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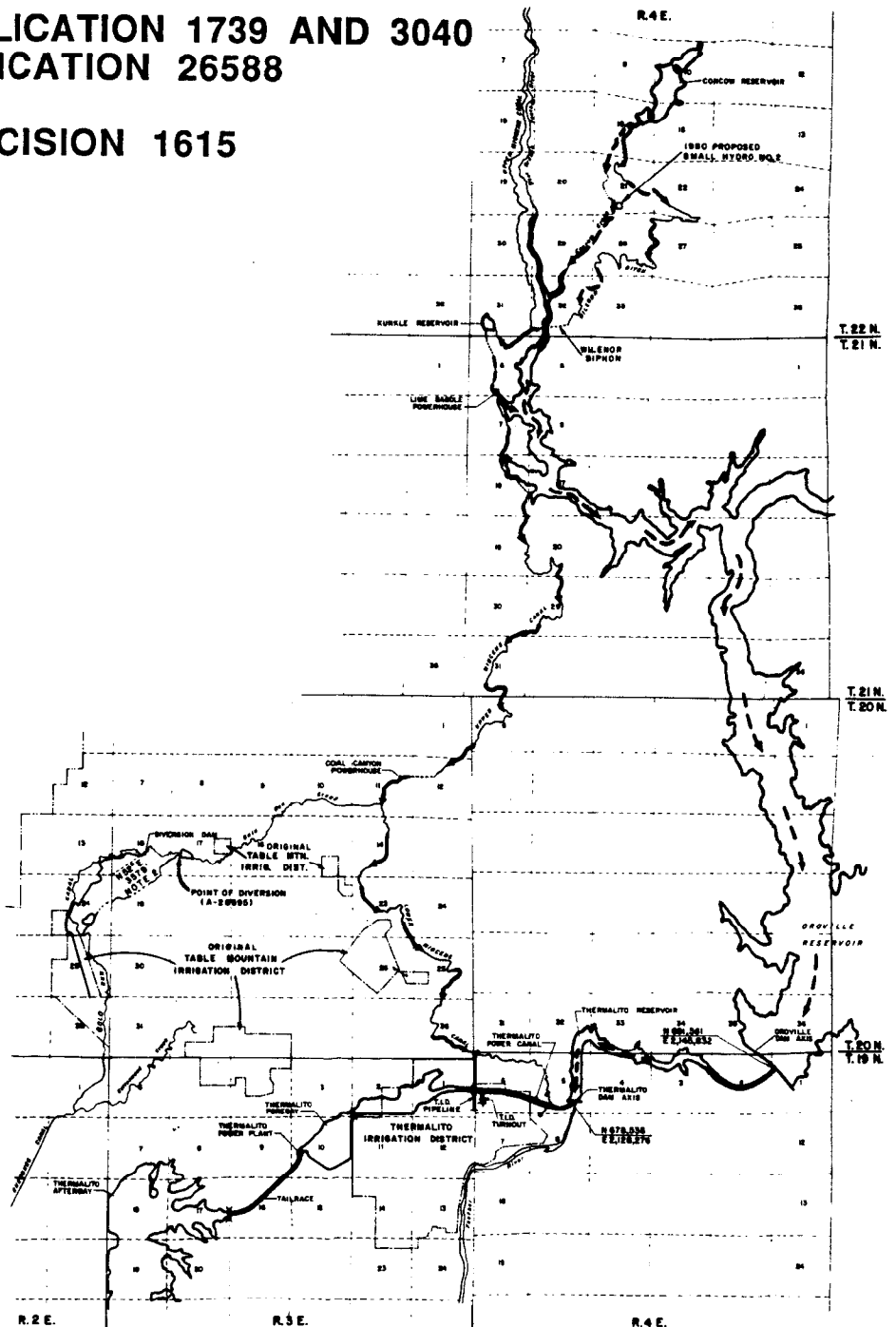
# THERMALITO IRRIGATION DISTRICT AND TABLE MOUNTAIN IRRIGATION DISTRICT

LICENSED APPLICATION 1739 AND 3040  
APPLICATION 26588

DECISION 1615



SEPTEMBER 1987





**STATE OF CALIFORNIA**

*George Deukmejian, Governor*

**STATE WATER RESOURCES  
CONTROL BOARD**

*W. Don Maughan, Chairman*

*Darlene E. Ruiz, Vice Chairwoman*

*Edwin H. Finster, Member*

*Eliseo Samaniego, Member*

*Danny Walsh, Member*



*James L. Easton, Executive Director*

STATE OF CALIFORNIA  
STATE WATER RESOURCES CONTROL BOARD

In the Matter of Licensed Application 1739, )  
Licensed Application 3040, and )  
Application 26588 of )  
 )  
THERMALITO IRRIGATION DISTRICT and )  
TABLE MOUNTAIN IRRIGATION DISTRICT, )  
 )  
Applicants and Licensees, )  
 )  
CALIFORNIA SPORTFISHING PROTECTION ASSN., )  
CALIFORNIA DEPARTMENT OF FISH AND GAME, )  
GOLDEN FEATHER COMMUNITY ASSOCIATION, )  
CAMELOT HOMEOWNERS' ASSOCIATION, )  
GLENN D. MILLER, JAMES F. ACKLEY, )  
and ROBERT J. BAIOCCHI, )  
 )  
Protestants. )  
 )

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DECISION 1615

SOURCE: Concow Creek

COUNTY: Butte

DECISION APPROVING CHANGES IN LICENSED APPLICATIONS 1739 AND 3040,  
AND APPROVING ISSUANCE OF A PERMIT ON APPLICATION 26588

BY THE BOARD:

1.0 INTRODUCTION

Thermalito Irrigation District (TID) and Table Mountain Irrigation District (TMID) having filed Application 26588 and a petition to change the place of use under licensed Application 3040; Thermalito Irrigation District having filed a petition to change the place of use under licensed Application 1739; protests having been filed against the application and change petitions; a public hearing having been held on July 14, 15, and 16, 1986 by the State Water Resources Control Board (Board); the Board having considered the evidence in the record; the Board finds as follows:

1615  
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2.0 SUBSTANCE OF CHANGE PETITIONS AND APPLICATION

2.1 Licensed Application 1739

Licensed Application 1739 (License 845) authorizes diversion to storage in Concow Reservoir of 8200 acre-feet per annum (afa) for agricultural, domestic and municipal uses. The license authorizes diversion to storage on Concow Creek from December 1 of each year through April 1 of the succeeding year.

Following issuance of Board Order WR 85-06, TID filed a petition to include its entire service area as the place of use authorized under licensed Application 1739. The petition requests that the authorized place of use be expanded from 3,100 acres to 13,167 acres.

2.2 Licensed Application 3040

Licensed Application 3040 (License 737) authorizes diversion to storage in Concow Reservoir of 8200 afa. The license authorizes diversion to storage from Concow Creek for power generation from November 1 of each year through July 1 of the succeeding year.

TID and TMID filed a petition in 1980 to change the place of use for power generation under licensed Application 3040. The petition requests deletion of the Lime Saddle and Coal Canyon Powerhouses on the Miocene Canal and addition of a powerhouse on Concow Creek. The Oroville Powerhouse would remain as a place of use for power generation for TID's portion of water stored under licensed Application 3040.

2.3 Application 26588

TID and TMID filed Application 26588 to appropriate 35 cubic feet per second by direct diversion from Concow Creek for generation of power at a proposed powerhouse to be located on Concow Creek approximately two miles below Concow Reservoir. The water would be diverted by pipeline leading from a valve on the downstream side of Concow Dam through the Wilenor Ditch route to the proposed powerhouse. The point of diversion at Concow Dam is within the SW1/4 of the NE1/4 of Section 16, T22N, R4E, MDB&M. The place of use at the proposed powerhouse is within the SE1/4 of the SW1/4 of Section 21, T22N, R4E, MDB&M. The application requests a year-round season of diversion.

3.0 DESCRIPTION OF PROPOSED HYDROELECTRIC PROJECT

The hydroelectric project proposed under Application 26588 and the change petition on licensed Application 3040 involves addition of a trash rack on the inside face of Concow Dam, connection of a pipeline to one of the existing 16-inch valves on the downstream side of the dam, installation of 9,500 feet of 30-inch pipe in the existing Wilenor Ditch, a 1,900 foot-long, 24-inch diameter steel penstock, a powerhouse located on Concow Creek, and 3,000 feet of transmission line from the powerhouse to Concow Road where the Districts' facilities will intertie with Pacific Gas and Electric Company facilities. The vertical drop from the reservoir to the powerhouse is approximately 630 feet. The proposed powerhouse consists of a 30-foot

square concrete block building to house a turbine/generator.

Estimated installed capacity of the powerplant is 990 kilowatts.

Annual energy production is estimated by the Districts as 6.8 gigawatt-hours (GWh). The project will utilize water from the natural flow of Concow Creek when available in addition to water released from seasonal storage at Concow Reservoir.

#### 4.0 PROTESTS

Protests were filed against the petitions to change the place of use on both licensed applications and against new Application 26588 as discussed below.

#### 4.1 Licensed Application 1739

Six protests were filed against the petition for change to licensed Application 1739. The basis of each protest and protest dismissal conditions of each protestant are summarized below:

##### 4.1.1 California Sportfishing Protection Alliance

The California Sportfishing Protection Alliance (CSPA) protested the petition to change licensed Application 1739 on public interest and environmental grounds. The protest dismissal conditions specified by CSPA requested that the Board require the following:

- a. Maintenance of minimum monthly reservoir levels as specified in the agreement between TID/TMID and DFG dated October 24, 1985.
- b. Installation of a rain gage above the reservoir.

- c. Maintenance of a full reservoir of 8200 acre-feet (af) from April 1 to August 30 of each year.
- d. Maintenance of the minimum streamflow below Concow Dam as specified in the agreement between TID/TMID and DFG dated October 24, 1985.
- e. Reasonable public access to the reservoir for bank fishing with special consideration to accommodate the elderly and physically handicapped.
- f. Installation of a measuring device to record the flow below Concow Dam continuously.
- g. Installation of a measuring device to record reservoir levels.

4.1.2 Golden Feather Community Association, et al.

The Golden Feather Community Association (GFCA) protested the change petition on public interest and environmental grounds and specified the same protest dismissal conditions that were specified by CSPA.

4.1.3 California Department of Fish and Game

The Department of Fish and Game (DFG) protested the change petition on public interest and environmental grounds. DFG specified protest dismissal terms for licensed Application 1739 which are the same as those in the agreement for licensed Application 3040 between TID/TMID and DFG dated October 24, 1985. The agreement is discussed in Section 9.2.1 below.

4.1.4 James F. Ackley

James F. Ackley protested the change petition on public interest and environmental grounds. The protest dismissal conditions specified by Mr. Ackley requested that the Board require the following:

- a. Maintenance of maximum reservoir levels during spring and summer (through August).
- b. Public access for bank fishing.
- c. Minimum streamflows below Concow Dam for protection of fish in Concow Creek.
- d. Streamflow measuring devices below Concow Dam.

4.1.5 Camelot Homeowners' Association

The Camelot Homeowners' Association (CHA) protested the change petition on public interest and environmental grounds. The Association requests that the Board require a full reservoir to be maintained through Labor Day of each year.

4.1.6 Glenn D. Miller

Glenn D. Miller protested the change petition on public interest and environmental grounds. As a protest dismissal condition, he requests that no release be made from the reservoir until October 1 of each year.

4.2 Licensed Application 3040

The DFG protested the petition to change licensed Application 3040 on environmental and public interest grounds. Negotiations between DFG



and TID/TMID resulted in the agreement dated October 24, 1985 which specifies end-of-month storage levels to be maintained in Concow Reservoir and minimum streamflow requirements below Concow Reservoir.

4.3 Application 26588

Two protests were filed against Application 26588 within the specified protest period. The protests are summarized below.

4.3.1 California Department of Fish and Game

The DFG protested Application 26588 on environmental and public interest grounds. The protest dismissal conditions specified by DFG requested that the Board require:

- a. Maintenance of a flow of 2.0 cfs at all times in Concow Creek; and
- b. Compliance with Fish and Game Section 1603 requiring a streambed and lakebed alteration agreement.

The applicant and DFG signed an agreement dated September 29, 1982 which requires bypass flows of 2.0 cfs from July 1 through October 31 and 1.0 cfs from November 1 through June 30. The DFG subsequently requested that its protest not be dismissed until the matter of the end-of-month reservoir storage was resolved.

4.3.2 Robert J. Baiocchi

Mr. Baiocchi protested Application 26588 on public interest grounds. As protest dismissal conditions, he requested that the Board require the following:

- a. Minimum stream releases from Concow Dam at a rate determined by DFG;
- b. Installation of measuring devices below the point of diversion to record daily flows;
- c. Maintenance of a minimum pool in the reservoir to protect the fishery; and
- d. Compliance with Fish and Game Code Section 5943 regarding public access to the reservoir for fishing.

Since Application 26588 is for direct diversion only, the requested maintenance of a minimum pool in the reservoir and access to the reservoir are considered with respect to Board review of the petitions to change licensed Applications 1739 and 3040.

## 5.0 COMPLAINTS

### 5.1 Complaint by Golden Feather Community Association

The Golden Feather Community Association filed a complaint against TID and TMID on July 24, 1983. The complaint alleged nonuse of water under licensed Applications 1739 and 3040 and requested that the Board revoke the licenses and require the unused water to revert to the public to be held in storage at Concow Reservoir as a minimum pool for fish, wildlife and aesthetic purposes. The complaint also requested that the Board require the Districts to meet certain requirements for measuring Concow Reservoir levels and inflow and outflow. The

complaint was heard on July 17 and 18, 1984 and Board Order WR 85-6 was entered on August 7, 1985. Order WR 85-6 deleted the place of use of TMID from the authorized place of use under licensed Application 1739 due to TMID's nonuse of water. TID was directed to submit a change petition to include its entire service area within the place of use authorized by licensed Application 1739.

Since a change petition on licensed Application 3040 was closely related to Application 26588 for hydroelectric generation, the Board took no action on Application 3040, but reserved both subjects for future hearing. In addition, Board Order WR 85-6 did not address the subject of reservoir operation for fish, wildlife and recreational purposes. The GFCA's concerns regarding water levels and reservoir operation were raised in the present proceeding by a protest against TID's petition to change the place of use under licensed Application 1739.

5.2 Complaint by Glenn D. Miller

Glenn D. Miller filed a complaint against TID on February 10, 1986 alleging that TID's operation of Concow Reservoir is a violation of the public trust, causes damage to the environment, and creates dangerous conditions for nearby residents. The complaint requests that TID be restricted from releasing water from the reservoir until October 1 of each year.

6.0 AVAILABILITY OF WATER FOR APPROPRIATION UNDER APPLICATION 26588 AND LICENSED APPLICATION 1739

The watershed which contributes runoff to Concow Reservoir is comprised of approximately 15 square miles of steep mountainous

terrain ranging in elevation from 2000 feet to 3600 feet. Average annual precipitation is 50 to 60 inches which occurs mainly as rainfall in the winter months with occasional light snow. In reviewing the hydrologic data to develop and analyze the proposed project, the applicants' consultant reviewed TID's end-of-year reservoir storage records, records of reservoir outflows measured at the gaging station immediately below the dam and the gaging station on Wilenor Ditch, precipitation records and estimates of evaporation and seepage losses. Data covering the years 1934 through 1947 was selected based on its availability and projected reliability. The consultant assumed that the hydrograph of monthly inflow would follow the same curve as the monthly precipitation hydrograph for the same year and total inflow was distributed accordingly to reconstruct monthly inflow. Annual inflow ranged from 10,502 acre-feet to 44,021 acre-feet with an average annual inflow of 21,906 acre-feet.

A computer program was utilized to analyze the above information to determine the amount of outflow available for power production in an average year. The model accounted for maintaining the minimum flow releases as agreed to by the applicants and DFG, specific minimum end-of-month storage volumes as determined by the type of rainfall year and the rated capacity of the proposed powerhouse. The applicants' analysis indicated that the average annual energy output of the plant would be 6.92 GWh. As discussed in Section 7.2 below, this output of electricity results in a favorable benefit/cost analysis.

The hydroelectric project will be a nonconsumptive use of water which otherwise would either flow through Concow Reservoir or be diverted to storage in the reservoir for consumptive use by TID. Based on the fact that the proposed use of water is nonconsumptive and that the applicants' hydrology studies showed that there is sufficient water available to make the project economically feasible, the Board determines that there is sufficient water available for operating the proposed project.<sup>1</sup> Water released from storage and utilized for hydroelectric generation will be diverted under licensed Application 3040. Water taken by direct diversion for hydroelectric generation will be diverted under the permit requested by Application 26588.

#### 7.0 ECONOMIC CONSIDERATIONS REGARDING PROPOSED HYDROELECTRIC PROJECT

In addition to the availability of water for appropriation, the economic feasibility of the project is favorably affected by the fact that Concow Dam is already in existence, the applicants have signed a contract with Pacific Gas and Electric Company (PG&E) for sale of power, and the project is eligible for 30-year tax exempt revenue bond financing.

#### 7.1 Power Purchase Agreement

The PG&E contract for purchase of electric power was executed on June 27, 1985. It provides that energy deliveries must start within

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<sup>1</sup> There was no evidence presented to show that the applicants' hydrological assumptions were not realistic, with the exception of evidence from DFG that the capacity of Concow Reservoir may be less than the 8,200 af assumed by the applicants. As discussed in Section 7.2, however, the evidence indicates that the hydroelectric project would still be economically feasible even with a reduction in reservoir storage capacity of the magnitude suggested by DFG.

five years of the execution date and that it will be in effect for 30 years from the date of initial energy deliveries. The agreement specifies a price per kilowatt hour of power which increases for each of the first ten years. In succeeding years, the contract provides that the purchase price shall be equal to PG&E's full short-run avoided operating costs. The applicants project that the purchase price in the eleventh year will decline from the price in the tenth year, and will thereafter increase gradually until the end of the contract period.

## 7.2 Economic Feasibility

The applicants presented a benefit/cost analysis as part of the economic report on the project. The analysis indicates that the proposed project has a benefit/cost ratio for the Districts of 1.49 and that the project will generate a positive cash flow for each year of operation. The 1.49 benefit/cost ratio was based upon an assumed interest rate for tax exempt revenue bonds of 9.75 percent. The 1.49 analysis was also based upon the assumption that the reservoir will be operated in accordance with the downstream flow release requirements and minimum end-of-month storage levels specified in the applicants' agreement with the DFG. The applicants' analysis showed that if no minimum storage or flow release requirements applied, the project would have a benefit cost ratio of 1.7. If reservoir storage were always maintained at no less than 7,000 acre-feet, the benefit/cost

ratio would fall to 1.1, a figure which the applicants believe would be too low to generate financing for the project. The applicants' financial consultant has advised them that projects with benefit/cost ratios of approximately 1.5 can be funded with readily saleable tax-exempt revenue bonds.

The only significant question regarding assumptions used in the applicants' economic analysis concerns the capacity of Concow Reservoir. The analysis assumed a reservoir volume of 8,200 acre-feet. As discussed in section 9.2.3 below, however, there was evidence presented that the capacity may be substantially lower. Based on a preliminary survey of the reservoir using sonar equipment, a DFG fisheries biologist testified that he calculated a rough estimate of reservoir capacity to be 6000 af. It was unclear if this estimate assumed the spillway flashboards were in place. In the Districts' rebuttal evidence, the Districts' expert witness assumed, without objection from DFG, that the 6000 af capacity estimated by DFG was the reservoir capacity in the absence of flashboards in the spillway. With the flashboards in place, the Districts' expert testified the capacity (based on the DFG survey) would be approximately 7000 af. Operation of the proposed hydroproject with a reservoir capacity of 7000 af was determined to result in a benefit cost ratio of 1.3. The Districts' witness testified that a benefit cost ratio of 1.3 would be sufficient to generate revenue bond sales and to result in an economically feasible project. No evidence was presented to refute this conclusion.

Based on the evidence presented, the Board concludes that the proposed project is economically viable.

#### 8.0 CONSUMPTIVE USE OF WATER WITHIN TID

Licensed Application 1739 authorizes diversion of 8,200 acre-feet per annum by storage in Concow Reservoir for agricultural, domestic and municipal uses. Historically, the water was diverted by TID and TMID as joint licensees with TID entitled to 45 percent and TMID receiving 55 percent. Board Order WR 85-06 deleted TMID from the place of use under licensed Application 1739 due to nonuse of water for a period in excess of five years. Order WR 85-06 further provided that TID could use the entire 8,200 acre-feet diverted under the license, but it directed TID to submit a change petition requesting addition of its entire service area to the licensed place of use.

The District's 1986 Urban Water Management Plan indicates that TID's annual water demand at that time was approximately 3,000 acre-feet. TID's annual water demand was expected to increase to 5,140 acre-feet based on present commitments to provide service. Assuming a 3 percent annual growth rate, the District predicted that urban water use will exceed 8,200 acre-feet per annum in approximately 30 years. Total water demand could increase more rapidly depending primarily upon the actual level of industrial and agricultural demands.

In addition to water stored at Concow Reservoir, a second source of water for consumptive use within TID is provided by six District



wells. TID's Urban Water Management Plan reports that TID has relied upon groundwater to supply the majority of domestic water demands in the past, although it now views groundwater as a supplemental supply to the District's primary source of water at Concow Reservoir. In 1974, combined production from TID wells was reportedly 4.7 million gallons per day. Assuming that a continuous yield at that level could be sustained, TID reports that approximately 5,265 acre-feet of groundwater could be produced annually from District wells.

To the extent that the quantity of water withdrawn from storage in Concow Reservoir may be insufficient to meet future consumptive use demands, the District's existing wells provide a significant supplemental supply. The quantity of water available to TID for consumptive use in a particular year under licensed Application 1739 will depend primarily on the quantity of water in storage at the beginning of the year and on license requirements governing reservoir operations. (See Section 9.2.1.)

## 9.0 ENVIRONMENTAL AND PUBLIC INTEREST ISSUES

### 9.1 Environmental Documentation

The subjects under consideration in this decision include the proposed hydroelectric project and the requested change in place of use for consumptive use under licensed Application 1739. The hydroelectric project will require issuance of a new permit on Application 26588 and approval of the requested change in place of use under licensed Application 3040. The environmental review and documentation for each requested approval is discussed below.

9.1.1 Request for Expanded Place of Use Under Licensed Application 1739

Licensed Application 1739 currently authorizes use of stored water for consumptive uses within 3,100 acres of TID's service area. Through a series of annexations, the service area of the District has been expanded to 13,617 acres. The change petition requests that the authorized place of use under the water right license be expanded to include the entire service area. Pursuant to the provisions of the California Environmental Quality Act (CEQA), the City of Oroville and Butte County were the lead agencies for preparation of an environmental impact report in 1978 which served as a reference for later annexations to the TID service area. Supplemental CEQA documentation was prepared for the subsequent annexations. The environmental effects of the TID annexations and the accompanying extension of water service were analyzed as part of the annexation process. The environmental documentation developed for the annexation process was recirculated in connection with the petition to change the place of use under licensed Application 1739.

9.1.2 Application 26588

As lead agencies, TID and TMID prepared an Initial Study of the proposed hydroelectric project. The study found no substantial evidence that the project could have a significant adverse effect on the environment, and, therefore, the Districts prepared a negative declaration. The negative declaration recommended several mitigation measures to reduce possible project impacts below the level of significance. The recommended mitigation measures include:

- a. A geotechnical investigation of the proposed powerhouse site to determine the quality of foundation materials.
- b. Adherence to instream flow requirements as determined by DFG.
- c. Installation of screens at the diversion dam conduit to prevent fish from entering the ditch and installation of a screening mechanism at the diversion into the penstock to prevent small animals or debris from entering the penstock. The Department of Fish and Game should be consulted to determine appropriate designs for the screens.
- d. Erosion control measures should be included in project plans including measures to avoid unnecessarily steep cuts in slopes during construction and plans for prompt revegetation of disturbed ground. Water bars to slow runoff should be constructed if necessary and the tailrace will be constructed to prevent streambed scouring and turbidity below the powerhouse outlet works.
- e. A minimum of 500 acre-feet of water should be maintained at all times in Concow Reservoir for fish populations in the lake.
- f. Two or three wildlife bridges should be constructed across Wilenor Ditch at designated intervals.
- g. Signs along Jordan Hill Road to alert residents of construction activities which may temporarily disrupt traffic.

- h. If subsurface cultural or historical materials are encountered during construction, a qualified archeologist should be contacted immediately to determine the significance of the materials.

Following circulation of the Initial Study and Draft Negative Declaration, DFG commented on the document stating it was inadequate because it did not address a number of subjects.

The DFG also stated that its first agreement to dismiss its protest to Application 26588 dated September 29, 1982 was based on the assumption that the project would utilize reservoir releases in accordance with historic flow regimes. Since the proposed project will alter historic flow regimes, DFG's position is that the 1982 protest dismissal stipulation is no longer applicable.

After responding to the DFG comments, the Districts compiled historic operational data for the reservoir for DFG's review and filed the negative declaration with the County Clerk on July 29, 1983. The Districts' actions with respect to preparing and circulating the initial study and draft negative declaration, responding to comments, and filing a final negative declaration complied with their responsibilities under CEQA as lead agency. As a "responsible agency" under CEQA, the Board should include as terms or conditions of any permit or license issued on Applications 3040 and 26588 those mitigation measures specified in the negative declaration which relate to matters within the Board's jurisdiction.

Following the filing of the negative declaration, DFG, TID and TMID negotiated an agreement regarding minimum end-of-month storage in Concow Reservoir, minimum streamflows in Concow Creek, angler access to the reservoir and other matters. The provisions of the agreement regarding reservoir storage and minimum streamflows are addressed in Sections 9.2.1 and 9.5.1.

9.1.3 Licensed Application 3040

The petition to change the place of use under licensed Application 3040 proposes deletion of the Lime Saddle and Coal Canyon Powerhouses from the license and addition of the powerhouse proposed by Application 26588. The deletion of the Lime Saddle and Coal Canyon Powerhouses would not cause any environmental impacts as defined by CEQA. The effects of adding the new powerhouse proposed by Application 26588 and of operating the reservoir for hydroelectric production at that site are addressed in the environmental documents prepared for Application 26588 as discussed in Section 9.1.2. The applicants have complied with their responsibility as lead agency under CEQA. The Board will comply with its obligations as a responsible agency under CEQA by requiring implementation of appropriate mitigation measures as conditions of licensed Application 3040.

9.2 Fishery Resources In Concow Reservoir

Concow Reservoir was created when the dam was built in 1924. The reservoir levels over the years have fluctuated between the maximum capacity of 8,200 acre-feet to the dead pool level when the reservoir

was drained. The reservoir provides habitat for a variety of warmwater and coldwater fish species. The warmwater fishery is self-sustaining and there is a residual trout fishery of rainbow trout which probably migrated to the reservoir from upper Concow Creek. When the reservoir was drained in 1978 for repairs, DFG eliminated the residual fish population and planted the reservoir with warmwater fish including largemouth bass, redear, sunfish, black crappie, and channel catfish. The uncontradicted expert testimony presented by DFG stated that Concow Reservoir provides an extremely good largemouth bass fishery.

The reservoir water level at maximum capacity provides the greatest amount of productive fisheries habitat. The littoral or shallow water habitat is productive due to nutrient input from the reservoir banks and penetration of sunlight. When the reservoir volume is reduced, the littoral zone is reduced, although the reduction is slight at first due to structure of the reservoir bottom. As the water level is drawn down, the reduction in littoral habitat occurs at a faster rate due to the steeper sides of the reservoir.

The DFG presented testimony that all warmwater species in the reservoir, except for channel catfish, utilize the shoreline or littoral zone habitat. The littoral zone habitat is generally characterized by depths of less than ten feet. In the case of Concow Reservoir, the littoral zone habitat provides abundant emergent vegetation which is desirable habitat for largemouth bass spawning. The testimony indicated that largemouth bass spawning generally occurs

at a depth of four to six feet and that the nesting sites are used or protected for the emergent fry for a period of approximately three weeks. To protect the spawning activity and fry, the water level should drop at a rate of less than four feet within three weeks during the spawning season of approximately May through mid-June, depending on water temperature and the particular year.

During the 1984 hearing in response to the GFCRA complaint, DFG presented testimony about the benefits of maintaining a full reservoir during the spawning period and early summer growth period. The high water levels permit rainbow trout in the reservoir to migrate upstream during the spring to spawn in Concow Creek. High water levels also permit young trout produced in Concow Creek to enter the reservoir. Additionally, at high reservoir elevations, the upper end of the lake is shallow and warm, providing excellent rearing areas for bass, crappie and redear fish. Both the DFG and the applicants' expert witness, Dr. Beck, recognized the benefit of high water levels in March and April for centrarchid reproduction.

#### 9.2.1 Impacts of Reservoir Drawdown on Concow Reservoir Fishery

The evidence establishes that the best fishery in the reservoir, and the best access to the fishery, would develop if Concow Reservoir were held at a constant level during the spring and summer months. As discussed in Section 9.4 below, the proposed water exchange contract between TID and the Department of Water Resources would allow for postponing until after Labor Day any releases for consumptive uses during most years. However, operation of the proposed hydroelectric

project would require that substantial quantities of water be released during the summer months. Since any substantial reservoir drawdown during the spring or summer would decrease the fishery from optimum levels, it is important to analyze and regulate reservoir releases closely to minimize adverse effects.

In the negotiations between protestant DFG and the Districts, consideration was given to a number of factors including fishery needs, yearly rainfall amounts and historical reservoir levels. The negotiations culminated in an agreement dated October 24, 1985 which included the following conditions:

- a. Specified minimum end-of-month reservoir levels shall be maintained for designated types of rainfall years.
- b. Minimum streamflows shall be maintained in Concow Creek of not less than 2.0 cfs from July 1 through October 30 and not less than 1.0 cfs from November 1 to June 30.<sup>2</sup>
- c. Streamflows shall be monitored continuously and reservoir elevation levels will be recorded.
- d. The Districts shall allow angler access.
- e. The Districts shall install and maintain wildlife crossings over Wilenor Ditch.

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<sup>2</sup> The Board assumes the reference in the agreement to "October 30" was intended to be October 31.



- f. Annual rainfall records shall be provided to DFG.
- g. The Districts shall enter into a Streambed Alteration Agreement pursuant to Section 1601 of the Fish and Game Code.

Based on this agreement, DFG dismissed its protest against Application 26588. Representatives from DFG appeared at the July 1986 hearing to explain the basis for entering into the agreement with the Districts and to provide information on fishery resources in Concow Reservoir and Concow Creek. Although the DFG agreement provided for a minimum pool in Concow Reservoir of as low as 800 acre-feet in October and November of a 30"-35" rainfall year, the Districts indicated at the hearing that they are willing to maintain a 1,000 acre-foot minimum pool level at all times. The effects of the agreed upon minimum reservoir storage were commented upon by expert witnesses for DFG and for the Districts. The DFG biologist testified that the 1,000 acre-feet minimum pool would serve to maintain a remnant fishery population which would expand when the reservoir was refilled. He also stated, however, that if storage was reduced to 1,000 acre-feet every year, the reservoir fishery would decline. The Districts' witness testified that the agreed upon minimum reservoir levels should avoid any significant impact on fish and wildlife except during dry and drought years. Impacts during dry years were thought to be minimal, but he stated that fish and wildlife could be adversely affected by two consecutive dry or drought years.

Based on the above information, the Board concludes that the minimum end-of-month storage specified in the Districts' October 24, 1985 agreement, in combination with a requirement to maintain a minimum pool of at least 1,000 acre-feet at all times, would adequately protect the Concow Reservoir fishery. Maintenance of the specified end-of-month reservoir storage requirements and a 1,000 acre-foot minimum pool should be added as a term of the license issued on Application 3040.

The Board concludes it is also appropriate to add the same end-of-month storage and minimum pool requirements as a term of the license issued on Application 1739 for consumptive use in TID. Any impacts of adding such a term to licensed Application 1739 will be substantially reduced if TID enters into an exchange agreement with the Department of Water Resources as discussed in Section 9.4. The Board would consider modification of a term imposing end-of-month storage requirements on licensed Application 1739 in the future if TID petitions the Board for such change and verifies to the Board's satisfaction that: (1) licensee cannot reasonably develop a water exchange contract with the Department of Water Resources; (2) licensee's monthly water demand for municipal and domestic use within the authorized place of use for licensed Application 1739 would cause it to violate the specified end-of-month storage requirements; and (3) there is no other water available to licensee for municipal and domestic use.

### 9.2.2 Rainfall Gages

The end-of-month reservoir storage requirements discussed above are based on the amount of precipitation in any given year.<sup>3</sup> In order to determine the rainfall in the Concow Creek watershed, DFG recommends that rainfall gages be maintained at two sites representative of conditions in the watershed and that the records from those gages be sent to DFG by May 30 of each year. By defining the precipitation year as the period from May 1 through April 30, a good indication of the relative amount of runoff above Concow Reservoir is provided at the start of the season when reservoir drawdowns are expected to begin. The TID engineering consultant testified that TID presently maintains a rain gage and that the cost estimates for the project include the cost of recording rainfall. In order to increase the reliability of precipitation measurements as a reasonable method for determining the applicable end-of-month reservoir levels, the Board concludes that it is reasonable to base the determination of annual precipitation on the average of measured precipitation at two gages located at sites representative of conditions in the watershed.

### 9.2.3 Survey of Reservoir Capacity

The end-of-month storage levels for Concow Reservoir are intended for the protection of the reservoir fishery. In order to ensure that the intended degree of fishery protection is in fact provided, it is

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<sup>3</sup> Even though the minimum monthly reservoir levels are referred to as "end-of-month reservoir levels", the Districts and DFG agree that the water would not be drawn down below the specified level at any time during the month. Similarly, the Board intends that the quantity of stored water in Concow Reservoir not fall below the specified amounts at any time during the month.

important that the method used for measuring reservoir storage reflect actual conditions. The quantity of water in reservoir storage presently is determined from a staff gage on the face of the dam installed many years ago. The gage is calibrated to measure reservoir volume based on the design capacity of 8,200 acre-feet. No adjustment has been made for reduced reservoir capacity due to siltation over the 63 years since the dam was constructed, nor does either district have accurate information on how much siltation has occurred.

On July 1, 1986, DFG conducted a preliminary survey of the reservoir utilizing sonar equipment mounted on a boat which ran transects of the reservoir. Depth contours from the transect depths were transferred to a map of the reservoir. The DFG study indicated that there may have been some changes in the bottom of the reservoir. For example, the DFG survey noted a reservoir depth of 67 feet at the deepest point near the dam compared to a previously assumed maximum depth of 82 feet.

Based on pictures taken in 1978-79 when the reservoir was drained for repairs, the Districts presented testimony that there was little evidence of substantial sedimentation. There was testimony from several other witnesses familiar with the area, however, which would support the conclusion that substantial sedimentation has occurred.

In view of the importance of the end-of-month reservoir storage to the protection of the fishery, and the substantial evidence presented which raises uncertainty about reservoir capacity and the present

method of measurement, the Board concludes that the Districts should be required to conduct a reservoir capacity survey with the reservoir water level maintained at not less than the 1,000 acre-feet minimum pool level discussed previously. The survey should be conducted in consultation with DFG at a time of year which will avoid or minimize adverse effects on the fishery. Upon completion of the survey, the Districts should be required to install a reservoir gage which is calibrated to the results of the survey.

### 9.3 Recreational Access and Use of Concow Reservoir

The issue of recreational use of Concow Reservoir was raised by DFG and other protestants. Recreational use of Concow Reservoir for fishing and boating has varied over the years, partially in response to reservoir water levels and changes in TID's policy toward recreational use. Although the reservoir is jointly owned by TID and TMID, an agreement between the Districts charges TID with responsibility for reservoir operations. In 1985, TID eliminated boating on the reservoir after the July 4 holiday weekend. In 1986, boating was eliminated entirely and authorized public access to the reservoir was reduced to one location. TID testimony indicated that the reduced access was based in part on public safety considerations and concerns over potential liability.

Based on the sale of District fishing permits, TID presented testimony that little recreational use is made of Concow Reservoir. The local game warden, however, testified that Concow Reservoir was very heavily utilized prior to the most recent 12 to 18 months preceding the

hearing. He recalled it was common to check 20 to 30 fishermen in one hour. More recently, the number of visitors has decreased with inadequate access being a continual complaint. The GFCA, CHA, and the CSPA all presented testimony regarding the need for public access to Concow Reservoir sportfishing and recreation.

TID has hired a consultant to do a study of recreational access to Concow Reservoir. The consultant's study plan recommends two access points and specifies criteria for selection of those points. TID has indicated, however, that a plan for full recreational development at Concow Reservoir is contingent upon development of the proposed hydroelectric project which would provide additional revenue.

There is little statutory guidance regarding the extent of access for fishing and recreational use which must be provided for a facility such as Concow Reservoir. Section 5943 of the Fish and Game Code provides that the owner of a dam shall accord public access for fishing to the water impounded by the dam during the open fishing season. More broadly, Water Code Section 1253 provides that the Board shall allow appropriation of unappropriated water "upon such terms and conditions as in its judgment will best develop, conserve and utilize in the public interest the water sought to be appropriated."

In this instance, there is a strong public interest in allowing public access to Concow Reservoir for recreational fishing. Therefore, a term should be added to licensed Applications 1739 and 3040 requiring that the licensees provide access to the public for the purpose of

recreational fishing. Insufficient evidence was presented to justify imposing an additional term in the licenses requiring licensees to make special accommodations to facilitate fishing by the elderly and physically handicapped. TID is now in the process of preparing a recreational plan for the reservoir. The Board believes that if the District and interested parties cooperate in good faith, disputes over access and recreation at the reservoir should be minimized.

9.4 Effect of Proposed Water Exchange Contract on Reservoir Levels

Under the present method of operations, water used for consumptive purposes within TID is released from Lake Oroville to the Feather River, rediverted to the Thermalito Power Canal and removed by TID for use within its service area. Pursuant to an existing agreement between TID and the Department of Water Resources (DWR), an equivalent amount of water is released from storage at Concow Reservoir and flows via Concow Creek to the West Branch of the Feather River which flows into Lake Oroville. The agreement allows TID to divert water from the Thermalito Power Canal on an "as needed" basis, up to the total amount of its entitlement.

In the absence of a hydroelectric project, one means of maintaining high water levels at Concow Reservoir during the summer months would be to continue use of the water exchange arrangement described above with the additional provision that storage releases from Concow would not be made until the end of the summer. Since TID receives its water out of Lake Oroville and since those releases ordinarily would not be dependent upon a simultaneous inflow to Lake Oroville from Concow

Reservoir, TID could use water as needed for consumptive uses subject to the requirement of delivering an equivalent amount of water to Lake Oroville at a time when DWR could still make use of the water.

At the close of the hearing, the hearing record was left open for receipt of confirmation that DWR would be willing to continue the exchange agreement with TID and that releases of stored water from Concow Reservoir could be made after Labor Day. By memorandum dated August 14, 1986, DWR Director David Kennedy advised the Board that DWR had no objections to TID releasing all or a major portion of the water covered by the exchange agreement after Labor Day provided the water does not enter Lake Oroville when flood control releases are being made or are projected in the near future. The contract referred to in Director Kennedy's memo refers to releases of up to 3,690 acre-feet for use by TID below Lake Oroville. When TID's consumptive use of water from Lake Oroville increases beyond that amount, a new exchange contract will be necessary. Based on the evidence in the record, it appears likely that TID could enter into such a contract with DWR and that water releases from Concow Reservoir for consumptive purposes could generally be made after Labor Day.

If a hydroelectric project is constructed at Concow Reservoir as proposed, there ordinarily will be releases of water from storage for hydroelectric generation prior to Labor Day. Until such time as a hydroelectric project is in operation, however, the record indicates that an exchange agreement with DWR could allow maintenance of high reservoir levels until after Labor Day. Once the hydroelectric



project is built, the agreement would not prevent reservoir drawdown, but would still ensure that the licensee is properly credited for releases of stored water from Lake Concow. Therefore, a condition should be added to licensed Applications 1739 and 3040 requiring that the licensee requests an agreement with DWR allowing TID to divert water from DWR facilities as needed in exchange for water released from storage in Concow Reservoir.

9.5 Protection of Instream Resources of Concow Creek Downstream of Concow Dam

9.5.1 Minimum Flow Requirements in Concow Creek

The agreement between the Department of Fish and Game and the Districts regarding the proposed hydroelectric project calls for maintaining a minimum flow of 1 cfs in Concow Creek immediately below Concow Dam between November 1 and June 30 and 2 cfs between July 1 and October 30 of each year. The DFG also requested that the same minimum streamflow requirements apply to licensed Application 1739. The Districts' analysis of the economic feasibility of the hydroelectric project assumed that the specified minimum flow requirements would be met.

Water diverted through the proposed hydroelectric facilities will be returned to Concow Creek approximately 2 miles below Concow Dam. The reach of Concow Creek between the dam and the powerhouse return is heavily dependent upon the agreed upon releases for protection of instream resources. An expert witness from DFG testified that if the reservoir releases were eliminated for several days, the fishery in

that particular reach of Concow Creek would be essentially eliminated. He further testified that a reduction of flows even for a period of a few hours in warm weather could increase the water temperature in the remaining pools along the stream to lethal levels. The DFG urged that the flow release requirements specified in the DFG agreement with the Districts be regarded as bare minimums which should be met at all times.

In order to protect fish and instream resources of Concow Creek below Concow Reservoir, a term should be added to licensed Applications 1739 and 3040, and to any permit issued on Application 26588 to require the Districts to bypass or release water from storage in Concow Reservoir to maintain the following minimum streamflows in Concow Creek immediately below Concow Reservoir:

July 1 to October 31: 2.0 cfs

November 1 to June 30: 1.0 cfs

In order to ensure that the flow in Concow Creek does not fall below the required rates, the Districts should be required to install, operate and properly maintain a recording gage to measure flow in Concow Creek immediately downstream from Concow Reservoir. The Districts should also be required to develop an acceptable contingency plan to respond rapidly to interruption of releases due to faulty equipment or other problems.

#### 9.5.2 Ramping Rate For Altering Powerhouse Flow Releases

The proposed hydropower project will utilize a maximum flow of 24 cfs through the turbine.<sup>4</sup> The required flow release into Concow Creek is 1 cfs or 2 cfs depending upon the month. The Districts originally considered operating the project as a "peaking" facility which would generate power primarily during the hours of peak demand, but they have since decided that the project will be operated at a relatively constant rate of flow over a 24-hour period. One of the disadvantages of operating as peaking facility is the adverse effect on fish due to disruption of food availability and possible stranding. Although operation as a peaking facility is no longer contemplated, the flow released for hydroelectric power generation will fluctuate during the summer months depending upon the availability of water in excess of the required end-of-month storage. In order to mitigate potential adverse effects of fluctuating flow releases, the Districts should be required to comply with the DFG standard that ramping rates be limited to a maximum of 30 percent per hour increase or decrease in the quantity of flow.

#### 9.6 Fish Screens

Installation of fish screens at a dam outlet serves to keep fish out of the hydroproject penstock and generating facilities. DFG presented testimony that fish screens are typically recommended. There was some testimony that a fish screen may not be necessary depending upon the nature of the thermocline that develops. The Districts biological

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<sup>4</sup> An engineering consultant for the Districts testified that, although the design capacity of the project is 24 cfs, the project could utilize 10-15 percent higher flow if operated in an "overload condition".

consultant stated, however, that he presumed that a fish screen will be installed as part of the permit procedure under Section 1601 of the Fish and Game Code. The Board concludes that a term should be added to licensed Application 3040 and to any permit issued on Application 26588 requiring the Districts to install and maintain a fish screen acceptable to DFG if DFG determines that such a screen is necessary.

9.7 Automatic Shutoff Valves Controlling Reservoir Releases For Hydroelectric Generation

The Districts' engineering consultant testified that automatic shutoff valves will be included in the hydroelectric project design although the specific type and placement had not been determined. Automatic shutoff valves are important to prevent damage to the system and to prevent erosion from a ruptured pipe or interruption in flow. Licensed Application 3040 and any permit issued on Application 26588 should be conditioned to require an automatic shut-off valve in the pipeline from Concow Reservoir to the powerhouse.

9.8 Erosion Control

The Districts propose to utilize the existing Wilenor Ditch for the route of a 9,500 foot pipeline leading from the dam to the penstock. The ditch traverses a steep slope on which erosion could present a problem in the absence of proper mitigation measures. The Districts' biological consultant testified that a number of specified measures would be utilized for erosion control during construction and that construction would occur during the dry season. Proper erosion control and reseedling will promote growth of vegetation for wildlife

food and cover and will help reduce turbidity and sedimentation in the creek. In order to assure that proper erosion control measures are taken, prior to construction of the hydroelectric project, the Districts shall submit to the Chief of the Division of Water Rights, proof of approval of an erosion control plan approved by the California Regional Water Quality Control Board for the Central Valley Region.

9.9 Protection of Plant and Wildlife Resources In Project Area

The only issue raised regarding botanical resources or rare plants concerns a single Butte fritillaria plant which was discovered adjacent to and uphill from the existing Wilenor Ditch alignment in a survey by the Districts' biological consultant. Butte fritillaria is listed as a rare plant by both the state and federal governments. As a rare plant, the Butte fritillaria located in the Districts' plant survey should be protected during construction activities. If a pipeline is placed in Wilenor Ditch as presently proposed, additional protective measures would probably be unnecessary. If the ditch itself is repaired for direct use, additional efforts should be made to protect the plant or to transplant it to a suitable area.

Potential impacts to wildlife in the project area concerned DFG and other protestants. Wildlife species known to inhabit the area include deer, raccoon, fox and mountain lion. Many other birds, mammal and reptile populations exist within the area as well. Bald eagles have been observed to feed on fish in the reservoir. The U. S. Fish and Wildlife Service Office of Endangered Species has advised the

applicant that, to the best of its knowledge, no federally listed rare and endangered species occur in the project area. The bald eagles that visit the area presumably nest along the West Branch of the Feather River and near Lake Oroville.

The Board concludes that there is no substantial evidence in the record to show that the hydroelectric project will have a significant adverse impact on wildlife. The Districts' original plan was to use the existing open ditch to convey water to the penstock and powerhouse. This would have presented a hazard to wildlife. The present plan, however, is to bury the pipeline in the ditch. This will create a bench along the slope but will not create any hazard or require wildlife crossings. Construction activities may cause wildlife to avoid the area during the period of construction. With proper erosion control and revegetation, the potential impacts will be reduced to a level of nonsignificance and the wildlife should again be able to utilize the area. Maintenance of minimum reservoir storage should reduce the impact to wildlife that directly or indirectly utilize the reservoir.

#### 10.0 SCHEDULING STORAGE RELEASES TO OPTIMIZE BENEFICIAL USES OF WATER

As discussed in previous sections, there are three main categories of use for water stored in Concow Reservoir: (1) consumptive use for municipal, irrigation and domestic purposes; (2) nonconsumptive use of water released from the reservoir for hydroelectric purposes; and (3) nonconsumptive use of stored water for fish and recreational uses

at the reservoir and in Concow Creek. The strong probability of an exchange contract between DWR and TID reduces the potential conflict between consumptive use of water and nonconsumptive uses for the fishery and recreation since the exchange contract would allow for maintaining relatively high reservoir levels until after Labor Day each year. Due to the limited capacity of the proposed hydroelectric plant, however, restricting releases of stored water to the period after Labor Day would not normally allow for utilizing the full quantity of stored water for hydroelectrical generation during the period of high power demand. Therefore, the Districts and other parties have assumed that, if the hydroelectric project is built, significant quantities of stored water will be released during the summer months for hydroelectric generation, even if an exchange contract with DWR is executed as anticipated.

The end-of-month storage requirements discussed previously were negotiated between the Districts and DFG in order to provide what was considered to be an acceptable degree of protection to the Concow Reservoir fishery based on historic operations. There is abundant evidence in the record, however, that the fishery generally would be best served by maintaining high reservoir storage as long as possible. The Board views the end-of-month storage requirements as minimum levels which must be complied with, but not as targets to be aimed at if an alternate method of operation in a particular year would allow for maintaining greater reservoir storage further into the summer without significantly interfering with operation of the hydroelectric project.

The scheduling of storage releases from Concow Reservoir will vary depending on a number of factors other than the water year type as defined in the Districts' agreement with DFG. For example, inflow into the reservoir, project maintenance and demand for power may all affect the quantity of storage releases in a particular month. Based on the Board's review of the record, however, it appears possible that the Districts could retain a larger quantity of water in storage for most of the summer months than is called for in the DFG agreement and still release almost the same total quantity of water for hydroelectric generation. This result could be achieved by concentrating releases of stored water later in the summer and early fall, but before the period when any significant inflow to the reservoir would be expected.

The record provides insufficient information to determine the effect on power revenues of making storage releases later in the year. Nevertheless, the Board believes that the possibility of operating the project in a manner which preserves and enhances the beneficial use of water for the fishery and recreation while not significantly impacting the generation of hydropower should be carefully reviewed on an annual basis. Therefore, the Board concludes that License 3040 should be conditioned to require the licensee to meet with a representative of DFG by May 30 of each year to discuss the scheduling of storage releases from Concow Reservoir in order to optimize fishery and recreation uses of the reservoir without significantly affecting use



of the stored water for hydroelectric generation. Prior to June 30 of each year licensee should be required to file a report with the Division of Water Rights regarding the meeting with the DFG representative and the projected schedule of releases through November 30 of the year involved.

#### 11.0 CONCLUSION

Based on the foregoing findings, the Board concludes as follows:

- a. Application 26588 for hydroelectric power generation by direct diversion should be approved subject to the terms and conditions specified in the Order which follows.
- b. Licensed Application 3040 should not be revoked for nonuse of water since the licensee has made reasonable efforts over a period of years to obtain Board approval of a change in place of use for hydroelectric power generation. The petition for a change in place of use of stored water diverted under licensed Application 3040 for hydroelectric power generation should be granted subject to the terms and conditions specified in the Order which follows.
- c. The petition for a change in place of use of stored water diverted under licensed Application 1739 for municipal, domestic and agricultural use should be granted subject to the terms and conditions specified in the Order which follows.
- d. Diversion of water as authorized by this decision will not adversely affect the diversion and use of water under prior water rights.

- e. The mitigation measures specified in the environmental documents for these projects pursuant to CEQA, together with the mitigation measures imposed by terms and conditions of the water right permit and licenses, will mitigate the adverse environmental effects of the diversion and use of water as part of these projects.
- f. The purposes of use proposed in Application 26588 and the purposes of use specified in licensed Applications 1739 and 3040 are beneficial.

ORDER

IT IS HEREBY ORDERED that Application 26588 be approved and a permit be issued to the applicants subject to prior rights and subject to the terms and conditions specified below.

IT IS FURTHER ORDERED that the petitions for changes to licensed Applications 1739 and 3040 be approved and that the licenses issued on Applications 1739 and 3040 be amended to include the terms and conditions specified below.

Application 26588

In addition to standard permit terms 6, 7 and 10 through 13,<sup>5</sup> the permit issued on Application 26588 shall include the following terms:

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<sup>5</sup> A copy of the Board's standard permit terms is available upon request.

1. The water appropriated shall be limited to the quantity which can be beneficially used and shall not exceed 35 cubic feet per second to be diverted from January 1 through December 31 of each year.
2. Construction work shall be completed by December 31, 1990.
3. Complete application of the water to the authorized use shall be made by December 31, 1991.
4. Permittee shall, for the maintenance of fish and aquatic resources in Concow Creek, maintain the following minimum flows in Concow Creek immediately below Concow Reservoir:
  - a. July 1 to October 31, 2.0 cubic feet per second;
  - b. November 1 to June 30, 1.0 cubic foot per second.

The water release structure shall be constructed so that the required flow release is automatically and continually released. Permittee shall promptly notify the Division of Water Rights any time the flow in Concow Creek falls below the required amount. The notification shall specify the reason for the deficient flow, the duration of the deficient flow and the corrective action taken to restore flow in Concow Creek to the required level.

5. By March 1, 1988 permittee shall prepare and submit to the Division of Water Rights a plan of compliance for maintaining the required minimum flows in Concow Creek below Concow Dam. The plan shall specify the point of measurement of the required minimum flows in Concow Creek and a contingency plan for maintaining or restoring required fishery flows in the

event of blockage or malfunction in the release structure at Concow Dam. The plan will be reviewed by the Division of Water Rights. If the plan is determined to be inadequate, the Chief of the Division of Water Rights shall request the permittee to modify the plan to correct the deficiencies. If the permittee does not correct the deficiencies and resubmit an adequate plan of compliance to the Division of Water Rights within 30 days, the Division may refer the matter to the Board for hearing and further order.

6. No water shall be diverted under this permit until permittee has installed flow measuring devices in Concow Creek immediately below Concow Dam and in Concow Creek below the powerhouse tailrace. The flow measuring devices shall be capable of measuring and recording the flows required by the conditions of this permit to the satisfaction of the Chief of the Division of Water Rights. Said measuring devices shall be properly maintained.
7. In accordance with Sections 1601, 1603, and/or Section 6100 of the Fish and Game Code, no work shall be started on the diversion works and no water shall be diverted until permittee has entered into a stream or lake alteration agreement with the Department of Fish and Game and/or the Department has determined that measures to protect fishlife have been incorporated into the plans for construction of such diversion works. Construction, operation, and maintenance costs of any required facility are the responsibility of the permittee.
8. Permittee shall install in the pipeline from Concow Reservoir to the powerhouse an automatic shut-off valve in case of a sudden reduction in pipeline pressure due to a rupture in the pipeline.

9. Prior to construction, permittee shall submit to the Chief, Division of Water Rights, proof of approval by the California Regional Water Quality Control Board, Central Valley Region, of an erosion control plan.
10. Permittee shall, prior to construction, file a Report of Waste Discharge pursuant to Water Code Section 13260 with the California Regional Water Quality Control Board, Central Valley Region (Regional Board), and shall comply with all Waste Discharge Requirements issued by the Regional Board. If the Regional Board waives issuance of Waste Discharge Requirements, the permittee shall comply with Parts I and II of the "Guidelines for Protection of Water Quality During Construction and Operation of Small Hydro Projects" (Guidelines) as contained in the Water Quality Control Plans of the Central Valley Basin. Specific requirements set forth in the permit shall prevail over any specific or general requirements in the referenced Guidelines in the event of conflict. When complying with the Guidelines, pursuant to this condition, the permittee shall not commence construction until the Erosion Control Plan and any baseline data required by the Guidelines have been submitted to and approved in writing by the Regional Board; and before commencing sluicing operations, the permittee shall submit and receive written approval from the Regional Board of the Sluicing Operation Plan.
11. Water diverted under this permit is for nonconsumptive uses at Concow powerhouse within the SE1/4 of the SW1/4 of Section 21, T22N, R4E, MDB&M and is to be released to Concow Creek within the SE1/4 of the SW1/4 of Section 21, T22N, R4E, MDB&M.

12. All rights and privileges to appropriate water for power purposes under this permit and any subsequently issued license are subject to depletions resulting from future upstream appropriation for domestic and stockwatering uses within the watershed. Such rights and privileges under this permit may also be subject to future upstream appropriations for uses within the watershed other than domestic and stockwatering if and to the extent that the Board determines, pursuant to Water Code Sections 100 and 275, that the continued exercise of the appropriation for power purposes is unreasonable in light of such proposed uses. Any such determination shall be made only after notice to permittee or licensee of an application of any such future upstream appropriation and the opportunity to be heard; provided, that a hearing, if requested, may be consolidated with the hearing on such application.
13. Permittee shall provide copies of the daily maximum and minimum streamflow records from the gage immediately below Concow Reservoir and the gage below the powerhouse tailrace to the California Department of Fish and Game annually by December 31 of each year for the preceding October 1 through September 30 water year.
14. To prevent fish stranding below the powerhouse, increases and decreases in the amount of water used for power generation shall be gradual and shall occur at a rate not to exceed 30 percent of the total streamflow below the powerhouse per hour provided that increases may be at a higher rate with the approval of the California Department of Fish and Game.
15. If determined to be necessary by the California Department of Fish and Game, a fish screen acceptable to the California Department of Fish and

Game shall be installed on the intake structure and shall be properly maintained by permittee.

16. Permittee shall identify, flag and protect any and all rare plant species within the project area to the satisfaction of the California Department of Fish and Game.
17. Transmission lines shall be designed in consultation with the California Department of Fish and Game and constructed such that they are not a hazard to raptors.
18. If any previously unrecorded archaeological or historical sites are discovered during the course of construction or development of any project works or other facilities at the project, construction activity in the vicinity shall be halted, a qualified archaeologist shall be consulted to determine the significance of the sites, and the permittee shall consult with the state Historic Preservation Office to develop a mitigation plan to protect archaeological or historical resources.
19. Permittee shall, for the life of the project, allow access to the project by agents representing the California Department of Fish and Game to ensure proper incorporation and operation of fish and wildlife protective measures.
20. If permittee proposes to rehabilitate the existing ditch and utilize said ditch for water conveyance, a mitigation plan to protect the Butte fritillaria shall be submitted to the State Water Resources Control Board for approval prior to starting any rehabilitation work.

21. No water shall be diverted under Application 26588 until all required agreements have been made with the California Department of Fish and Game and project facilities are built and operable.
22. The State Water Resources Control Board reserves jurisdiction in the public interest to modify the terms and conditions of this permit, including imposition of requirements to alter project facilities or operations and to modify instream flow releases and/or minimum reservoir levels, in the event of unforeseen adverse impacts to fish and wildlife. Board action will be taken only after notice to interested parties and opportunity for hearing.

Licensed Application 3040 (License 737)

Water right License 737 shall be amended to include the following terms and conditions:

1. Licensee shall, for the maintenance of fish and aquatic resources in Concow Creek, maintain the following minimum flows in Concow Creek immediately below Concow Reservoir:
  - a. July 1 to October 31, 2.0 cubic feet per second;
  - b. November 1 to June 30, 1.0 cubic foot per second.

The water release structure shall be constructed so that the required streamflow is automatically and continually released. Licensee shall promptly notify the Division of Water Rights any time the flow in Concow



Creek falls below the required amount. The notification shall specify the reason for the deficient flow, the duration of the deficient flow and the corrective action taken to restore flow in Concow Creek to the required minimum level.

2. By May 31, 1988 licensee shall prepare and submit to the Division of Water Rights a plan of compliance for maintaining the required minimum flows in Concow Creek below Concow Dam. The plan shall specify the point of measurement of the required minimum flows in Concow Creek and a contingency plan for maintaining or restoring required fishery flows in the event of blockage or malfunction in the release structure at Concow Dam. The plan will be reviewed by the Division of Water Rights. If the plan is determined to be inadequate, the Chief of the Division of Water Rights shall request the licensee to modify the plan to correct the deficiencies. If the licensee does not correct the deficiencies and resubmit an adequate plan of compliance to the Division of Water Rights within 30 days, the Division may refer the matter to the Board for hearing and further order.
3. No water shall be diverted under this license until licensee has installed flow measuring devices in Concow Creek immediately below Concow Dam and in Concow Creek below the powerhouse tailrace. The flow measuring devices shall be capable of measuring and recording the flows required by the conditions of this license to the satisfaction of the Chief of the Division of Water Rights. Said measuring device shall be properly maintained.
4. Licensee shall provide copies of the daily maximum and minimum streamflow records from the gage immediately below Concow Reservoir and the gage below

the powerhouse tailrace to the California Department of Fish and Game annually by December 31 of each year for the preceding October 1 through September 30 water year.

5. Water diverted under this license is for nonconsumptive uses at Concow powerhouse within the SE1/4 of the SW1/4 of Section 21, T22N, R4E, MDB&M and is to be released to Concow Creek within the SE1/4 of the SW1/4 of Section 21, T22N, R4E, MDB&M.
6. Licensee shall, prior to commencement of construction of the Concow Hydroelectric Project, fund and conduct a reservoir area-capacity survey. Such survey shall be conducted at a minimum reservoir storage of 1,000 acre-feet at the time of year when it will be of minimum impact to the fisheries resource and shall be approved in advance by the Chief of the Division of Water Rights in consultation with the California Department of Fish and Game.
7. Licensee shall install and maintain a recording reservoir gage in Concow Reservoir that is calibrated to the above-mentioned reservoir survey. Copies of reservoir storage records shall be submitted to the State Water Resources Control Board at the request of the Chief of the Division of Water Rights. Licensee shall provide copies of the reservoir storage records to the California Department of Fish and Game annually by December 31 of each year for the preceding October 1 through September 30 water year. Licensee shall allow a representative of the California Department of Fish and Game reasonable access to the reservoir for the purpose of verifying the recorder reading and determining water levels in the reservoir.

8. Licensee shall install in the pipeline from Concow Reservoir to the powerhouse an automatic shut-off valve in case of a sudden reduction in pipeline pressure due to a rupture in the pipeline.
9. Licensee shall for the life of the project allow access to the project by agents representing the California Department of Fish and Game to ensure proper incorporation and operation of fish and wildlife protective measures.
10. In compliance with Fish and Game Code Section 5943, licensee shall accord to the public, for the purpose of fishing, reasonable access to the water impounded by Concow Dam during the open season for the taking of fish, subject to the regulation of the Fish and Game Commission and subject to public health requirements of Section 7623 to 7630, Title 17, California Administrative Code, for domestic water supply reservoirs.
11. Licensee shall install and maintain precipitation gages at two representative sites within the Concow Creek watershed. The average of the two precipitation amounts shall be the basis for the determination of the amount of annual precipitation. Records of annual precipitation shall be submitted to California Department of Fish and Game by May 31 of each year for the preceding May 1 through April 30.
12. Licensee shall request a long-term water exchange agreement, approved by the State Water Resources Control Board, with the Department of Water Resources that allows licensee to divert water from Lake Oroville or any

other facility operated by the Department of Water Resources for use within its service area under licensed Application 1739 while licensee retains an equal amount of water in Concow Reservoir until after September 1 of each year for release to Lake Oroville. Before licensee can operate the Concow Hydroelectric Project authorized by licensed Application 3040, licensee shall submit the water exchange agreement to the Board for approval regarding adequacy of the agreement to permit compliance with end-of-month storage requirements or demonstrate to the satisfaction of the Board that licensee cannot reasonably develop a water exchange agreement with the Department of Water Resources.

13. The end-of-month storage in acre-feet in Concow Reservoir, under licensed Application 3040 shall be maintained at not less than the following specified minimums provided that licensee shall not be required to meet any end-of-month storage requirements which exceed the capacity of Concow Reservoir as determined by an area-capacity survey approved by the Chief of the Division of Water Rights. The precipitation year for each month shall be the precipitation during the preceding May 1 through April 30 period, except for January through April when the precipitation year shall be the 12 months ending on the last day of the preceding month.

MINIMUM END-OF-MONTH RESERVOIR STORAGE IN ACRE-FEET

30-35" PRECIPITATION YEAR

JANUARY	1500	JULY	2400
FEBRUARY	2500	AUGUST	1500
MARCH	3500	SEPTEMBER	1200
APRIL	4000	OCTOBER	1000
MAY	4000	NOVEMBER	1000
JUNE	3000	DECEMBER	1200

35-40" PRECIPITATION YEAR

JANUARY	2000	JULY	4500
FEBRUARY	3000	AUGUST	3000
MARCH	4000	SEPTEMBER	2000
APRIL	5000	OCTOBER	1000
MAY	6000	NOVEMBER	1200
JUNE	6000	DECEMBER	1500

40-50" PRECIPITATION YEAR

JANUARY	3500	JULY	5000
FEBRUARY	5000	AUGUST	3500
MARCH	5500	SEPTEMBER	2800
APRIL	6500	OCTOBER	2000
MAY	7250	NOVEMBER	2000
JUNE	6200	DECEMBER	3000

50" AND ABOVE PRECIPITATION YEAR

JANUARY	5000	JULY	6000
FEBRUARY	5500	AUGUST	5000
MARCH	6500	SEPTEMBER	4000
APRIL	7250	OCTOBER	2500
MAY	8120	NOVEMBER	2500
JUNE	7000	DECEMBER	3500

14. Licensee shall meet with a representative of the California Department of Fish and Game prior to May 31 of each year to discuss the scheduling of storage releases from Concow Reservoir. To the extent feasible, licensee shall develop a water release schedule which will maintain the largest quantity of water in Concow Reservoir during the summer months without significantly reducing project revenue from hydroelectric generation. Prior to June 30 of each year, licensee shall submit a report on the meeting and on the projected water release schedule for the current year through November 30.

15. Licensee shall at all times maintain a minimum pool in Concow Reservoir of not less than 1,000 acre-feet.
16. Pursuant to California Water Code Sections 100 and 275 and the common law public trust doctrine, all rights and privileges under this license, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of the State Water Resources Control Board in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use or unreasonable method of diversion of said water.

The continuing authority of the Board may be exercised by imposing specific requirements over and above those contained in this license with a view to eliminating waste of water and to meeting the reasonable water requirements of licensee without unreasonable draft on the source. Licensee may be required to implement a water conservation plan, features of which may include but not necessarily be limited to: (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this license and to determine accurately water use as against reasonable water requirements for the authorized project. No action will be taken pursuant to this paragraph unless the Board determines, after notice to affected parties and opportunity for hearing, that such specific

requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the Board also may be exercised by imposing further limitations on the diversion and use of water by the licensee in order to protect public trust uses. No action will be taken pursuant to this paragraph unless the Board determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution Article X, Sec. 2; is consistent with the public interest and is necessary to preserve or restore the uses protected by the public trust.

17. Licensee shall provide copies of the records of daily maximum and minimum streamflow from the gage immediately below Concow Reservoir and the gage below the powerhouse tailrace to the California Department of Fish and Game annually by December 31 of each year for the preceding October 1 through September 30 water year.
18. To prevent fish stranding below the powerhouse, increases and decreases in the amount of water used for power generation shall be gradual and shall occur at a rate not to exceed 30 percent of the total streamflow below the powerhouse per hour provided that increases may be at a higher rate with the approval of the California Department of Fish and Game.
19. If determined to be necessary by the California Department of Fish and Game, a fish screen acceptable to the California Department of Fish and Game shall be installed on the intake structure and shall be properly maintained by licensee.

20. Licensee shall identify, flag and protect any and all rare plant species within the project area to the satisfaction of the California Department of Fish and Game.
21. Transmission lines shall be designed in consultation with the California Department of Fish and Game and constructed such that they are not a hazard to raptors.
22. If any previously unrecorded archaeological or historical sites are discovered during the course of construction or development of any project works or other facilities at the project, construction activity in the vicinity shall be halted, a qualified archaeologist shall be consulted to determine the significance of the sites, and the licensee shall consult with the State Historic Preservation Office to develop a mitigation plan to protect archaeological or historical resources.
23. Licensee shall, for the life of the project, allow access to the project by agents representing the California Department of Fish and Game to ensure proper incorporation and operation of fish and wildlife protective measures.
24. If licensee proposes to rehabilitate the existing ditch and utilize said ditch for water conveyance, a mitigation plan to protect the Butte fritillaria shall be submitted to the State Water Resources Control Board for approval prior to starting any rehabilitation work.
25. No water shall be diverted under licensed Application 3040 until all required agreements have been made with the California Department of Fish and Game and project facilities are built and operable.



Licensed Application 1739 (License 845)

Water right License 845 shall be amended to include the following terms and conditions:

1. Licensee shall, for the maintenance of fish and aquatic resources in Concow Creek, maintain the following minimum flows in Concow Creek immediately below Concow Reservoir:
  - a. July 1 to October 31, 2.0 cubic feet per second;
  - b. November 1 to June 30, 1.0 cubic foot per second.

The water release structure shall be constructed so that the required streamflow is automatically and continually released. Licensee shall promptly notify the Division of Water Rights any time the flow in Concow Creek falls below the required amount. The notification shall specify the reason for the deficient flow, the duration of the deficient flow and the corrective action taken to restore flow in Concow Creek to the required minimum level.

2. By May 31, 1988 licensee shall prepare and submit to the Division of Water Rights a plan of compliance for maintaining the required minimum flows in Concow Creek below Concow Dam. The plan shall specify the point of measurement of the required minimum flows in Concow Creek and a contingency plan for maintaining or restoring required fishery flows in the event of blockage or malfunction in the release structure at Concow Dam. The plan

will be reviewed by the Division of Water Rights. If the plan is determined to be inadequate, the Chief of the Division of Water Rights shall request the licensee to modify the plan to correct the deficiencies. If the licensee does not correct the deficiencies and resubmit an adequate plan of compliance to the Division of Water Rights within 30 days, the Division may refer the matter to the Board for hearing and further order.

3. No water shall be diverted under this license until licensee has installed a device, in Concow Creek immediately below Concow Dam, satisfactory to the Chief of the Division of Water Rights, which is capable of measuring and recording the flows required by the conditions of this license. Said measuring device shall be properly maintained.
4. Licensee shall install and maintain precipitation gages at two representative sites within the Concow Creek watershed. The average of the two precipitation amounts shall be the basis for the determination of the amount of annual precipitation. Records of annual precipitation shall be submitted to California Department of Fish and Game by May 31 of each year for the preceding May 1 through April 30.
5. Licensee shall, prior to commencement of construction of the Concow Hydroelectric Project, fund and conduct a reservoir area-capacity survey. Such survey shall be conducted at a minimum reservoir level of 1,000 acre-feet at the time of year when it will be of minimum impact to the fisheries resource and shall be approved in advance by the Chief of the Division of Water Rights in consultation with the California Department of Fish and Game.

6. Licensee shall install and maintain a recording reservoir gage in Concow Reservoir that is calibrated to the above-mentioned reservoir survey. Copies of reservoir storage records shall be submitted to the State Water Resources Control Board at the request of the Chief of the Division of Water Rights. Licensee shall provide copies of the reservoir storage records to the California Department of Fish and Game annually by December 31 of each year for the preceding October 1 through September 30 water year. Licensee shall allow a representative of the California Department of Fish and Game reasonable access to the reservoir for the purpose of verifying the recorder reading and determining water levels in the reservoir.
7. Licensee shall provide copies of the daily maximum and minimum streamflow records from the gage immediately below Concow Reservoir and the gage below the powerhouse tailrace to the California Department of Fish and Game annually by December 31 of each year for the preceding October 1 through September 30 water year.
8. Licensee shall for the life of the project allow access to the project by agents representing the California Department of Fish and Game to ensure proper incorporation and operation of fish and wildlife protective measures.
9. In compliance with Fish and Game Code Section 5943, licensee shall accord to the public, for the purpose of fishing, reasonable access to the waters impounded by Concow Dam during the open season for the taking of fish, subject to the regulation of the Fish and Game Commission and subject to

public health requirements of Section 7623 to 7630, Title 17, California Administrative Code, for domestic water supply reservoirs.

10. Licensee shall request a long-term water exchange agreement, approved by the State Water Resources Control Board, with the Department of Water Resources that allows licensee to divert water from Lake Oroville or any other facility operated by the Department of Water Resources for use within its service area under Licensed Application 1739 while licensee retains an equal amount of water in Concow Reservoir until after September 1 of each year for release to Lake Oroville. Within 18 months from the date of this order or before licensee can operate the Concow Hydroelectric Project authorized by licensed Application 3040, whichever comes first, licensee shall submit the water exchange agreement to the Board for approval regarding adequacy of the agreement to permit compliance with end-of-month storage levels or demonstrate to the satisfaction of the Board that licensee cannot reasonably develop a water exchange agreement with the Department of Water Resources.
  
11. Except as necessary to meet the specified minimum flow requirements in Concow Creek, no stored water shall be released from Concow Reservoir for consumptive use under this license between June 1 and September 1 during any year that both of the following conditions exist:
  - a. A water exchange contract is in effect with the Department of Water Resources allowing for release of stored water from Concow Reservoir after September 1, and

- b. No water is being released for generation of hydroelectric power upstream from Oroville Dam under Application 3040 between June 1 and September 1.
12. End-of-month storage in acre-feet in Concow Reservoir, under licensed Application 1739, shall be maintained at not less than the following specified minimums provided that licensee shall not be required to meet any end-of-month storage requirements which exceed the capacity of Concow Reservoir as determined by an area-capacity survey approved by the Chief of the Division of Water Rights. The precipitation year for each month shall be the precipitation during the preceding May 1 through April 30 period, except for January through April when the precipitation year shall be the 12 months ending on the last day of the preceding month.

MINIMUM END-OF-MONTH RESERVOIR STORAGE IN ACRE-FEET

30-35" PRECIPITATION YEAR

JANUARY	1500	JULY	2400
FEBRUARY	2500	AUGUST	1500
MARCH	3500	SEPTEMBER	1200
APRIL	4000	OCTOBER	1000
MAY	4000	NOVEMBER	1000
JUNE	3000	DECEMBER	1200

35-40" PRECIPITATION YEAR

JANUARY	2000	JULY	4500
FEBRUARY	3000	AUGUST	3000
MARCH	4000	SEPTEMBER	2000
APRIL	5000	OCTOBER	1000
MAY	6000	NOVEMBER	1200
JUNE	6000	DECEMBER	1500

40-50" PRECIPITATION YEAR

JANUARY	3500	JULY	5000
FEBRUARY	5000	AUGUST	3500
MARCH	5500	SEPTEMBER	2800
APRIL	6500	OCTOBER	2000
MAY	7250	NOVEMBER	2000
JUNE	6200	DECEMBER	3000

50" AND ABOVE PRECIPITATION YEAR

JANUARY	5000	JULY	6000
FEBRUARY	5500	AUGUST	5000
MARCH	6500	SEPTEMBER	4000
APRIL	7250	OCTOBER	2500
MAY	8120	NOVEMBER	2500
JUNE	7000	DECEMBER	3000

The minimum end-of-month storage requirements may be modified only if the licensee demonstrates to the satisfaction of the Board the existence of the following conditions: (1) Licensee cannot reasonably develop a water exchange agreement with the Department of Water Resources; (2) monthly water demand for municipal and domestic use within licensee's service area would cause it to violate end-of-month storage requirements; and (3) there are insufficient other water resources reasonably available for municipal and domestic uses within licensee's service area under licensed Application 1739. If licensee desires a modification of the end-of-month storage requirements, it shall petition the Board and provide evidence of the above-specified conditions. Board action will be taken only after notice to interested parties and the opportunity for hearing.

13. Licensee shall at all time maintain a minimum pool in Concow Reservoir of not less than 1,000 acre-feet.
14. Pursuant to California Water Code Sections 100 and 275 and the common law public trust doctrine, all rights and privileges under this license, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of the State Water

Resources Control Board in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use or unreasonable method of diversion of said water.

The continuing authority of the Board may be exercised by imposing specific requirements over and above those contained in this license with a view to eliminating waste of water and to meeting the reasonable water requirements of licensee without unreasonable draft on the source. Licensee may be required to implement a water conservation plan, features of which may include but not necessarily to be limited to: (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this license and to determine accurately water use as against reasonable water requirements for the authorized project. No action will be taken pursuant to this paragraph unless the Board determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the Board also may be exercised by imposing further limitations on the diversion and use of water by the licensee in order to protect public trust uses. No action will be taken pursuant to

this paragraph unless the Board determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution Article X, Sec. 2; is consistent with the public interest and is necessary to preserve or restore the uses protected by the public trust.

15. Licensee shall consult with the Division of Water Rights and, within one year from the date of this order, shall submit to the State Water Resources Control Board its Urban Water Management Plan as prepared and adopted in conformance with Section 10610 et seq. of the California Water Code, supplemented by any additional information that may be required by the Board. All cost-effective measures identified in the Urban Water Management Plan as supplemented, shall be implemented in accordance with the schedule for implementation found therein.

#### CERTIFICATION

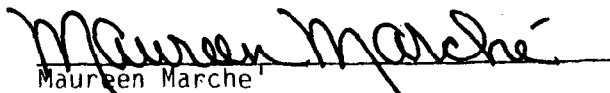
The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a decision duly and regularly adopted at a meeting of the State Water Resources Control Board held on **SEP 03 1987**

AYE: W. Don Maughan, Chairman  
Darlene E. Ruiz, Vice Chairwoman  
Edwin H. Finster, Member  
Danny Walsh, Member

NO: None

ABSENT: Eliseo M. Samaniego, Member

ABSTAIN: None

  
Maureen Marche  
Administrative Assistant to the Board