel crossing; (14) a 60-mile long double circuit 230 kV transmission line from the switchyard to the non-**project** Gregg substation; and (15) appurtenant facilities:-the location, nature and character of which are more specifically shown and described by the exhibits hereinbefore cited and by certain other exhibits which also form part of the application for license ans which are designated and described as follows:

Exhibit L **FPC** No. **2735**- Showing

Sheet 1 27 Details of Court-right

Intake-Discharge

Structure,

Gate Shaft

and Tunnel Sections

Sheet 2 28 Profile of Penstock

Sheet 3 29 Plan and Sections of

Powerhouse

Sheet 4 30 Details of Wishon

Intake-Discharge

Structure and Surge

Chambers

****21 Exhibit M:** Consisting of five typewritten pages entitled 'Exhibit M-General Description of Mechanical, Electrical and Transmission Equipment', filed with the Commission September 4, 1973.

(iii) all of the structures, fixtures, equipment or facilities used or useful in the maintenance and operation of the **project** and located on the **project** area, and such other property as may be used or useful in connection with the **project** or any part thereof, whether located on or off the **project** area, if and to the extent that the inclusion of such property as part of the **project** is approved or acquiesced in by the Commission; together with all riparian or other rights, the use of possession of which is necessary or appropriate in the maintenance or operation of the **project**.

(C) This license is also subject to the conditions set forth in Form L-6 (revised October, 1975) entitled 'Terms and Conditions of License for Unconstructed Major **Project** Affecting Navigable Waters and Lands of the United States,' which terms and

conditions designated as Articles 1 through 37, except Article 20,²⁴ are attached hereto and made a part hereof, and *2265 subject to the following special conditions set forth herein as additional Articles:

Article 38. The Licensee shall pay the United States the following annual charge, effective as of the first day of the month in which the license is issued:

(a) For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable annual charge as determined by the Commission in accordance with the provisions of its regulations, in effect from time to time. The authorized installed capacity for such purposes is 1,400,000 horsepower.

(b) For the purpose of recompensing the United States for the use, occupancy, and enjoyment of 195.18 acres of its lands, exclusive of transmission line rights-of-way, \$468.43, or such amount as may be determined from time to time pursuant to the Commission's Regulations.

(c) For the purpose of recompensing the United States for the use, occupancy and enjoyment of 436.14 acres (the equivalent of 35.98 miles of right-of-way 100 feet in width) of its lands for transmission line rights-of-way, \$287.84, or such amount as may be determined from time to time pursuant to the Commission's Regulations.

Article 39. The Licensee shall conduct a mathematical model study and/or a hydraulic model study to verify the adequacy of the design of the surge chambers and shall submit the results of such studies to the Commission and shall not commence construction of such facilities prior to Commission approval of the design of the surge chambers.

Article 40. The model study report prepared by the manufacturer for the **project's pump**-turbine units shall be submitted to the Commission for review prior to installation of the units.

Article 41. The Licensee shall retain a Board of three or more qualified independent consultants to review the design, specifications, and construction of the **project** for safety and adequacy. The names and qualifications of the Board members shall be submitted to the Chief, Bureau of Power for approval. Among other things, the Board shall assess the geology of the **project** site and surroundings; the design, specifications, and construction of the powerhouse, electrical and mechanical equipment involved in water control, and emergency power supply; the construction inspection program; and construction procedures and progress. The Licensee shall submit to the Commission copies of the Board's report on each meeting. Reports reviewing each portion of the **project** shall be submitted prior to or simultaneously with the submission of the corresponding Exhibit L final design drawings. The Licensee shall also submit a final report of the Board upon completion of the **project**. The final report shall contain a statement indicating the Board's satisfaction with the construction, safety, and adequacy of the **project** structures.

****22** *Article 42.* The Licensee shall commence construction of the **project** ***2266** within two years from the effective date of the license and shall thereafter in good faith and with due diligence prosecute such construction and shall complete construction of such **project** works within seven years from the effective date of the license.

Article 43. Licensee shall consult and cooperate with the Forest Service of the Department of Agriculture, Bureau of Outdoor Recreation of the Department of the Interior, and State and local recreation agencies in conducting further studies to determine the type, number, and location of facilities needed to provide for recreation use at the **project** and shall, within one year of the date of issuance of this **order**, file for Commission approval a revised Exhibit R conforming to Section 4.41 of the Commission's Regulations under the Federal Power Act: *Provided*, that such Exhibit R shall include a detailed schedule for initial and future recreation development, including proposals for temporary replacement of existing facilities to be affected by **project** construction; *Provided, further*, that in preparing the revised Exhibit R to be filed pursuant to this article, Licensee shall study the feasibility of integrating utility services or structures of **project** construction camps into future recreational facilities.

Article 44. Following construction of the **project** Licensee shall, to the extent consistent with efficient **project** operation, maintain water levels as high as possible in Courtright Reservoir on weekends during the recreation season for the benefit of recreational use at the **project**.

Article 45. Licensee shall, to the satisfaction of the Commission's authorized representative, install and operate such signs, lights, sirens or other devices in the vicinity of the intake-discharge structures, as may be reasonably needed to protect the public in its recreational use of **project** lands and waters.

Article 46. Licensee is authorized to use the reservoirs of **Project** No. 1988 in the operation of **Project** No. **2735** and shall coordinate the operation of the **project** with that of **Project** No. 1988.

Article 47. Licensee shall, within three years after issuance of this license, file for Commission approval a revised Exhibit S prepared pursuant to Section 4.41 of the Commission's Rules and Regulations which shall include: (1) the results of a study by Licensee to be prepared in consultation and cooperation with the California Department of Fish and Game, the U.S. Fish and Wildlife Service of the Department of the Interior, and the Forest Service, to determine the effects of **project** operation on the fishery resources of North Fork Kings River downstream of Wishon Reservoir to Black Rock Reservoir, **Helms** Creek and Courtright and Wishon Reservoirs; (2) specific plans to mitigate any adverse effects identified by the studies and to protect and enhance the fishery, schedules for their implementation and costs thereof to be paid for by the Licensee and others; and (3) a detailed comprehensive plan for the mitigation and enhancement of the wildlife resources affected by the construction, operation and *2267 maintenance of the **project** including transmission line right-of-way lands to include, among other things, development and maintenance procedures, materials and a schedule for implementation.

****23** At the end of the second year following commencement of the **project's** operation, Licensee shall, in consultation with the California Department of Fish and Game, the U.S. Fish and Wildlife Service of the Department of the Interior, and the Forest Service, review Licensee's Exhibit S to assess the fishery mitigation plan in light of actual **project** operation, and to determine what, if any, modifications should be made in **project** operation or physical structures to further protect and enhance the fishery. The findings and recommendations of this review shall be filed with the Commission.

Article 48. Licensee, for the purpose of assessing the impact of construction and operation on water quality, in cooperation with the California State Water Resources Control Board and California Department of Fish and Game shall:

(1) continue, until the **project** becomes operational, its pre-construction water quality studies at selected locations: (a) on the tributaries flowing into Courtright and Wishon Reservoirs, (b) in Courtright and Wishon Reservoir, (c) in **Helms** Creek below Courtright Reservoirs, and (d) in the North Fork Kings River above and below Wishon Reservoir. Dependent upon climate conditions, water samples shall be taken on a monthly basis and shall include measurements of dissolved oxygen, temperature, pH, conductivity, total alkalinity, turbidity, ortho and total phosphorus, inorganic and total nitrogen, total and fecal coliforms, macrobenthos, zooplankton and phytoplankton, flow and other significant parameters. In Courtright and Wishon Reservoirs over-depth measurements shall be made of the above parameters in addition to chlorophyll *a* and Secchi disc depth.

(2) conduct a post-operational water quality monitoring program at those stations used in the pre-construction monitoring program for a period of five years from the date of commencement of **project** operation. Samples shall be taken at least monthly dependent upon climatic conditions and shall include those parameters measured during the pre-construction monitoring programs.

(3) file with the Commission annual progress reports during the course of the studies and within one year following conclusion of the monitoring program, file a final report showing the findings of this program together with recommendations of any need for further sampling or for proposals for changes in the operation of the **project** to protect the aquatic environment as shown to be desirable by studies.

The Commission reserves the right, after notice and opportunity for hearing, to require additional studies and require such reasonable changes in the **project** and its operation as may be found necessary or appropriate to maintain or improve the aquatic environment.

Article 49. The Licensee shall, prior to the start of construction, consult ***2268** and cooperate with the State of California Water Resources Control Board in developing a plan to minimize the quantity of inorganic sediments or other pollutants from entering the streams or reservoirs in the **project** area resulting from construction, operation or maintenance of the **project**. The plan, to be filed with the Commission, shall include a schedule for its implementation and a description of the methods to be used to control sedimentation and other forms of pollution.

****24** *Article 50.* Licensee, prior to the start of construction, shall in consultation and cooperation with the U.S. Forest Service, California State Water Resources Control Board and the Fresno County Health Department, evaluate and revise, if found to be appropriate, Licensee's proposed methods of sewage effluent disposal at temporary and permanent **project** facilities. This plan to protect ground and surface waters was prepared on July 24, 1974, and filed with the Commission on August 7, 1974. A finalized plan, in accordance with State and local regulations and mutually agreed upon by the above agencies, shall be filed with the Commission for its information.

Article 51. Licensee shall not chemically treat soil, water, animals, or vegetation on National Forest lands unless written approval of the proposed treatment has been obtained from the Forest Service.

Article 52. Licensee shall consult and cooperate with the California Department of Public Health in complying with State and local regulations in planning and providing for the collection, **storage**, and disposal of solid wastes generated through public access and use of **project** lands and waters and, within one year after the commencement of operation of the **project**, shall file with the Commission a solid waste management plan which has been approved by the California Department of Public Health. This plan shall provide, (a) the location of solid waste receptacles to be provided at public areas, including campgrounds, picnicking areas, and boat access areas; (b) schedules of collection for the above receptacles; (c) provisions for including in the subject plan any public use areas as they are developed; and (d) disposal sites and methods of disposal.

Article 53. The Licensee shall take all reasonable precautions necessary to control the amount of particulate matter in the air during construction (*e.g.*, regularly watering, or spreading gravel on unpaved roads). Federal, State, and local air pollution agencies shall be consulted to ensure that any precautionary methods used are the least harmful to the surrounding environment.

Article 54. Licensee shall dispose of all temporary structures, unused timber, brush, refuse or other material unnecessary for the purpose of the **project**, which results from clearing of lands of from the maintenance or alteration of the **project** works. Clearing of lands and disposal of 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.

***2269** *Article 55.* Licensee, shall, in the design, construction and maintenance of the **project** works and in the construction, relocation or reconstruction of any non-**project** roads, bridges or transmission lines made necessary by the construction and maintenance of the **project**, follow the Commission's 'Guidelines for the Protection of Natural, Historic, Scenic and Recreational Value in the Design and Location of Rights-of-Way and Transmission Facilities' of Commission **Order** No. 414 and other recognized engineering and landscaping practices as may be needed to protect and preserve the environmental values of the **project**.

****25** *Article 56.* The Licensee shall avoid or minimize any disturbance caused by construction and maintenance of the **project** works to the natural, scenic, historical and recreational values of the area, blending **project** works with the natural view, and revegetating, stabilizing and landscaping the construction areas located outside the area of the **project** reservoir. Within one year from issuance of this license, the Licensee shall submit to the Commission its detailed plan to avoid or minimize any disturbance to such values of the area caused by construction and maintenance of the **project** works; this plan, including an architectural

rendering for the major **project** features including **project** transmission facilities, shall be prepared after consultation with professional land use planner and appropriate Federal State and local agencies; and this plan shall give due consideration to the provisions of the Commission's **Order** No. 414, issued November 27, 1970, 44 **FPC** 1491. The Commission reserves the right, after notice and opportunity for hearing, to prescribe any changes in the plans as the public may warrant.

Article 57. Licensee shall, during the operation of the **project**, regularly consult and cooperate with the Forest Service, Fish and Wildlife Service, California Department of Fish and Game and other appropriate environmental agencies with regard to measures needed to insure continued protection and development of the natural resources values of the **project** area, and the Commission reserves the right, after notice and opportunity for hearing, to require such changes in the **project** and its operation as may be necessary to accomplish such natural resource protection and development.

Article 58. The Licensee shall arrange for a preconstruction survey of all areas proposed to be disturbed by **project** construction or operation, to determine the impacts, if any, on endangered or threatened species of flora and fauna. This survey shall be conducted by a professional(s) in the fields of botany and wildlife, and shall include the transmission line right-of-way, spoil sites, construction campsites, roads, laydown areas, and other **project** facility sites. The Licensee shall provide for review of this survey by the California State Resources Agency and the U.S. Fish and Wildlife Service of the Department of the Interior. Should it be determined from the survey that specimens of any endangered or threatened species of flora or fauna would be adversely affected by the ***2270** construction or operation of the **project**, the Licensee shall cooperate with the aforementioned agencies in developing and implementing a mitigation plan for the affected species. A copy of the plan shall be filed with the Commission for its information.

Article 59. Licensee shall, prior to the commencement of construction, consult with the California State Historic Preservation Officer and the Forest Service to determine the extent of any archeological survey or salvage that may be necessary within the **project** boundary and at the sites of the proposed construction camps, and to ascertain the proper mitigative measures to be taken at any sites discovered during archeological surveys or construction activities: *Provided*, that Licensee shall provide reasonable funds for the protection or salvage of archeological sites, as appropriate; *Provided, further*, that reports of surveys and salvage excavations shall be forwarded to the State Historic Preservation Officer, the Federal Power Commission, the Forest Service, and the San Francisco Office of the Interagency Archeological Services Division, Office of Archeology and Historic Preservation, National Park Service; *Provided, further*, that in the event that the Licensee and the State Historic Preservation Officer cannot reach agreement on the amount of funds necessary for archeological work at the **project**, the Commission reserves the right, after notice and opportunity for hearing, to require Licensee to conduct such archeological survey and salvage operations as it may find necessary

****26 Article 60.** Licensee shall, prior to commencement of construction, submit to the Commission a study on the feasibility of using material from the excavation of the Courtright intake-discharge structure to rehabilitate the Courtright quarry area, and the use of revegetation and screening to reduce the visual impact of the Courtright quarry area. The study should be prepared in consultation with the Forest Service and should include, among other things, the effect on turbidity levels in the reservoir, the estimated cost of the rehabilitation effort and its effect on **project** economic feasibility, and the degree of mitigation that would be achieved.

Article 61. In the event that the ownership or control of **Project** No. 1988 and **Project** No. **2735** become vested in different entities, either through transfer of license, surrender of license, issuance of license to another Licensee, Federal takeover, or any other reason, the separate owners or Licensees of the **projects** shall negotiate an agreement to be submitted to the Commission for its approval, providing for compensation, if any, to be paid by the Licensee or owner of **Project** No. **2735** to the Licensee or owner of **Project** No. 1988, for the former's use of Courtright and Wishon reservoirs. If such an agreement cannot be reached, the Commission reserves the right to establish such compensation, after notice and opportunity for hearing.

Article 62. The Commission reserves the right, after notice and an opportunity for hearing, to prescribe such further conditions pursuant to *2271 the Federal Power Act as may be found appropriate to remedy Licensee's anticompetitive or monopolistic practices, if any.

Article 63. After the first 20 years of operation of the **project** under the license, six percent per annum shall be the specified rate of return on the net investment in the **project** for determining surplus earnings of the **project** for the establishment and maintenance of amortization reserves pursuant to Section 10(d) of the Federal Power Act; one-half of the **project** surplus earnings, if any, accumulated after the first 20 years of operation under the license, in excess of six percent per annum on the net investment, shall be set aside in a **project** amortization reserve account as of the end of each fiscal year: *Provided*, that if and to the extent that there is a deficiency of **project** earnings below six percent per annum for any fiscal year or years after the first 20 years of operation under the license, the amount of such deficiency shall be deducted from the amount of any surplus earnings accumulated thereafter until absorbed, and one-half of the remaining surplus earnings, if any, thus cumulatively computed, shall be set aside in the **project** amortization reserve account and the amounts thus established in the **project** amortization reserve account shall be maintained therein until further **order** of the Commission.

(D) The Exhibits designated and described in Paragraph (B) above are hereby approved to the extent indicated therein and made a part of the license.

****27** With respect to **Project** No. 1988, *the Commission orders*:

(A) *Article 40* of the **project** license is hereby replaced by the following new article:

Article 40. Pending further **order** by the Commission on its own motion or at the request of the California Department of Fish and Game or the U.S. Fish and Wildlife Service of the Department of the Interior, after notice and opportunity for hearing, the Licensee shall discharge continuous minimum flows from the **project** reservoirs for the periods specified as follows:

June through December through Dry

November May Years²⁵

Courtright

Reservoir (**Helms** No

Creek) 4 cfs 2,5 cfs Change

Wishon Reservoir

(N. Fork Kings

River 15 cfs 7.5 cfs 7.5 cfs

***2272** (B) The following articles are hereby added to and made a part of the **project** license:

Article 43. Licensee, after **Project** No. **2735** becomes operational, shall, in cooperation with the California Department of Fish and Game evaluate the minimum flow releases below Courtright Reservoir of 4 cfs from June through November and 2.5 cfs from December through May and shall evaluate the minimum releases below Wishon Reservoir of 15 cfs from June through

November and 7.5 cfs from December through May to determine the adequacy of such flows or modifications needed to protect the downstream aquatic habitats of Helms Creek and the North Fork Kings River.

Article 44. In the event that ownership or control of Project No. 1988 and Project No. 2735 become vested in different entities, either through transfer of license, surrender of license, issuance of license to another licensee, Federal takeover, or any other reason, the separate owners or Licensees of the projects shall negotiate an agreement to be submitted to the Commission for its approval, providing for compensation, if any, to be paid by the Licensee or owner of Project No. 2735 to the Licensee or owner of Project No. 1988, for the former's use of Courtright and Wishon reservoirs. If such an agreement cannot be reached, the Commission reserves the right to establish such compensation, after notice and an opportunity for hearing.

Article 45. The Licensee for the Helms Project No. 2735 is authorized to use the reservoirs of Project No. 1988 in the operation of Project No. 2735 and the operation of Project No. 1988 shall be coordinated with that of Project No. 2735.

Article 46. Following construction of Project No. 2735 Licensee shall, to the extent consistent with efficient project operation, maintain water levels as high as possible in Courtright Reservoir on weekends during the recreation season for the benefit of recreational use at the project.

(C) This order shall become final within 30 days from the date of its issuance unless application for rehearing shall be filed as provided in Section 313(a) of the Act, and failure to file such an application shall constitute acceptance of the license for Project No. 2735 and the amendments to the license for Project No. 1988. In acknowledgment of its acceptance of the license and the amendments, it shall be signed for the Licensee and returned to the Commission within 60 days from the date of issuance of this order.

FORM L-6 (Revised October, 1975)

FEDERAL POWER COMMISSION

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

****28 *2273** *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 works shall be constructed 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.

Upon the completion of the **project**, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised exhibits insofar as necessary to show any divergence from or variations in the **project** area and **project** boundary as finally located or in the **project** works as actually constructed when compared with the area and boundary shown and the works described in the license or in the exhibits approved by the Commission, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variation in or divergence from the approved exhibits. Such revised exhibits shall, if and when approved by the Commission, be made a part of the license under the provisions of Article 2 hereof.

Article 4. The construction, operation, and maintenance of the **project** *2274 and any work incidental to additions or alterations shall be subject to the inspection and supervision of the Regional Engineer, Federal Power 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 a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of the **project** and for any subsequent alterations to the **project**. Construction of the **project** works or any feature or alteration thereof shall not be initiated until the program of inspection for the **project** works or any such feature thereof has been approved by said representative. The Licensee shall also furnish to said representative such further information as he may require concerning the construction, operation, and maintenance of the **project**, and of any alteration thereof, and shall notify him of the date upon which work 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 allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across **project** lands and **projects** 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.

****29** *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 of 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 retirement from service 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.

***2275** *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 be 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.

****30 Article 9.** The Licensee shall, after notice and opportunity for hearing, ***2276** 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 Commission. 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 United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation of the navigable waterway affected; and 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 Secretary of the Army may prescribe in the interest of navigation, and 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 urposes 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 Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other 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 *2277 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.

****31 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 *2278 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.

****32 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 consult with the appropriate State and Federal agencies and, within one year of the date of issuance of this license, shall submit for Commission approval a plan for clearing the reservoir area. Further, 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. Upon approval of the clearing plan 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. Material may be dredged or excavated from, or placed as fill ***2279** in, **project** lands and/or waters only in the prosecution of work specifically authorized under the license; in the maintenance of the **project**; or after obtaining Commission approval, as appropriate. Any such material shall be removed and/or deposited in such manner as to reasonably preserve the environmental values of the **project** and so as not to interfere with traffic on land or water. Dredging and filling in a navigable water of the United States shall also be done to the satisfaction of the District Engineer, Department of the Army, in charge of the locality.

Article 22. Whenever the United States shall desire to construct, complete, or improve navigation facilities in connection with the **project**, the Licensee shall convey to the United States, free of cost, such of its lands and rights-of-way and such rights of passage through its dams or other structures, and shall permit such control of its pools, as may be required to complete and maintain such navigation facilities.

****33** *Article 23.* The operation of any navigation facilities which may be constructed as a part of, or in connection with, any dam or diversion structure constituting a part of the **project** works shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including control of the level of the pool caused by such dam or diversion structure, as may be made from time to time by the Secretary of the Army.

Article 24. The Licensee shall furnish power free of cost to the United States for the operation and maintenance of navigation facilities in the vicinity of the **project** at the voltage and frequency required by such facilities and at a point adjacent thereto, whether said facilities are constructed by the Licensee or by the United States.

Article 25. The Licensee shall construct, maintain, and operate at its own expense such lights and other signals for the protection of navigation as may be directed by the Secretary of the Department in which the Coast Guard is operating.

Article 26. Timber on lands of the United States 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 ***2280** relieve the Licensee of responsibility for the clearing and disposal of all slash and debris from **project** lands.

Article 27. 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 28. 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.

****34** *Article 29.* 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 appropriate department or agency of the United States.

Article 30. 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 31. 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 ***2281** subject to the approval of the department or agency of the United States having supervision over the lands involved.

Article 32. 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 33. 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.

****35** *Article 34.* 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 35. 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 *2282 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 obligation 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 36. 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 37. 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.

FEDERAL POWER COMMISSION

Footnotes

- * **Order** issued July 15, 1976 granting rehearing for the purpose of further consideration is unreported. Rehearing denied by **order** issued December 7, 1976, 56 **FPC** 3447. Editor's note: Petition for review filed February 7, 1977, *Northern California Power Agency, et al. v. F.P.C.*, CADC No. 77-1159.
- 1 Pacific Gas and Electric Co., **Projects** Nos. 175 and 1988, 14 **FPC** 684 (1955).
- 2 Alternative plans for recreational development and transmission line routes are discussed in their respective sections, *infra*.
- 3 Sacramento Municipal Utility District, Supplemental Power Statement (**FPC** Form 12E-2) filed January, 1976.
- 4 Environmental effects of the **Helms** transmission line are discussed *infra*.
- 5 Water to be displaced by the spoil is dead **storage**, and thus the amount of water available for generation of power will not be reduced.
- 6 Applicant's Exhibit R proposed rehabilitation of the quarry site at Wishon, including deposit of spoil, grading, landscaping, and recreational development. This feature of the recreational concept was unopposed, and received support in several comments. We therefore do not require Applicant to further study the Wishon site, because it has already done so with favorable results.
- 7 See 40 Fed. Reg. 58308, 58309 (December 16, 1975.)
- 8 Interior also recommended that the **Project** No. 2735 license contain standard L-Form articles respecting fish, wildlife, and the environment. Form L-6 contains these articles.
- 9 33 U.S.C. § 1251(a)(1) (Supp. 1975).
- 10 16 U.S.C. § 796(11)
- 11 Applicant had originally proposed double towers for 22 miles of the line, but reduced the distance to 15.7 miles at the request of the Forest Service.
- 12 **Project** No. 1988 was licensed in 1955, before the Commission required a recreation plan (Exhibit R) to be filed with each application for major license.
- 13 At its closest point, the Wilderness is approximately one mile to the northeast of Courtright. See Figure 1.

- 14 The Dinkey Lakes Roadless Area No. 75 was established in 1974. It consists of 114,170 acres of unroaded and undeveloped land under the jurisdiction of the Forest Service. The portion of the area which will be affected by the **Helms Project** totals approximately 5,800 acres.
- 15 The resort is operated under a special use permit from the Forest Service.
- 16 We note that PGandE proposed in its Exhibit R to locate the fishermen's parking/access/picnic facility at Short Hair Creek (Lake Wishon) at the site of the Short Hair construction camp. We believe this to be a desirable proposal in that the site will already have been cleared and graded, and restoration and landscaping of the site can be performed with the ultimate recreation facilities in mind.
- 17 **32 FPC 826 (1964)**.
- 18 In a document filed on December 29, 1975, Association sought to withdraw its intervention in this proceeding on the condition that its requested relief be included in any license issued for **Project** No. **2735**. The Association's conditional withdrawal of intervention was denied by Commission **order** issued April 15, 1976.
- 19 *Fresno Irrigation District, Pacific Gas and Electric Co., **Projects** Nos. 1925, 175 and 1988, **8 FPC 348, 357 (1949)**, as amended, Fresno Irrigation District, Pacific Gas and Electric Co., **Projects** Nos. 1925, 175 and 1988, **10 FPC 460, 464-65 (1951)**.*
- 20 *Pacific Gas and Electric Co., **Projects** Nos. 175 and 1988, **14 FPC 684, 686-87 (1955)**.*
- 21 *Cf. Section 27 of the Act, **16 U.S.C. § 821**.*
- 22 *Cf. the Northfield case, Western Massachusetts Electric Co., **Projects** Nos. 1889 and 2485, **39 FPC 723, 739 (1968)**, wherein we expressly reserved the question whether the Commission has the authority under Part I of the Act to **order** wheeling beyond a **project's** primary lines.*
- 23 Hydroelectric **projects** downstream on the North Fork Kings River include the Balch **Project** No. 175 and the North Fork Kings River **Project** No. 1988. Both are licensed to PGandE.
- 24 Article 20 of Form L-6 requires the preparation, submittal, and Commission approval of a reservoir clearing plan. The reservoirs for **Project** No. **2735** have been constructed.
- 25 A dry year shall be defined as one in which the unimpaired seasonal runoff of Kings River at Piedra, as estimated on May 1 by the State of California Department of Water Resources, will be 1,000,000 acre feet or less.

55 F.P.C. 2237, 1976 WL 15758