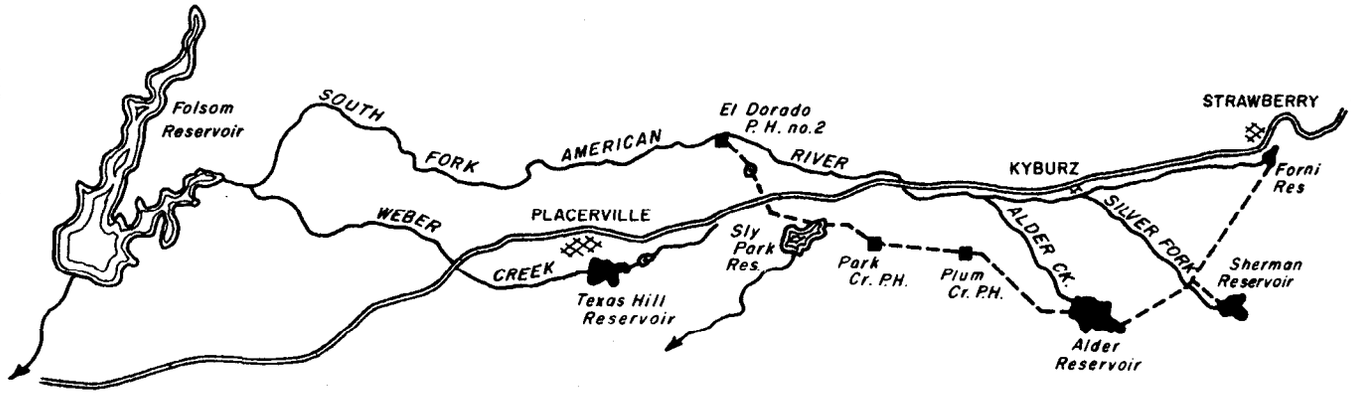
Dec. 1 Order WR 83-1

SOUTH FORK AMERICAN RIVER PROJECT
WATER RIGHTS DECISION

Decision 1587



November 1982

STATE WATER RESOURCES CONTROL BOARD

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of Application 26375 and 26376 to Appropriate Water From The South Fork of the American River and Its Tributaries

Petition For Assignment and Release From Priority of State-held Applications 5645, et al.

EL DORADO IRRIGATION DISTRICT AND EL DORADO COUNTY WATER AGENCY
Applicant

CALIFORNIA DEPARTMENT OF BOATING AND WATERWAYS, AMERICAN RIVER RECREATION ASSOCIATION, INC. et al
Protestants

DECISION: 1587

Source: South Fork American River

County: El Dorado County

DECISION APPROVING WATER RIGHT APPLICATIONS FOR THE SOUTH FORK AMERICAN RIVER PROJECT

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Citing the Record

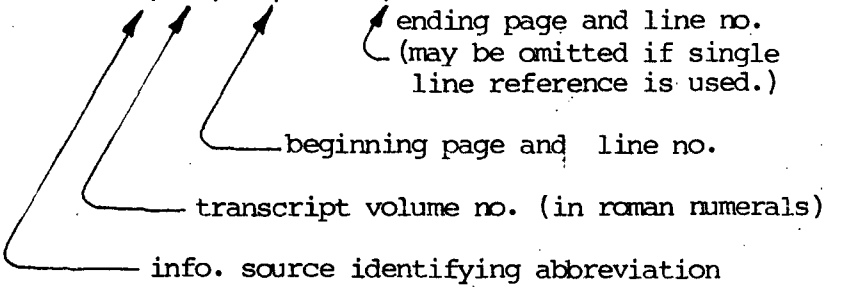
The following format and abbreviations will be used when citing evidence in the hearing record:

I. Abbreviations For Information Source

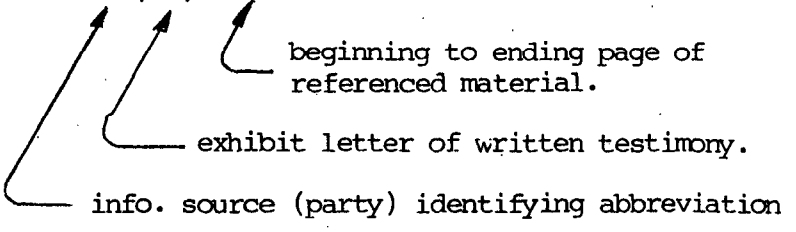
American River Canyon Assoc.	ARCA
American River Recreation Assoc.	ARRA
Calif. Dept. of Boating & Waterways	B&W
Calif. Dept. of Fish	F&G
Cameron, Sharon	SC
Concerned Citizens for Rural Resources	CCRR
Deposition	D
El Dorado County Water Agency/El Dorado Irrigation District	EID
El Dorado Wine Grape Growers Assoc.	WINE
Environmental Planning & Information Council of Western El Dorado Co.	EPIC
Friends of the River	FOR
Gwynn, John & Florence	JG
Hall, Arden	AH
Hearing Transcript	T
Hensley, Charlene	CH
Langley, Russell & Cheryl	RL
Maidu Group, Mother Lode Chapter, Sierra Club	CLUB
Northern Sierra Summer Home Assoc.	CABIN
Pacific Gas and Electric Co.	PG&E
Sacramento Municipal Utility District	SMUD
SOFAR Council	SOCO
SWRCB	STAFF
U.S. Bureau of Reclamation	BUREAU

II Citing Format

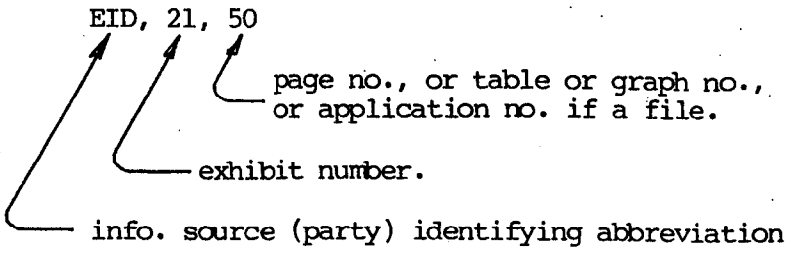
Information source	Format
Hearing transcript Deposition	T, IV, 20,3 - 23,18



Written testimony	EID, C, 12-14



Exhibit


EID, 21, 50
page no., or table or graph no.,
or application no. if a file.
exhibit number.
info. source (party) identifying abbreviation

DECISION APPROVING WATER RIGHT APPLICATIONS

FOR THE SOUTH FORK AMERICAN RIVER PROJECT

BY THE BOARD:

El Dorado Irrigation District and El Dorado County Water Agency (El Dorado or applicant) having filed applications 26375 and 26376 and having petitioned for assignment and release from priority of state-held applications; numerous protests having been filed; 25 days of public hearing having been held by the State Water Resources Control Board (Board); El Dorado, protestants and interested parties having appeared and presented evidence; closing briefs having been submitted; the evidence and closing briefs having been received and duly considered, the Board finds as follows:

2.0 Subject Of Decision

On May 21, 1980, El Dorado filed applications for water right permits for the proposed South Fork American River (SOFAR) project. The project involves diversions of water from the South Fork American River and numerous tributaries to that river in El Dorado County. Diversions requested for power generation are up to 600 cubic feet per second, (cfs), and 200,368 acre-feet annually, (afa) and for consumptive use purposes are up to 150 cfs and 225,368 afa. In support of the proposal, El Dorado has filed water right applications 26375 and 26376; petitions for assignment of state-held applications (sometimes called state filings) 5645, 7938 and 18063 through 18070; release of priority

of state-held application 7939 in favor of application 18063 through 18070, 26375 and 26376; and, to the extent the requested assignments are not granted, a release of priority of applications 5645, 7938 and 18063 through 18070 in favor of applications 26375 and 26376.

3.0 Relationships Among Applications

Applications 26375, 7938, 18064, 18066, 18068 and 18070 propose appropriation of water for use of producing power. The petition for assignment of applications 7938, et al. indicates El Dorado would use the water for the same project described in application 26375. To the extent the petition for assignment is granted, the permits issued for the state applications would reduce the quantity of water needed under application 26375. Application 26375 would be used only to the extent needed to cover the entire power portion of the project. In no event would the sum of all permitted amounts exceed that described under application 26375.

Applications 26376, 5645, 18063, 18065, 18067 and 18069 propose appropriation of water for consumptive uses. The petition for assignment of applications 5645, et al. indicates El Dorado would use the water for the same project described in application 26376. To the extent the petition for assignment is granted, the permits issued for the state applications would be used in lieu of any water sought under application 26375.

Application 7939 is for storage of 1,050,000 afa of water for consumptive use on the floor of the Sacramento and San Joaquin Valleys and delta. The applicant petitioned for a release from priority of this application in favor of applications 18063 through 18070, 26375 and 26376. To

the extent the requested assignments are not granted, the applicant further asked for a release from priority of applications 5645, 7938, and 18063 through 18070 in favor of applications 26375 and 26376.

Applications 26375 (power), 26376 (consumptive use) and related state filings would, in general, use the same physical works for diverting, conveying and storing water. Application 26376 has additional physical works, principally the Texas Hill Reservoir.

4.0 Protests to Applications

On February 13, 1981, notice was given of the applications to appropriate water and the petition for assignment and release from priority of state-held applications to appropriate water for the project. Twenty eight protests were filed in response to the notice. Additionally, three persons failing to meet the noticed time for filing protests were recognized as interested parties. During the hearing the number of participating parties was reduced due to withdrawals and the failure of some parties to appear or to comply with procedural requirements.

In addition to applicant El Dorado, the following persons are protestants or interested parties in this proceeding: Sharon Cameron; Charlene Hensley; American River Recreation Association, Incorporated; Friends of the River; U. S. Bureau of Reclamation; John A. and Florence S. Gwynn; Russell D. and Cheryl L. Langley; California Department of Boating and Waterways; Arden H. Hall; American River Canyon Association; California Department of Fish and Game; Environmental Planning and Information Council of Western El Dorado County; Pacific Gas and Electric Company; California Regional Water Quality

Control Board, Central Valley Region; SOFAR Council; El Dorado Wine Grape Growers Association; the Northern Sierra Summer Homes Association; and the Concerned Citizens for Rural Resources.

4.1 Withdrawals and Dismissals

Douglas W. Baty and Mary L. Freeman withdrew their protests by letter dated January 25 and Feburary 3, 1982, respectively. On July 8, 1982, the Environmental Council of Sacramento was dismissed as a party, after having failed to appear and testify on two separate occasions (T, XXI, 56, 25-57, 6). Hearing instructions issued on December 9 and 31, 1980, and January 14, 1981, required the parties to submit exhibits and testimony in writing in advance of the hearing. The instructions further indicated persons failing to comply could lose their standing as parties. During the second day of hearing, on February 16, 1982, nine persons who failed to comply with submittalrequirements were dismissed from the proceeding (T, II, 167, 14). The persons dismissed were interested party Mr. and Mrs. Harold R. Constable and protestants Clifford O. and Ruth S. Boggess, Sierra Kayak School, Bobby L. and Margaret I. Curtis, Earl and Francis Olive, Paul F. and Sharon G. Dauer, CSUS Environmental Union, Cecilia M. Minard and Edward B. and Adine E. Eldred.

4.2 Agreements Between Applicant and Protestants

Several protestants have entered into agreements with El Dorado. In general, such protestants neither support nor oppose the project but rather request the Board, if the water right applications are approved, to include

agreed upon conditions in any permits issued. The protestants who have entered into agreements calling for conditioned approval are: the California Department of Fish and Game; American River Recreation Association, Inc; El Dorado Wine Grape Growers Association; and the California Department of Boating and Waterways. These agreements are the subject of additional findings later in the decision.

4.3 Interested Parties

One interested party, the SOFAR Council, supports the project and another interested party, the California Regional Water Quality Control Board, is neutral. Finally, the Northern Sierra Summer Homes Association (Homes Association), an interested party, opposes the project on the basis of injury to prior water rights and public interest. The Homes Assocation's concerns will be discussed in more detail later in this decision.

4.4 Basis of Protests

The remaining protestants either oppose the project or ask the Board to impose conditions upon project approval. Table 1, "Protestants and Basis of Protest", identifies these protestants and indicates generally the basis of each protest.

TABLE 1

PROTESTANTS AND BASIS OF PROTEST

PROTESTANT	BASIS OF PROTEST
1. U. S. Bureau of Reclamation(Bureau)	Injury to prior water rights
2. Pacific Gas and Electric Company(PG&E)	Injury to prior water rights
3. American River Canyon Association	Public interest and environmental
4. Concerned Citizens for Rural Resources	Public interest and environmental
5. Environmental Planning and Information Council of El Dorado County Inc.(EPIC)	Public interest and environmental
6. Friends of the River(FOR)	Public interest and environmental
7. Sharon Cameron	Public interest and environmental
8. Arden H. Hall	Injury to prior water rights, public interest and environmental
9. Russell D. and Cheryl L. Langley	Public interest and environmental
10. John A. and Florence S. Gwynn	Public interest and environmental
11. Charlene Hensley	Public interest and environmental

5.0 Substance of Applications

The substance of each application, including the state-held applications petitioned for assignment or release from priorty, is described in Table 2, "Substance of Applications."

TABLE 2

SUBSTANCE OF APPLICATIONS

APPL. NO.	DATE FILED	SOURCE	DIVERSION AMOUNTS				DIVERSION POINT MDB&M			PURPOSE	PLACE OF USE
			DIRECT cfs	SEASON	STORAGE afa	SEASON	Sect.	TWP	Range		
26375	5/21/80	(1) S.F American River trib, American River	600	1/1-12/31	48 (Forni Dam)	9/1-7/31	24	11N	16E	Power & Recreation	Alder Reservoir - recreation 1400 acres in Sect. 8, 9, 15, 16, 17, 18, 19, 20, 21, 22, & 28 in T10N-R15E
		(2) Silver Fork American Riv. trib. S.F. American Riv.	600		320 (Sherman Dam)		21	10N	16E		
		(3) Forni Cr. trib. S.F. Amer.	30				24	11N	16E		Plum Cr. Powerhouse Sect. 10, T10N-R14E
		(4) Station Cr. trib. S.F. Amer.	30				25	11N	16E		
		(5) Long Cyn. Cr. trib. S.F. Amer.	30				4	10N	16E		
		(6) Mule Cr. trib. Silver Fork	60				16	10N	16E		Park Cr. Powerhouse Sect. 7, T10N-R14E
		(7) Martin Cr. trib. Silver Fork	40				21	10N	16E		
		(8) Bark Shanty Cr. trib. Silver Fork	40				16	10N	16E		El Dorado Powerhouse No. 2 Sect. 22, T11N-R12E
		(9) Girard Cr. trib. Silver Fork	20				18	10N	16E		
		(10) Alder Cr. trib. S.F. American	600		200,000 (Alder Dam)		8	10N	15E		
		(11) Plum Cr. trib. S.F. American	70				10	10N	14E		
		(12) Unnamed Str. trib. Plum Cr.	20				10	10N	14E		
		Total Diversion	600		200,368		Rediversion Pts.				
							8	10N	15E	(Alder dam)	
							25	11N	12E	(El Dorado Forebay)	
7938 State held	5/21/34	South Fork Amer. Riv. trib. American Riv.	2,500	1/1-12/31 (7 mi. downstream	1,050,000	10/1-7/15 of Coloma)	28	11N	9E	Power	At powerhouse located 2000 feet below storage dam
18064 State held	3/27/58	Silver Fork American Riv. trib. S.F. Amer.	195	1/1-12/31	70,000	1/1-12/31	22	10N	16E	Power	At following powerhouses:
							Rediversion Pts.				Alder Cr. Sec. 35, T11N-R14E
							8	10N	15E	(Alder Cr.)	Sly Pk. Cr. Sec. 18, T10N-R13E
							26	11N	14E	(S.F. Amer. Riv)	Camino Sec. 7, T10N-R12E
							18	10N	13E	(Sly Pk. Dam enlarged)	Weber Cr. Sec. 17, T10N-R12E
							18	10N	13E	(Sly Pk. Afterbay)	Placerville Sec. 18, T10N-R11E
							18	10N	12E	(Weber Reservoir enlarged)	
							18	10N	12E	(Weber Afterbay)	
18066 State held	3/27/58	Alder Creek trib. S.F. Amer. Riv.	195	1/1-12/31	30,000	1/1-12/31	8	10N	15E	Power	At following powerhouses:
							Rediversion Pts.				Alder Cr. Sec. 35, T11N-R14E
							26	11N	14E	(S.F. Amer. Riv.)	Sly Pk. Sec. 18, T10N-R13E
							18	10N	13E	(Sly Pk. Dam Enlarged)	Camino, Sec. 7, T10N-R12E
							18	10N	13E	(Sly Pk. Afterbay)	Weber Sec. 17, T10N-R12E
							18	10N	12E	(Weber Reservoir enlarged)	Placerville Sec. 18 T10N-R11E
							18	10N	12E	(Weber Afterbay)	

TABLE 2, cont.

APPL. NO.	DATE FILED	SOURCE	DIVERSION AMOUNTS				DIVERSION POINT MDB&M			PURPOSE	PLACE OF USE
			DIRECT cfs	SEASON	STORAGE afa	SEASON	Sec.	TWP	Range		
18068 State held	3/27/58	S.F. Amer. Riv. trib. American Riv.	400	1/1-12/31	31,000	1/1-12/31	26	11N	14E	Power	At following power-houses:
							Rediversion Pts.				Sly Pk. Sec. 18, T10N-R13E
							18	10N	13E	(Sly Pk. Dam enlarged)	Camino Sec. 7, T10N-R12E
							18	10N	13E	(Sly Pk. Afterbay)	Weber Sec. 17, T10N-R12E
							18	10N	12E	(Weber Reservoir enlarged)	Placerville Sec. 18, T10N-R11E
							18	10N	12E	(Weber Afterbay)	
18070 State held	3/27/58	S.F. Amer. Riv. trib. American Riv.	100	1/1-12/31	11,000	1/1-12/31	21	11N	16E	Power	Silver Fork power-house Sec. 28, T11N-R15E
							Rediversion Pt.				
							35	11N	15E	(China Flat Reservoir)	
26376	5/21/80	(1) S.F. Amer. Riv. trib. Amer. Riv.	150	1/1-12/31	48 (Forni Dam)	9/1-7/31	24	11N	16E	Domestic, Municipal, Industrial, irrigation, Frost protection, Heat Control, Recreation & Fish enhancement	Onshore recreation facilities at Alder Reservoir.
		(2) Silver Fork American Riv. trib. S.F. American Riv.	150		320 (Sherman Dam)		21	10N	16E		All or portions of
		(3) Forni Cr. trib. S.F. Amer.	30				24	11N	16E		T8N-R8E thru R10E T9N-R8E thru R12E
		(4) Station Cr. trib. S.F. Amer. Riv.	30				25	11N	16E		T10N-R8E thru R13E T11N-R8E thru R13E
		(5) Long Cyn. Cr. trib. S.F. Amer.	30				4	10N	16E		T12N-R9E & R10E
		(6) Mule Cr. trib. Silver Fork	60				16	10N	16E		
		(7) Martin Cr. trib. Silver Fork	40				21	10N	16E		
		(8) Bark Shanty Cr. trib. Silver Fork	40				16	10N	16E		
		(9) Girard Cr. trib. Silver Fork	20				18	10N	16E		
		(10) Alder Cr. trib. S.F. American	150		200,000 (Alder Dam)		8	10N	15E		
		(11) Plum Cr. trib. S.F. American	70				10	10N	14E		
		(12) Unnamed Str. trib. Plum Cr.	20				10	10N	14E		
		(13) Weber Cr. trib. S.F. American	-		25,000 (Texas Hill Dam)		19	10N	11E		
							Rediversion Pts.				
		Total Diversion	150		225,368		8	10N	15E	(Alder Dam)	
		Total combined per year			30,000		25	11N	12E	(El Dorado Forebay)	
							17	10N	13E	(Jenkinson Lk.-Sly Pk. Dam)	
							19	10N	11E	(Weber Cr.)	
							18	10N	12E	(Weber Reservoir)	
5645 State held	7/30/27	(1) Sly Pk. Cr. trib. Camp Cr.	50	1/1-12/31	30,000	1/1-12/31	17	10N	13E	Irrigation & Domestic	210,000 acres within T8N to T11N, inclusive R8E to R13E, inclusive
		(2) N.F. Consumnes Riv. trib. Consumnes Riv.	-		10,000		10	9N	14E		
		(3) N.F. Consumnes Riv.	50		-		7	9N	13E		
		(4) Camp Cr. trib. N.F. Consumnes	-		10,000		25	10N	14E		
		(5) Camp Cr.	50		-		26	10N	12E		
		(6) N.F. Consumnes Riv.	200		30,000		7	9N	12E		
		(7) Consumnes River	600		60,000		14	8N	10E		
		(8) S.F. Amer. Riv. trib. Amer. Riv.	700		70,000		15	11N	9E		
		(9) S.F. Amer. Riv.	60		-		28	11N	15E		

TABLE 2, cont.

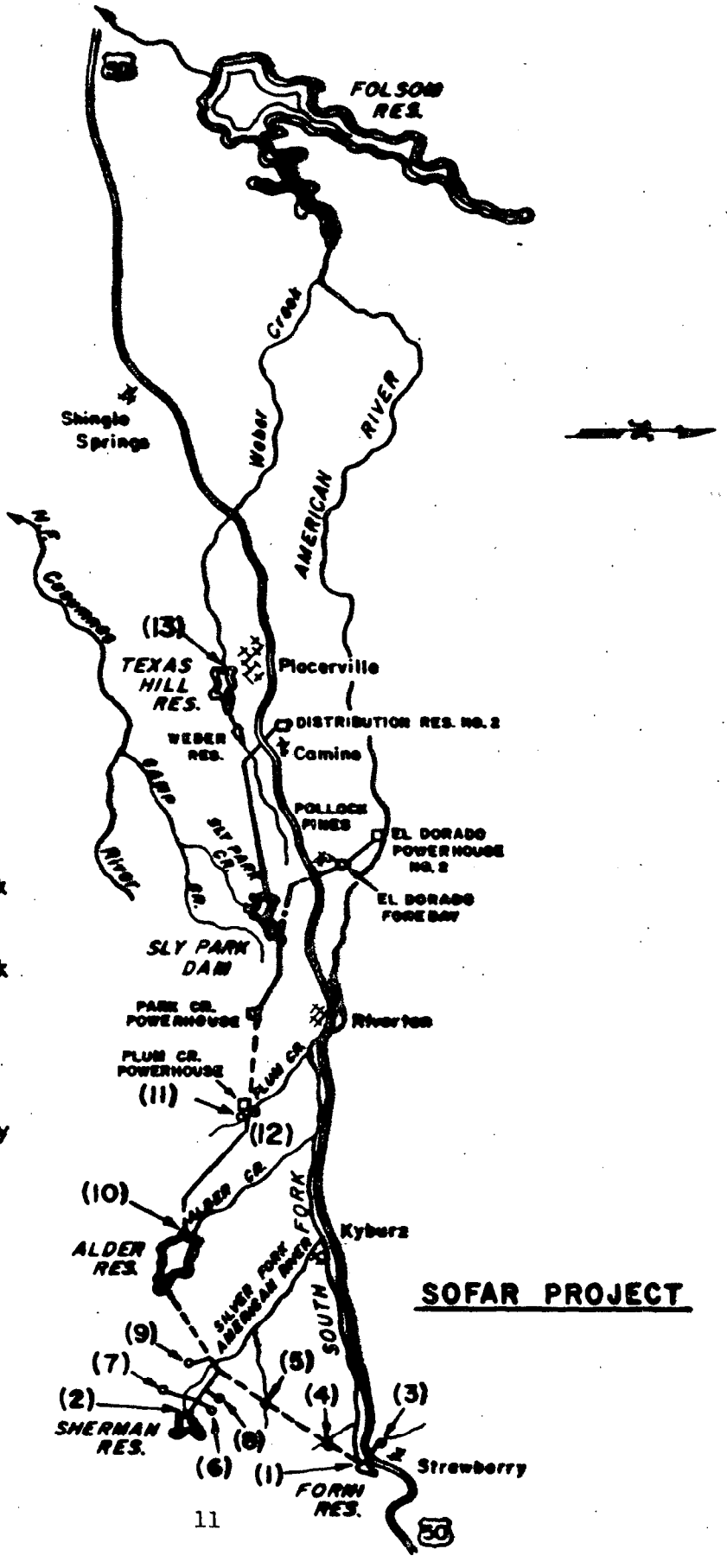
APPL. NO.	DATE FILED	SOURCE	DIVERSION AMOUNTS				DIVERSION POINT MDB&M			PURPOSE	PLACE OF USE
			DIRECT cfs	SEASON	STORAGE af	SEASON	Sec.	TWP	Range		
18063 State held	3/27/58	Silver Fork Amer. Riv. trib. Amer. Riv.	300	1/1-12/31	70,000	1/1-12/31	22	10N	16E	Domestic, Irrigation, Municipal, Industrial & Recreation	T8N to T11N, inclusive R8E to R13E, inclusive (calc. total of 552,960 ac.)
							Rediversion Pts.				
							8	10N	15E	(Alder Cr.)	
							26	11N	14E	(S.F. Amer. Riv.)	
							18	10N	13E	(Sly Pk. Dam enlarged)	
							18	10N	13E	(Sly Pk. Afterbay)	
							18	10N	12E	(Weber Reservoir enlarged)	
							18	10N	12E	(Weber Afterbay)	
							7	10N	11E	(Hangtown Cr.-Placerville Afterbay)	
18065 State held	3/27/58	Alder Creek trib. S.F. American Riv.	195	1/1-12/31	30,000	1/1-12/31	8	10N	15E	Domestic, Irrigation, Municipal, Industrial & Recreation	T8N to T11N, inclusive R8E to R13E, inclusive (calc. total of 552,960 ac.)
							Rediversion Pts				
							26	11N	14E	(S.F. Amer. Riv.)	
							18	10N	13E	(Sly Pk. Dam enlarged)	
							18	10N	13E	(Sly Pk. Afterbay)	
							18	10N	12E	(Weber Reservoir enlarged)	
							18	10N	12E	(Weber Afterbay)	
							7	10N	11E	(Hangtown Cr.-Placerville Afterbay)	
18067 State held	3/27/58	S.F. Amer River trib.	400	1/1-12/31	31,000	1/1-12/31	26	11N	14E	Domestic, Irrigation Municipal, Industrial & Recreation	T8N to T11N, inclusive R8E to R13E, inclusive (calc. total of 552,960 ac.)
							Rediversion Pts.				
							18	10N	13E	(Sly Pk Dam Enlarged)	
							18	10N	13E	(Sly Pk. Afterbay)	
							18	10N	12E	(Weber Reservoir enlarged)	
							18	10N	12E	(Weber Afterbay)	
							7	10N	11E	(Hangtown Cr.-Placerville Afterbay)	
18069 State held	3/27/58	S.F. Amer. Riv. trib. American Riv.	100	1/1-12/31	11,000	1/1-12/31	21	11N	16E	Domestic, Irrigation Municipal, Industrial & Recreation	T8N to T11N, inclusive R8E to R13E, inclusive (calc. total of 552,960 ac.)
							Rediversion Pt.				
							35	11N	15E	(China Flat Reservoir)	
7939 State held	5/21/34	S.F. Amer. Riv. trib. American River		- (7 mi. downstream	1,050,000 of Coloma	10/1-7/15	28	11N	9E	Irrigation, Domestic Saline Control, Flood Control & Navigation	2,500,000 acres within the floor of the Sacramento and San Joaquin Valleys and the delta area of the two rivers.

6.0 Project Description

Forni Dam will be built on the South Fork of the American River near the community of Sciots Camp (1). (Points of diversion shown on map 1 and described in the following paragraphs are correlated with the numbers shown on Map 1 and in Table 2.) The dam will be 54 feet high and have a capacity of 48 acre-feet. Water collected at Forni Dam on the South Fork American River will be combined with water diverted from Forni Creek, (3) via a pipeline laid parallel to Highway 50. The combined flow will then be routed through a tunnel crossing beneath the Silver Fork via a siphon, to Alder Reservoir. The tunnel will receive diversions of water from Station Creek (4), Long Canyon Creek (5), Silver Fork (2), Mule Creek (6), Martin Creek (7), Bark Shanty Creek (8) and Girard Creek (9). Sherman Reservoir (2) will be located on the Silver Fork American River about seven miles upstream from the South Fork American River and two miles above the siphon. The reservoir will be formed by a dam about 65 feet high and will have a capacity of 320 acre-feet.

Points of Diversion

No.	Stream
(1)	S. F. Am. River (Forni Res.) (48 A.F.)
(2)	Silver Fork (Sherman Res.) (320 A.F.)
(3)	Forni Creek
(4)	Station Creek
(5)	Long Canyon Creek
(6)	Mule Creek
(7)	Martin Creek
(8)	Bark Shanty Creek
(9)	Girard Creek
(10)	Alder Creek (Alder Res.) (200,000 A.F.)
(11)	Plum Creek
(12)	Unnamed tributary on Plum Creek
(13)	Weber Creek (Texas Hill Res) (25,000 A.F.)



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Alder Dam (10) will be built on Alder Creek at a point about four miles upstream from the South Fork American River. This dam will be 343 feet high and the reservoir will have a capacity of approximately 200,000 acre-feet. Water will be diverted from Alder Reservoir to the Plum Creek Powerhouse through another tunnel, a pipeline, and a penstock. The powerhouse will be on Plum Creek about three miles upstream from the South Fork American River. Water leaving this powerhouse will be augmented by diversions from Plum Creek (11) (12) and routed through a tunnel to the Park Creek Powerhouse. A release of water will be made to Sly Park Creek below the powerhouse for fishery enhancement and for consumptive use purposes. This water will flow down Sly Park Creek into existing Jenkinson Lake (Sly Park Dam) and then be diverted into the existing Camino Conduit. The water in the Camino Conduit may be released into Weber Creek for conveyance to Texas Hill Reservoir or may continue to existing Reservoir No. 2 near the town of Camino for distribution.

The balance of the water from the Park Creek Powerhouse will pass through several tunnels and pipelines to the existing El Dorado Forebay. There will be a means of releasing water where this pipeline crosses North Fork Weber Creek. Release will be made at this point for fish mitigation in North Fork Weber Creek and for routing to Texas Hill Reservoir for consumptive use (13). At the existing El Dorado Forebay, near Pollock Pines, water will enter a penstock for generation of power at El Dorado Powerhouse No. 2, near PG&E's existing powerhouse. After power is generated, the water will be discharged into the South Fork American River. The total capacity of the three powerhouses is 110 megawatts.

Water released into North Fork Weber Creek will pass through the existing Weber Reservoir and thence downstream to Texas Hill Reservoir. The

dam for Texas Hill Reservoir (13) will be located on Weber Creek, about two miles south of Placerville and will be 157 feet high. The reservoir will have a capacity of approximately 25,000 acre-feet. Water will be used for recreational purposes at the reservoir and released into a distribution system to be constructed later for agricultural and municipal purposes. Except for Texas Hill Reservoir, El Dorado has not developed plans for the facilities needed to make actual use of the water to be appropriated for consumptive purposes.

7.0 Petition For Assignment Or Release Of Priority Of State Filings

7.1 State Filings

The legislature authorized the filing of applications to appropriate water which "...is or may be required in the development and completion of the whole or any part of a general or coordinated plan looking toward the development, utilization, or conservation of the water resources of the state". (Water Code Section 10500; Stats. 1927, ch. 286, p. 508; Stats. 1933, ch. 537, p. 1425.) Such applications are held by this Board, and any portion of an application may be assigned or released from priority when "...the release or assignment is for a purpose of development not in conflict with such general or coordinated plan or with water quality objectives established pursuant to law." (Water Code Section 10504.) Release or assignment of the priority of any state-held application is prohibited, however, when the county in which the water originates would be deprived of water necessary for development. (Water Code Section 10505.)

An assignment or partial assignment is a transfer of ownership of all or part of the right initiated by the state filing. The recipient of an assignment receives a right to develop water having the priority of the filing. A release from priority is a waiver of the priority of the state application in favor of an application filed by the recipient of the waiver. Table 2 shows the substance of the state held applications involved in this proceeding.

7.2 Applicant's Petitions

The applicant requests assignment of 150 cfs of the 700 cfs direct diversion filed for in application 5645 for consumptive use purposes. The request for the right to divert water directly for consumptive use could be satisfied from several state filings involved in this proceeding; however, El Dorado would prefer assignment of application 5645 because it has the earliest priority available. (See paragraph 9.5 for the discussions of this issue as it relates to the Bureau's Folsom Reservoir Unit of the Central Valley Project.) For consumptive use storage, El Dorado requests assignment of the 70,000 afa filed for in application 5645 (at the diversion rate to offstream storage set forth in application 26376), the release of priority of applications 7939 in favor of applications 18063, 18065, 18067 and 18069 and the assignment of 142,000 afa filed for in applications 18063, 18065, 18067 and 18069. Since the project requires an additional 13,368 afa, El Dorado requests that the additional storage be granted under its original application 26376. The applicant further requests that it be authorized to divert water to storage at a maximum rate of 800 cfs (the sum of the rates in applications 18063, 18065 and 18069).

For power purposes El Dorado requests:

> "...partial assignment of application 7938, and a release from priority for the balance of that application. If this cannot be accomplished, El Dorado requests complete assignment of applications 18062, 18064, 18068, and 18070; and approval of application 26375 for the balance of the storage and to make up any deficiencies in the diversion rates to offstream storage." (EID, O. Brief, 51, 13-19).

The applicant's project has been previously described in paragraph 6.0. This description is also reflected in the description of the substance of applications 26375 and 26376.

7.3 State Water Plan - American River Basin

On January 1, 1927, the first state water plan was submitted to the Legislature (Summary Report on the Water Resources of California and a Coordinated plan for the Development, Bulletin No. 12). The plan envisioned a reservoir on the American River near Folsom, California as part of a coordinated plan for the Sacramento Valley. The purposes of the coordinated plan included: reduction of flood flows, restraint of mining debris, supply of water for navigation, salt water control in the Delta, supply of water forirrigation, and power (pages 28 through 33). Application 5645 was filed on July 30, 1927. The application includes diversion to storage of 70,000 afa of water for irrigation and domestic use at a point above the existing Folsom Reservoir not far below the City of Coloma (see Table 2).

Another water plan was prepared for the 1931 Legislature. (Report to Legislature of 1931 on State Water Plan , Bulletin No. 25.) This plan envisioned reservoirs at or near the cities of Folsom, Coloma and Auburn (p.91). The plan proposed that these reservoir be used for the purposes of flood control, navigation and salinity control in the lower Delta, and to make water available for irrigation and domestic use during seasons and at locations where water was not available. Power was identified as an incidental benefit that could be used to pay for project costs (pp. 90-94). Applications 7938 and 7939 were filed on May 21, 1934. The applications propose a diversion to storage of 1,050,000 afa of water at a point above the existing Folsom Reservoir and below the City of Coloma for the purposes previously identified. The place of use of the water is 2,500,000 acres on the Sacramento and San Joaquin Valley floors (see Table 2).

The most recent water plan was transmitted to the Legislature in May 6, 1957 (Staff, 6, 0). This plan:

> "..... is a master plan for the control, conservation, protection, and distribution of the waters of California, to meet present and future needs for all beneficial uses and purposes in all areas of the State to the maximum feasible extent."

(Staff, 6, 37)

Great emphasis is placed on the tentative nature of the plan. For example:

> "The water development works described in this chapter and shown on the plates accompanying this bulletin demonstrate one means believed practicable of accomplishing the objectives of The California Water Plan in each area of the State, based on presently available

knowledge. As knowledge increases, as technology improves, as conditions change through the years, and as future patterns of development become more easily discernible, more suitable alternatives to any feature or features herein discussed are likely to be found. It is the intention that as the time approaches for construction in any given area further studies will be made to determine the most feasible solution in the light of conditions then obtaining. That solution may depart considerably from the Plan as now conceived." (Staff, 6, 37)

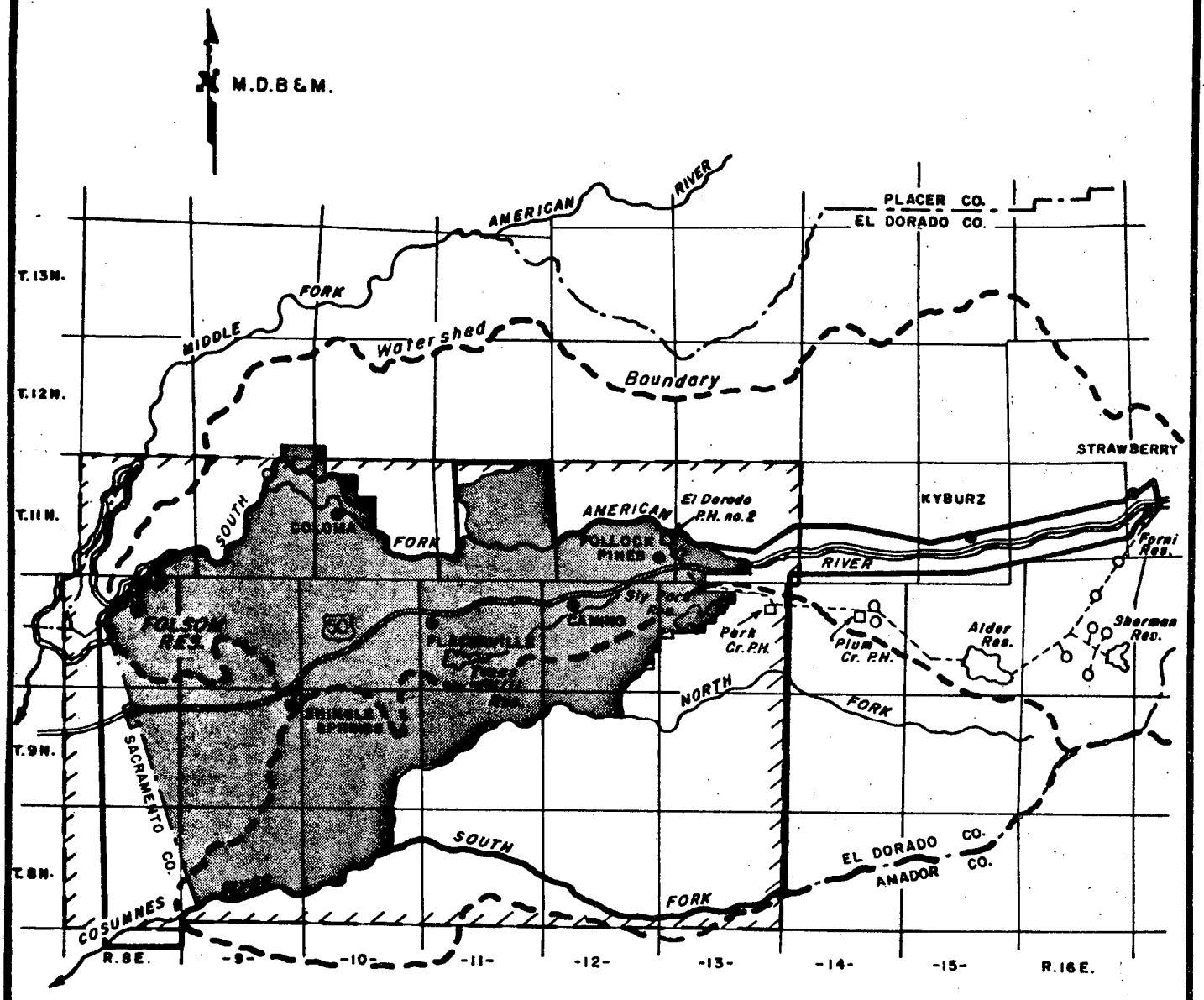
The objectives of the plan for the American River include development of land, water, power, fish, wildlife and recreation resources to the highest practicable extent (p. 113). The plan identifies numerous works that could be used to develop the water of the South Fork American River for beneficial uses (see pages 112-116, and sheet 8A of 26).

7.4 Project Not in Conflict With General or Coordinated Plan

Applications 18063 through 18070 were filed by the Department of Water Resources on March 27, 1958 (see Table 2). While these applications do not replicate the works described in the plan, they do have common features. These state filings propose use of water for domestic, irrigation, municipal, industrial, recreation, and power uses; these applications and application 5645 propose use of water for consumptive purposes within 864 square miles mostly situated in western El Dorado County (see map 2). As can be noted from the map, with one exception, the place of use identified by the applicant for its project lies within that 864 square mile area (EID, 1, 1,). The exception lies

to the northwest of the City of Coloma and includes portions of Sections 35 and 36, T12N, R9E and Section 31, T12N, R10E.

Applications 5645, 7938 and 7939 propose storage of water near Coloma. The legislature has subsequently prohibited the Board from issuing a permit for any application to appropriate water for a project that would flood any portion of the Gold Discovery Site Park at Coloma. (Water Code Section 10001.5.) Although earlier state water plans have been superseded by the 1957 plan, the state-held applications initiated in earlier years remain in effect. (Water Code Section 10007.)



LEGEND

PLACE OF USE AS DEFINED BY STATE FILINGS

E.I.D. SERVICE AREA

SOFAR PROJECT PLACE OF USE

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

APPLICATION
26375 et al
SOFAR PROJECT
PLACE OF USE

SCALE
0 3 6 12 mi

DATE: 9-8-82 | DRAWN: A.G. | CHECKED: D.B. | DWG 3256-A

The place for consumptive use for the SOFAR project is for all practical purposes identical with the state-held filings except application 7939 which would put water to beneficial use on the Sacramento and San Joaquin Valley floors. Application 7939 would divert the water of the South Fork of the American River at Coloma. The South Fork is situated wholly within El Dorado County. The county is entitled to any water covered by the application that is necessary for its development. (Water Code Section 10505.) The applicant proposes powerhouses at some locations that are different from those set forth in the state filings; however, such powerhouse are for the same use and within the same watershed as those encompassed by the state plan and state-held applications.

The proposed uses of project water include all those uses set forth in the state-held applications. However, some new categories of uses, not defined when the state-held applications were filed, are also included in the proposed uses. These uses include frost protection, heat control, and fish enhancement. Frost protection and heat control are special beneficial uses ancillary to agriculture production and may be viewed as an extension of traditional irrigation uses. Similarly, fish enhancement is a beneficial use that is a specialized outgrowth of recreational use. The definition of recreational use includes the use of stored or released water for fish. (23 Cal. Admin. Code 667.)

Applications to appropriate water may be amended to include additional uses provided (a) the proposed change is not an initiation of a new right and (b) no injury will occur to another lawful user of water. (23 Cal. Admin. Code 738.) The applicant's project has some points of diversion, places of storage and powerhouse locations that differ from those set forth in the state-held

applications. (The changes proposed for the points of diversion and storage will be discussed, infra). No injury to other legal users will occur as a result of the proposed additional uses. As has already been explained, these new uses were already encompassed in the broader meaning of irrigation and recreational beneficial uses. Most importantly, such uses must occur within the face amount of water already reserved for use by state-held applications. Clearly the changes in the purposes of use are not the initiation of a new right.

On the basis of the foregoing discussion we find that the project proposed by the applicant is not in conflict with a general or coordinated plan for the development of the South Fork American River.

7.5 Project Will Not Deprive County of Water

As previously discussed, the project will develop the water of the South Fork American River for use in the county in which the water originates. We find, accordingly, that the project will not deprive the county of water necessary for its development.

7.6 Conditions Required To Protect Water Quality

The Board may not release from priority or assign state-held applications that conflict with water quality objectives. (Water Code Section 10504.) The Board has established water quality objectives for the Delta and determined that water should not be exported from the Delta unless the water quality objectives are satisfied (Decision 1485). Large in-basin consumptive use water projects also have an effect on water quality in the Delta. Although

the effect of an individual project may not be measurable, such projects taken cumulatively will adversly affect water quality in the Delta. In addition, the California Regional Water Quality Control Board, Central Valley Region, has adopted waste discharge requirements (EID, 91,1) on project construction and operation. The Regional Board has determined that its waste discharge requirements will mitigate adverse water quality impacts (EID, 91,2).

We conclude, therefore, that any release from priorty or assignment of state-held applications should include conditions to protect Delta water quality objectives and insure compliance with waste discharge requirements (see conditions 3.7 and 3.8).

7.7 Amending Points of Diversion in State Filings

As previously discussed, the applicant's project has some points of diversion and storage that differ from those set forth in the state held applications. The points of diversion and places of storage may be changed provided (a) the proposed change does not initiate a new right and (b) no injury will occur to another lawful user of water (23 Cal. Admin. Code 738).

The changes proposed do not increase the quantity of water to be diverted as specified in the State filing and the sources remain the same. We conclude, therefore, that assignment of the state held applications will not initiate a new right. This holding is confirmed by Johnson Rancho County Water District v. State Water Resources Control Board, (1965) 235 Cal.App.2d 863, 45 Cal.Rptr. 585.

The proposed changes to the state-held applications will move points of diversion upstream on the South Fork of the American River. The applicant acknowledges that such changes could interfere with existing water rights and

suggests that assignment be made subject to a condition to protect existing water rights (EID, O. Brief, 56, 10-23).

Based on the foregoing discussion, we conclude that subject to conditions to protect water quality and lawful users of water, El Dorado's petition for assignment of state-held applications may be granted with appropriate changes in place of use, purposes of use, and points of diversion and storage.

8.0 Need For Project

The Water Code requires that an appropriation of water be for some useful or beneficial purpose. (Water Code Section 1240.) The applicant seeks to appropriate water for the generation of electricity and for consumptive uses.

8.1 Use of Water for Power

The applicant proposes to divert water through three powerhouses with a combined installed capacity of 110 megawatts (MW), to generate an annual average of 461 million kilowatt hours (kwh) of electrical energy. The power will not be used by El Dorado directly. Instead, El Dorado proposes to sell the power to electric utilities which will retail the power to its customers. The applicant seeks to have the utility pay all debt service and other annual project costs. The project cost includes the cost of a 25,000 acre-foot reservoir at Texas Hill for local consumptive uses. No agreement has been executed with any utility for the purchase of power. In the absence of a

contracting utility, the Board must determine whether the power that could be produced by the project is marketable.

8.1.1 Future Power Need

The California Energy Commission (CEC) has concluded that the average annual rate in the growth of energy demand will be 1.63 percent on a statewide basis and 1.93 percent in the PG&E planning area. The SOFAR project is within the PG&E planning area. The CEC also forecasts that by 1992 utilities must add 13,705 MW of additional generating capacity and 96,432 gigawatthours (GWh) of energy to meet projected statewide needs. Of that total, 7,524 MW of additional generating capacity and 28,478 GWh of energy is required to meet future needs within the PG&E planning area (EID, H, 5).

The CEC also determines what resources (means of producing power) should supply the additional energy and capacity requirements. (EID, H, 30). This is accomplished by reviewing utility resource plans which, by law, must be submitted to the CEC. The applicant revised the CEC demand and supply forecasts to take more recent information into consideration. With its revision EL Dorado concluded:

> "...if demand increases to the exact extent projected in Electricity Tomorrow , if all the conservation reasonable likely to occur does occur, and if all the projects shown in the resource plan are constructed, there would be 562 MW of excess capacity in 1992. This would be 562 MW out of a total demand of over 19,200 MW or approximately three percent. Statewide, there would be excess supply

(plus reserves) of 3050 MW out of a total demand between 43000 and 46000 MW, or between 6 and 7 percent." (EID, H, 38)

8.1.2 Project Relationship to Future Power Need

If constructed, the project would add 110 MW of generating capacity to the existing installed capacity of over 16,000 MW in northern California, an increase of 0.7 percent (Staff, 13, 327). Compared to a statewide installed generating capacity of 40,000 MW, the project would add 0.3 percent (Staff, 13, 310). The 461,500,000 kwh the project would generate in an average year would be an increase of 0.7 percent over the current 66 billion kwh in northern California and an increase of 0.3 percent over the 146 billion kwh generated statewide (Staff, 13, 312). In this scale, the project is rather small; however, depending on the utility which may buy the output of the project, the contribution could be quite significant.

The applicant's showing that the power produced would be marketable rests on four points:

a) Negotiations are under way with utilities interested in the output of the project.

b) The estimated cost of the power to be produced by the project is within the range of costs of other new projects being actively pursued by utilities in California and of continued production of electricity in existing oil and gas-fired steam boiler power plants.

c) Utilities may prefer the project to other alternatives because it uses an established low risk technology, its costs will remain

stable once the project is constructed, and its major environmental problems will have been resolved.

d) While utilities plan to build more facilities than are needed to meet future requirements for power, unexpected changes in demand or difficulties in bringing other projects into operation may make the project more attractive.

These points are discussed in the following sections.

8.1.3 Power Purchase Negotiations

The applicant has contacted eighteen organizations regarding the sale of power from the project (EID, XIX, 94, 22-95, 5). The utilities expressing the most interest are Sacramento Municipal Utility District (SMUD), PG&E and the Northern California Power Agency. Another four or five utilities may be somewhat interested (T, XIX, 138, 11-138, 21). It appears that the only meaningful negotiations regarding the sale of power have been with SMUD which is considering using as much as seventy-five percent of the power from the project (EID, XVIII, 115, 15-115, 16).

The project is potentially desirable for SMUD because: (a) The on-line date fits SMUD's needs; (b) the project provides needed firm peaking capacity; and (c) the project is convenient to existing SMUD transmission lines (EID, XVIII, 100, 6-100, 22). Notwithstanding the project's compatability with needs and facilities, SMUD has not entered into a contract for the power because the anticipated cost of power is too high due to high interest rates and the rate at which construction costs are escalating (SMUD, A, 16; SMUD, 5; see paragraph 10.0 for additional findings concerning project costs).

8.1.4 Power Cost Comparison

Many technologies, both conventional and innovative, may produce power at a lower cost then the SOFAR project depending on future events. However, power from the project is within the range of costs of other means of producing electricity. Adjustments in project features or changes in the assumptions used in the cost analysis, such as a change in future conditions, could render the project more attractive. The project is in the range of costs competitive with other means of producing power. Significantly, however, no utility has entered into an agreement to buy this power.

Numerous reasons were presented why a utility should find the project attractive. However, the applicant has not persuaded a utility to sign a preliminary sales agreement even though negotiations have been underway for at least a year. Based on the applicant's estimates of power costs the power from the project is only marginally marketable. Much of the reason for the high cost of power from the project is the effect of current high interest rates on project financing. Were interest rates to fall, the project would be more attractive to potential power purchasers (see also Section 10.0, "Project Economics").

8.1.5 Attractiveness Of Non-economic Factors

The applicant contended the project is superior to alternatives on a number of grounds. First, the applicant indicated the project uses a proven low-risk technology. However, the applicant did not offer evidence to support its contention regarding the reliability of available technologies. The value

of using proven technology has merit when this project is contrasted with such technologies as nuclear, biomass, wind, geothermal and solar; however, there are other reliable technologies, not disposed of by this contention, e.g., coal, oil and gas.

Second, the applicant contends the project is preferable if it has no major unresolved environmental problems. Coal, oil and gas technologies are associated with an array of environmental problems, but that is also true of the SOFAR project. It should also be noted that this contention gives no consideration to the relative environmental attractiveness of potential power savings that may result from investments in conservation.

Third, the applicant contends the project is attractive because the cost of power will be stable over time, relatively unaffected by inflation. This is true of projects with a high initial cost but with small annual costs.

8.1.6 Increased Attractiveness Due To Uncertainty

The applicant contends that unexpected changes in demand or difficulties experienced by utilities in putting other projects into operation may make the project more attractive to utilities. Resource plans are very dynamic and projects are added or dropped by utilities frequently. Demand projections change frequently. However, according to the applicant's calculations, utilities are already planning for substantial amount of supply in excess of demand (EID, 61 and 62).

8.1.7 Conclusions Regarding Power

We cannot conclude the power is clearly marketable and that water appropriated for power would be put to beneficial use. By the same token, we cannot conclude the power from the project is unmarketable. Within a wide range of uncertainties, the applicant has shown the cost of power from the project is comparable to other options. Furthermore, utilities will need to acquire thousands of megawatts of new generating resources in the next ten years. Utility resource plans have become so dynamic that, utilities disappointed by other projects, could quickly increase their interest in this project. Therefore, we conclude the applicant should be granted a water right permit with a condition that a power purchase contract be signed within a given time period (see condition 1.2).

8.2 Use of Water For Consumptive Purposes

The applicant provides water service to a large portion of El Dorado County including the City of Placerville (EID, 15, 1-15, 2; T, I, 39, 20-39, 24; see Map 2). The population currently served by El Dorado is about 47,000 (T, I, 38, 24-38, 26). About 42,000 acre-feet is available to El Dorado to supply water users. Included in this total is water obtained from Folsom Reservoir through contracts with the Bureau. Not all the water that could be used through those contracts is considered available because it is not feasible to distribute the water to the service area. (T, II, 177, 7-177, 26; EID, D, 13)

The amount of water diverted by El Dorado and consumed by its users is illustrated in Table 3 (EID, 15, Table 6-3).

TABLE 3

COMPARISON OF DIVERSION TO CONSUMPTION

FOR THE SOFAR SERVICE AREA

Year	Diversions Ac-Ft(1)	Consumption Ac-Ft(2)	Unaccounted for Water	
			Ac-Ft	Percent of Diversions
1975	36,400	22,019	14,383	40
1976	38,545	22,576	15,969	41
1977	20,974	12,237	8,737	42
1978	25,188	-	-	-
1979	34,853	18,689	16,164	46
1980	34,063	-	-	-

The "Unaccounted for Water" in Table 3 represents, by and large, the amount of water lost in El Dorado's water delivery system (ditch, pipelines, etc.). The losses are substantial. Pre-drought water use was approximately 1.00 afa per connection (EID, 19, 7).

The applicant has filed applications or seeks state-held applications to provide 30,000 afa for future consumptive uses. Several protestants contend El Dorado does not need this water. These protestants include the Friends of the River, Sharon Cameron and the Langleys (see protests and briefs). In general, the protestants assert that with appropriate efforts to conserve water and improvements to existing ditches and pipelines to minimize water losses, El Dorado could postpone or forego the need for water from the proposed project.

8.2.1 Future Consumptive Demand

The estimated future demand for water was based on assumptions regarding (a) future rates of water consumption; (b) population trends; and (c)

land use development patterns. The applicant has established a series of objectives for future water consumption. El Dorado's objective is to reduce consumption per connection from 1.00 afa to 0.62 afa (EID, 19, 7). Water consumption is a function of type of land use and elevation. Water consumption objectives prepared by El Dorado considered these variables (EID, 15, Table 6-4).

To estimate population trends El Dorado relied upon the E-150 population projection for El Dorado County prepared by the State of California, Department of Finance (EID, D, 18). Adjustments were made to the E-150 projection by El Dorado because the projection was for the entire county and not just El Dorado's service area. Local planning agencies were consulted regarding growth estimates for 20 county planning areas. (EID, 15, 3-7). The ranges in the rate of growth and projected populations for the planning areas showed significant variance (EID, 15, Tables 3-4 amd 3-5). Population figures which were actually used by El Dorado in estimating future county growth are not clear. However, it was testified that the figures used by El Dorado were eight percent higher than the E-150 projection for housing units (T, XX, 7, 17 7, 24). The E-150 projection may be characterized as a mid-range growth projection (Staff, 14, W-4-24).

Forecasts of the nature and location of development were based on the long range land use plan. Local planners made estimates of the rate at which development would occur (T, II, 179, 9-179, 15; EID, 15, 3-1; T, III, 8, 13-8, 21). Table 4 summarizes the quantity of water that must be diverted to meet consumptive needs resulting from the combined projections (EID, 15, Table 6-9).

TABLE 4

SUMMARY OF 1982 THROUGH ULTIMATE

ANNUAL DIVERSION REQUIREMENTS IN ACRE-FEET

Service Area	1982	1983	1984	1985	1986	2020	Ultimate
SOFAR							
Domestic	20,044	21,013	22,269	24,199	26,582	40,427	67,601
Irrigation	19,010	19,010	19,010	19,010	19,010	51,740	73,903
SOFAR Totals	39,504	40,023	41,279	43,209	45,592	92,167	141,504
Non-Contiguous							
Domestic	590	666	751	855	972	3,750	8,027
Golf Course	449	449	449	449	449	1,910	1,910
District Totals	40,093	41,138	42,479	44,513	47,013	97,827	151,441

Table 4 indicates El Dorado will need additonal water by 1984 (the year in which diversion requirements will exceed available supply, including that from Folsom Reservoir). The addition of the 30,000 afa sought by the applicant for consumptive purposes would satisfy estimated future demand until about 2005 (EID, 15, Fig. 6-2).

8.2.2 Water Conservation

Substantial water savings are possible through water conservation. The two components are system improvements to reduce unaccounted for losses and reduction of consumptive demand. The applicant plans to reduce average annual consumption per connection from 1.00 afa to 0.62 afa. It is planned that annual consumption per connection be reduced to: (a) 0.81 afa by 1984; (b) 0.65 afa by 1988 and (c) 0.62 by 2005 (EID, 19, 7-8). About 7,000 afa of water currently diverted for consumption can be saved if this goal is accomplished (EID, 19, 13; T, V, 31, 22-32, 3).

Approximately 46 percent of the water currently diverted is lost for consumptive use due to unaccounted for losses (see Table 3). About 40 percent of such losses occur in the older ditches, pipelines and reservoirs used for conveying water (EID, 19, 8). The applicant has the goal of reducing losses in storage and open ditches to 25 percent and losses in closed conveyance systems to 10 percent. It is planned that annual losses in open ditches be reduced to: (a) 32.5 percent by 1994 and (b) 25 percent by 2005. Annual losses in closed conveyance systems would be reduced to: (a) 25 percent by 1994 and (b) 10 percent by 2005 (EID, 19, 8). By reducing losses in open ditches to 25 percent, 1,800 afa of water could be saved. The reduction of losses in closed systems to 10 percent will save about 9,000 afa.

Taken together, improvements to ditches and pipelines could save about 10,800 afa of water currently diverted but lost. It is estimated, however, that about 3,000 afa of such savings are recoverable losses only if unauthorized takings are terminated (T, V, 53, 11-54, 19 and 20, 2-20, 18). If water savings through conservation (7,000 afa) is added to system improvement water savings (7,800 afa), then 14,800 afa of existing water losse could be saved for use by El Dorado.

Article 10, Section 2, of California's Constitution provides that "the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented." This section also provides that the right to water does not extend to water that is wasted. In Section 100 of the Water Code, the Legislature has declared that it is the policy of the State that the waste of water be prevented. This Board has been directed to take appropriate action to prevent the waste of

water (Water Code Section 275). That the Board has responsibility and authority to take appropriate action to prevent waste has been upheld in State of California v. Forni, (1976) 5 Cal.App.3d 243, 126 Cal.Rptr. 851. It was further held in this case that in order to assure that water is not wasted but is put to reasonable beneficial use, water users may be required to endure some inconvenience and expense.

Potential water savings from El Dorado's proposed conservation and system improvement program are approximately 14,800 afa. Water lost to other beneficial uses through an unreasonably high rate of consumption is not a reasonable use of water. Similarly, unreasonably high water losses from ditches and pipelines is not a reasonable method of use or method of diversion of water. Given the circumstances present in this matter, the Board must require the applicant to initiate a water conservation and system improvement program. The program should require the applicant to achieve specified conservation amounts over time in coordination with consumptive use of water pursuant to permits issued in accordance with this decision. Achieving only 80 percent of El Dorado's stated goals would save about 12,000 afa of water.

8.2.3 Additional Considerations

Estimates of the future demand for water were reduced by agricultural growth assumptions. No additional agriculture demand for water through 1986 was assumed (EID, 15, Table 6-9). Testimony indicates this asumption is unrealistic (T, XIX, 76, 5-77, 2; T, V, 34, 20-35, 8).

Similarly, estimates for the future supply of water were overstated. A portion of El Dorado's existing water supply is obtained from Sly Park

Reservoir. The safe yield for Sly Park Reservoir was estimated to be 23,000 afa by the applicant; however, during the 1976-77 drought the reservoir yielded only about 16,000 acre feet (EID, 15, 7-11 and 10-6; T, II, 177, 1-177, 3). It appears prudent, therefore, for El Dorado to estimate again the firm yield available.

8.2.4 Cost Of Saving Water

As stated previously, achieving only 80 percent of El Dorado's conservation goals would save about 12,000 afa of water. If that savings were spread over the period of time required to develop the full beneficial use of the 30,000 afa of water developed with the project, then an annual savings of 480 afa should be attained. Stated in other terms, for each 5,000 afa of "new" water developed over a 4-year period to meet the increased consumptive demand, 2,000 afa of savings should be attained.

The cost of saving water through the system improvement component of the applicant's conservation plan is approximately $46 million---#39 million to renovate the ditch system, $2.4 million to renovate portions of the reservoir system, and $4 million to repair high priority mains. The applicant estimates that the annual cost, on a "straight-line" basis, of saving 5,400 afa (50%) is more than $2.4 million (EID, 19, p. 14). If, however, the applicant's list of system improvements were prioritized on the basis of the least cost for the water saved, approximately 2,400 acre-feet of water could be saved in four years at a cost of $5.3 million (EID, 95). This would involve five ditch improvement projects and two main renovation projects. That magnitute of expenditure would represent about 74% of the 1982 EID General Operating Budget

water operation expenses if it were projected to remain constant over four years ($7.2 million).

Although El Dorado testified that limited funds are available for system improvements, additional revenues could be raised in several ways.Those were through a revision in the rate structure with a systemimprovement set aside allocated from the new revenues generated; capital connection fees for new hookups; creation of special assessment districts; and revenues from the SOFAR project proceeds (T, V, 26, 11-27, 13). Obviously,increased user fees is another source.

In addition to the system improvement savings, 7,000 afa could be saved through reduction of consumptive demand. Ninety percent of that goal, or approximately 6,300 afa, is to be attained by 1988 (EID, 19, 7-8). The program to accomplish this includes metering the remaining 1,000 connections in the EID service area, education of consumers with regard to conservation measures and water saving devices, revised rate structures, and new building ordinances requiring water saving devices in new construction (T, V, 16, 7-19, 4). No cost of implementing this component of the conservation program was given. Except for installation of meters, the cost should be minimal.

It should be noted, however, that EID is mandated to expend $19 million to improve water quality to meet State Health Department standards for drinking water. That expenditure would not conserve water but merely improve its quality. The possibility of obtaining bond funds for those improvements appears remote (T, XXV, 101, 20-102, 10). This indicates that some of the revenue needed for conservation measures would have to be diverted for water quality improvements.

However, it does not appear unreasonable to require the applicant to adequately finance conservation measures that would save 2,000 acre-feet of water every four years.

8.2.5 Conclusions Regarding Consumptive Need

El Dorado's projected demand for water could have been postponed by a water conservation and system improvement program such as currently planned.If water conservation and system improvements could be made rapidly, the need for additional water could be deferred only until about 1988 (T, V, 33, 10-33, 17). Even so, deferral of demand to 1988 is questionable if a reduction in safe yield from Sly Park Reservoir and realistic agricultural growth projections are considered. We conclude, therefore, that El Dorado has demonstrated a need for the consumptive use of water and that such water can be put to beneficial use. We further conclude that any approval of the project should include a condition to require the applicant to implement conservation and system improvement measures to conserve a total of 12,000 afa. A staged amount of 2,000 afa should be saved before each 5,000 afa of consumpitve water use is allowed (see condition 2.5).

9.0 Availability of Unappropriated Water

A prerequisite to the issuance of a permit to appropriate water is that unappropriated water be available to supply the applicant. (Water Code Section 1375.) Unappropriated water does not include water being used by others under a prior right (23 Cal. Admin. Code 653(a)) or the amounts of water

required in the public interest for recreation, the preservation and enhancement of fish and wildlife resources, and uses specified to be protected in any relevant water quality control plan. (Water Code Sections 1243, 1243.5.) Accordingly, three questions must be answered regarding the availability of water for El Dorado's applications to appropriate water:

1. Is water physically available in quantity and season in the South Fork American River to satisfy El Dorado's applications?
2. Is sufficient unappropriated water available in quantity and season to satisfy El Dorado's applications if one considers the water right claims asserted by PG&E, the Bureau and the Homes Association?
3. How much water is required in the public interest for recreation, fish and wildlife, and uses specified in relevant water quality control plans?

9.1 The Project

Applications and petitions for assignment of state applications have been filed proposing the appropriation of 600 cfs by direct diversion and 200,368 afa by storage of water for the generation of power and 150 cfs and 225,368 afa of water for consumptive uses via diversion of water from the South Fork American River and its tributaries. Total diversion proposed for consumptive use purposes is limited to 30,000 afa. Substance of these applications is shown in Table 2.

9.2 Seasonal Availability of Water

The applicant has requested a year round season of direct diversion of water for both power generation and consumptive use purposes and a season from September through July to collect water to storage (see Table 2). Prior decisions by this Board have found that unappropriated water is not available in the South Fork American River by direct diversion for consumptive use purposes and by storage for any purposes during the months of July through October (Decision 893 and 1045). We conclude, therefore, that any approval of El Dorado's applications must include a condition limiting the season of diversion to November through June except for direct diversion for power purposes that may remain as a year round diversion (see conditions 1.1 and 2.1).

9.3 Water Physically Available

The applicant presented a model demonstrating that on an average annual basis, minus the months of July through October, the quantity (afa) of water requested by El Dorado is present in the watershed. The model does not show, however, that the maximum rates requested for direct diversion are present on an average annual or monthly basis. It is possible, nevertheless, that the rate of diversion may be reached on a daily or weekly basis (EID, F, EID, 52).

Given the relationship between the requested rate of diversion and the water available on an average monthly basis, it is readily apparent that the full approval of El Dorado's project could mean that no additional water would be available for future appropriation from the South Fork American River above

Placerville. We find, accordingly, that any approval of El Dorado's applications should include a condition that will assure that some water will be available within the watershed for future development (see condition 1.7).

9.4 PG&E Protest

The protest of PG&E was made on the basis that the applications would injure vested rights. While PG&E identified thirteen vested right claims in its protest only eight could be affected by El Dorado's application. In general, water rights initiated earlier in time have priority over rights subsequently initiated. With one exception the eight claims have an earlier priority date than El Dorado's applications or the state-held applications for which assignment is sought by El Dorado. The applicant did not contest the claims asserted by PG&E.

PG&E currently uses the water it appropriates to generate power near Pollock Pines. The applicant's operational studies are based on the asumption that it would be able to use a substantial portion of the water currently diverted by PG&E (EID, 51). After using the water, El Dorado would return the water to PG&E at Pollock Pines for the generation of power (EID, C, 17). The operation of El Dorado's project in conjunction with PG&E's projectwill generate more power from a given quantity of water than will PG&E's project when operated alone.

Even though PG&E has prior rights to water necessary for El Dorado's project, it may be compelled to enter into an agreement to make the water available to El Dorado. Article 10, Section 2 of California's Constitution provides that it is state policy that water resources be put to the fullest

beneficial use of which they are capable and that the right to the use of water shall be limited to the amount required for the beneficial use to be served. Exercise of a claimed water right in a manner that would deny a subsequent appropriation the reasonable and beneficial use of water, where the claimant's beneficial use is not reduced by the subsequent appropriation, would result in waste of water. This Board has the responsibility and authority to prevent the waste of water. (Water Code Section 275.)

Fortunately, PG&E has indicated that its protest can be resolved if El Dorado will enter into an agreement whereby PG&E is assured that its rights will be kept whole (PG&E, Protest 04/10/81; PG&E, A, 4). El Dorado has indicated a willingness to enter into such an agreement (T, XXII, 69, 8-70, 26; T, II, 58, 17-60, 6). We conclude that any approval of El Dorado's applications should include a condition requiring El Dorado to reach an agreement with PG&E prior to commencing project construction (see condition 1.6).

9.5 Bureau of Reclamation Protest

The protest of the Bureau is based on the allegation that El Dorado's application, if approved, would impair the rights to appropriate water held by the Bureau at Folsom and Nimbus reservoirs near Folsom, California. (see Map 1; see Table 5, for Bureau water rights.) Such impairment, it is claimed, would be caused by reductions in the amount of water reaching the reservoirs due to system losses and consumptive uses occasioned by the proposed project. Further reduction of flow, it is alleged, could be caused by El Dorado's use of South Fork American River water in another watershed.

TABLE 5

SUBSTANCE OF USBR RIGHTS AT FOLSOM DAM

APPL. NO.	DATE FILED	SOURCE	DIVERSION AMOUNTS				DIVERSION POINT MDB&M			PURPOSE	PLACE OF USE
			DIRECT cfs	SEASON	STORAGE afa	SEASON	Sect.	TWP	Range		
5618	7/23/27	1) Echo Lake, Truckee River;			2,000	1/1-12/31	1	11N	17E	Power	Folsom Power Plant
		2) Medley Lake (Lake Aloha) So. Fork American River			5,900	1/1-12/31	30	12N	17E		
		3) Twin Lakes (Caples Lake) So. Fork American			25,000	1/1-12/31	18	10N	18E		
		4) Silver Lake, So. Fork American			10,000	1/1-12/31	32	10N	17E		
					42,900						
13370	10/1/49	American River at Folsom Reservoir	8,000	11/1-8/1	1,000,000	11/1-7/1	24	10N	7E	Irrigation, Salinity & Flood Control	Within 500,000 acres
13371	10/1/49	American River at Folsom Reservoir	700	11/1-8/1	300,000	11/1-7/1	24	10N	7E	Municipal, industrial, domestic & recreation	Vicinity of City of Sacramento.
13372	10/1/49	American River at Folsom Reservoir	8,000	1/1-12/31	1,000,000	11/1-7/1	24 16	10N 9N	7E 7E	Power	Folsom and Nimbus Powerhouse
14662	1/29/52	American River at Folsom Reservoir			300,000	11/1-7/1	24 16	10N 9N	7E 7E	Power	Folsom and Nimbus Powerhouse

The Bureau presented evidence that the project will reduce the inflow to Folsom Reservoir by 33,000 afa on an average annual basis (T, XXI, 17, 9-17, 19). The Bureau also indicated the project will have a greater effect on its Folsom rights if Auburn Reservoir is built because there will be fewer spills at Folsom Reservoir (Bureau, A, 3). Reduced inflow to Folsom, it is contended,

will interfere during the three and one-half year critical period with the Bureau's ability to deliver water during June 28 through October 31 when stored waters are reduced to minimum levels to satisfy contractual obligations (T, XXI, 18, 2-19, 16). Reduced inflow would also reduce Folsom revenues to the Bureau from the sale of water and from power generation at Folsom and Nimbus dams. Finally the Bureau contends that as a matter of law, the Board cannot diminish the inflow to Folsom Reservoir by any approval given to El Dorado to appropriate the water of the South Fork American River.

9.5.1 Priority of Bureau Rights

Licensed application 5618 for 42,900 afa is held by the Bureau and has a priority date of July 23, 1927. Licensed applications 13370, 13371 and 13372 have an October 1, 1949 priority date Licensed application 14662 has a January 29, 1952 priority date (see Table 5). On February 27, 1958, the Department of Water Resources released the priority of state-held applications 7936, 7937, 7938, and 7939 in favor of permitted applications 13370, 13371, 13372 and 14662 held by the Bureau for the Folsom Reservoir.

Licensed application 5618 is earlier in time and has priority over any application held by El Dorado or any state-held application that may be assigned to El Dorado. This priority does not involve enough water (42,900 afa) to affect the feasibility of the project.

State-held Application 5645 has the next earliest priority of the applications under consideration. El Dorado seeks assignment of that application. Appropriation of 70,000 afa under application 5645 could supply about one-third of the appropriation needed to meet the consumptive use

requirements of the project (see Table 2). Application 5645 has priority over any of the remaining Bureau water rights. That the project would divert some consumptive use water from the watershed of the South Fork American River and thereby diminish return flows to Folsom Reservoir is not a valid Bureau protest if application 5645 is assigned to El Dorado.

Permitted applications 13370, 13371, 13372 and 14662 held by the Bureau have a junior priority to state-held applications 7938 and 7939. Applications 7938 and 7939 authorize the diversion and storage of 1,050,000 afa for power and consumptive use purposes (see Tables 1 and 2); however on February 27, 1958 the Department of Water Resources released the priority of applications 7938 and 7939 in favor of application 13370, 13371, 13372 and 14662. The effect of the release is that a person who subsequently appropriates water under this state-held application will not be able to assert the priority of applications 7938 and 7939 against applications 13370, 13371, 13372 and 14462, with the following exceptions.

State-held applications may not be released from priority if the county in which the water originates would be deprived of water necessary for its development. (Water Code Section 10505.) The operative language in the 1958 release from priority provided, in part:

> "The Department of Water Resources... does hereby release from priority to the United States of America all prior rights existing under Applications Nos... 7938, and 7939...in favor of Applications Nos. 13370, 13371, 13372, and 14662 of the United States; SUBJECT, HOWEVER, TO the prior rights of any county in which the water sought to be appropriated originates to use such water as may be necessary for the development of the county..."

The Board implemented this provision by including the following term issued onapplications 13370, 13371, 13372 and 14462 for the Folsom unit of the Central Valley Project (CVP):

> "The amounts which may be diverted under rights acquired or to be acquired under this permit are and shall remain subject to reduction by future appropriation of water for reasonable, beneficial use within the watershed tributary to Folsom Reservoir." (Emphasis added)

Moreover, units of the CVP identified in the California Water Code are subject to the requirements of Water Code Sections 11460 and 11128, the watershed protection statutes. These statutes also have the effect of reserving water for local development. The applicant's project will supply water necessary for development of the county, watershed and area wherein the water originates.

9.5.2 Application of Area of Origin Law is Neither Retrospective Nor Unconstitutional

The Bureau contends that diminishing its permitted amounts is unconstitutional because Congress authorized the Folsom Project in 1949 and the aforementioned provisions of the Water Code providing protection to counties and watersheds of origin were not enacted until 1951 (Bureau, Statement, 11).

This contention is factually erroneous. The statutory antecedent of Water Code Section 10505 -- the present codification of the county of origin protection principle — was first enacted in 1931, as an amendment to the 1927 legislative act which created the state filing system. (Stats. 1981, ch. 720, p. 1513.) With minor amendments, which are not relevant to the application of the principle in this proceeding, that statute has remained in force to this day. The statute had been a part of California's water law for eighteen years

when the Folsom project was authorized by Congress. Since 1931 the Statute has provided that the priority of a state-held application shall not be released if the county in which the water originates would be deprived of water necessary for its development. The aforementioned reservation on the release from priority by the Department of Water Resources was based on Water Code Section 10505. Clearly, this reservation is not a retrospective application of a statute.

Moreover, the State Central Valley Project Act was approved by the Legislature and the Governor in 1933. (Stats, 1933, ch. 1042, p. 2643.) Through the referendum process, that Act was approved by vote of the people at a special election on December 19, 1933. The statutory antecedent of present Water Code Section 11460 was a provision of that Act (Stats. 1933, ch. 1042, sec. 11, pp. 2650-2651.) and with minor amendment has remained in force to this day. Water Code Section 11460 provides that in the construction and operation of the project, no watershed or area wherein water originates, or an immediately adjacent area which can conveniently be supplied with water therefrom, shall be deprived of the prior right to all water reasonably required to serve the beneficial needs of its inhabitants. In 1951 Water Code Section 11128 was enacted. It expressly applied the requirements of Water Code Section 11460 to units identified in the State Central Valley Project Actwhen constructed or operated by the Federal Government; Folsom Reservoir is such a unit. When enacting the American River Basin Development Act (P.L. 356, 81st Congress; 63 Stat. 853) in 1949 Congress provided, in part:

> "Nothing contained in this Act shall be construed by implication or otherwise as an allocation of water and in the studies for the purposes of developing plans for disposal of water as herein

authorized the Secretary of the Interior shall make recommendations for the use of water in accord with State water laws including but not limited to such laws giving priority to the counties and areas of origin for present and future needs." (Emphasis added)

The application of Water Code Sections 11128 and 11460, through conditions on Bureau appropriations, to protect counties and watershed of orgin is not a retrospective application of a statute to the Bureau's permits. Congress was fully aware of and recognized the necessity of Bureau compliance with these statutes.

We further find that over the long period during which it has been constructing or operating water projects in California, the Bureau has sought and obtained many appropriative permits under California's water right laws. In addition to its Folsom Project permits, the Bureau has obtained permits for other units of the Central Valley Project and for other projects. Virtually all of these permits contain conditions protecting the prior rights of the areas of the waters' origin. The Bureau has accepted these water right entitlements issued under the laws of this State. It has availed itself of the authority and benefits conferred by these entitlements in constructing or operating works for the appropriation of the waters of this State. The hour is very late for the Bureau's assertion that it need not respect the entitlement conditions protecting the interests of the areas in which the water originates. These conditions -- no less than the authority and benefits -- are part and parcel of the entitlements.

9.5.3 Application Of State Law Reducing Bureau Water Is Not Inconsistent With Congressional Directives

The Bureau also contends that any diminishment of the water the Bureau may appropriate under its permits is inconsistent with Congressional authorization of the project because Congress intended that a specific quantity of water would be available for consumptive use and power purposes once the project was constructed (Bureau, Statement, 7).

When enacting the Reclamation Act of 1902 (32 Stat. 390, as codified, 43 U.S.C. Secs. 372, 383) authorizing construction of water projects by the Department of the Interior, Congress provided that the Secretary should proceed in conformity with state water law. The United States Supreme Court has held that the United States government must comply with the form and substance of state water law that is not directly inconsistent with congressional directives. (California v. United States, (1978) 438 U.S. 645, 57 L.Ed.2d 1018, 98 S.Ct. 2985.) Finally the American River Basin Development Act of 1949 provided that the Secretary of the Interior should plan a project in accord with California water law including laws giving priority to the counties and areas of origin for present and future needs. In view of the specific mandate in the Act of 1949, we are unable to comprehend any basis for the Bureau's assertion that the reservation provisions of California law for the counties and areas of origin are in conflict with a Congressional directive authorizing the Folsom Unit of CVP. The Bureau's reading of the Act of 1949 contradicts Section 8 of the Reclamation Act of 1902, California v. United States, and the Act of 1949.

Accordingly, based on all of the evidence and legal materials before

us, we find that California area of origin laws, as applied in this decision, are not inconsistent with any Congressional directive.

9.5.4 Reduction of Bureau Water Does Not Violate Article X, Section 2, of the California Constitution

The Bureau contends that the Board's implementation of Water Code Sections 10505, 11128 and 11460, violates Article X, Section 2, of the California Constitution (Bureau, Statement, 10). This Constitutional provision mandates that the general welfare requires that the water resources of the state be put to beneficial use to the fullest extent of which they are capable and that the waste of water be prevented. The Bureau apparently alleges that approval of the applications would prevent water from being fully put to beneficial use. Beyond this sketchy contention the Bureau does not develop facts that might be related to it. California decisional law has repeatedly held that a determination of whether water is wasted involves consideration of all relevant facts and circumstances. (In re Waters of Long Valley Creek Stream System, (1979) 25 Cal.3d 339, 158 Cal.Rptr. 350, 599 P.2d 656.) We find that the uses proposed by applicant's project are beneficial and that they are non-wasteful, reasonable, and to be made under reasonable methods of use and diversion; the Bureau has submitted no substantial evidence which would suggest a contrary finding.

Water that would be used by the project is already used by PG&E to generate electric power. The applicant's project is based on the assumption that it will be able to use a substantial portion of the water currently diverted by PG&E (EID, 51). After using the water, El Dorado would return the

water to PG&E for the generation of power at Pollock Pines (EID, C, 17). The operation of El Dorado's project in conjunction with PG&E will generate more power from a given quantity of water than will PG&E's project when operated alone. We conclude, therefore, the project is in furtherance of the requirement that waters be put to beneficial use to the fullest extent of which they are capable and does not violate Article 10, Section 2.

9.5.5 If Reservation Is Void, The Release of Priority Is Also Void

The releases of priority of state-held applications 7938 and 7939 in favor of permitted applications 13370, 13371, 13372 and 14662 were subject to the reservation in favor of the county of origin. If this Board concurred with any of the Bureau's contentions intended to frustrate the county and watershed of origin reservations, we would be forced to conclude as a matter of law that the release of priority in favor of the Bureau must also be set aside. That is, as a matter of law, assignment could be made under California law only if the county of origin was protected. (Water Code Section 10505.)

9.6 Northern Sierra Summer Homes Association Protest

The project will reduce flows in the South Fork American River between the Forni diversion dam and PG&E's diversion dam near Kyburz. Several protestants were concerned that the reduced flows in this reach would not be sufficient to meet the consumptive needs of cabin owners. These protestants

include Arden Hall and the Homes Association. The Homes Association is an interested party representing 154 summer home owners using Forest Service land in the vicinity of the upper reaches of South Fork American River (Cabin, C, 1).

Hydrologic calculations by the applicant indicated that if a use of 200 gallons per day is assumed for 150 cabins, the total daily demand would be 30,000 gallons per day. This figure is less than 0.05 cfs and is about 0.2 percent of flows that must be bypassed in accord with mitigation flows for fisheries as proposed in the vicinity of the cabins (T, VIII, 85, 25-86, 21). Clearly, the project will bypass sufficient flows to satisfy the cabin owners consumptive need for water.

The Riverside Tract is one of several tracts represented by the Homes Association. Evidence presented during the hearing indicates that the thirteen parcels in the Riverside Tract may be riparian to the South Fork American River (T, XXIV, 45, 8-46, 19; Cabin 5). Additional evidence in the record indicates that a substantial number of the cabins are situated on sites that might be riparian to the river. No evidence was presented to indicate whether such sites physically join the river so that they might be considered as having riparian status. Even assuming that such cabin sites do join the river, whether the sites are entitled to riparian status under the law is doubtful. (McKinley Brothers v. McCauley, (1932) 215 Cal. 229, 9 P.2d 298; California Oregon Power Co. v. Beaver Portland Cement, (1935) 295 U.S. 142, 55 S.Ct. 725; Federal Power Commission v. Oregon, (1955) 349 U.S. 435, 75 S.Ct. 345.)

Given the doubtful nature of the cabin owners claimed riparian status and the fact that El Dorado proposes to bypass flows at its diversion dams in excess of the domestic needs of the cabin owners, the Homes Association claims

need not be considered when determining the availability of unappropriated water. Additional concerns of the cabin owners will be addressed under subsequent headings.

9.7 Conclusions Regarding Availability of Water

The Bureau testified that the project would reduce the inflow to Folsom Reservoir by 33,000 afa on an average annual basis. However, the Bureau did not present evidence that it had a prior legal right to such inflow (T, XXI, 34, 11-34, 20). Further, the Bureau does not contend there is no unappropriated water in the South Fork American River above Folsom Reservoir (T, XXI, 45, 3-45, 13). No testimony was introduced by either the applicant or the Bureau tending to show how much water the Bureau has actually put to use at Folsom Reservoir or how much water it has spilled while carrying out its flood control operations.

Analysis of stream gaging data indicates that on an average annual basis there is about 2,406,000 afa in the American River at the Fair Oaks gage. About 45 percent of this flow originates in the South Fork of the American River. After subtracting water rights that may be asserted by the Bureau, the City of Sacramento and users downstream of Folsom Reservoir, and considering the amounts of water required in the public interest for recreation and for fish and wildlife, it appears there is an amount in excess of 60,000 acre feet available for appropriation on an average annual basis from the South Fork American River.

In conclusion, it appears that there is sufficient unappropriated water for the project. Further if applications 5645, 7938 and 7939 are

assigned or released to El Dorado, the applicant will have sufficient water for the project although some small portion of the right requested would be junior to the Bureau rights. As a practical matter, the Bureau would be entitled to appropriate by direct diversion for power purposes all return flow from the proposed project.

The Bureau would not be entitled to store for any purpose, or divert directly for consumptive use purposes, return flows reaching Folsom Reservoir during August, September and October. However, these flows, which the Bureau must bypass through its reservoirs, would help meet requirements for flows downstream from Nimbus Dam and meet Delta water quality standards. Thus the Folsom Unit of the CVP would be substantially unimpaired.

The Bureau's own testimony indicated that inflow to Folsom Reservoir would be reduced by about 33,000 afa from the project's proposed operations, an amount that is insignificant when examining the 1,050,000 afa that can be assigned to El Dorado under Applications 7938 and 7939. Finally, the Bureau did not contend that it was legally entitled to all or part of the 33,000 afa reductions in inflow to Folsom Reservoir.

10.0 Project Economics

Large hydroelectric projects are capital intensive; that is, such projects require a large initial capital investment before benefits from the sale of power begin. Such projects become competitive with other alternatives for producing power over an extended period of time because operating expenses are lower. Operating costs tend to be lower and subject to lower cost escalation when compared to other conventional technologies because water is

usually a free renewable resourse. By way of contrast, oil, gas and coal are nonrenewable resources that are expected to become much more costly over time.

10.1 Project Costs

Project costs can be separated into two major categories--costs associated with construction and costs associated with financing. Construction costs include such items as engineering, planning, design and management, land aquisition for roads, dams, reservoir and pipes; supplies for construction; and generators. It is important to note that construction costs also include capitalized costs associated with mitigation measures for recreation and the environment (EID, 9).

10.1.1 Construction Costs

The applicant has estimated what final construction costs would be if construction were completed by 1986 and 1987 (EID, 11 and 12). These two dates assume that four years will be required for final design and construction (EID, 10 and 11 and 12). The 1986 completion date assumes that all required government approvals would be obtained on or about November 1981 (T, II, 105, 5 105, 25). Required approvals include those by this Board and the Federal Energy Regulatory Commission (FERC). Completion of construction by 1986 is now out of the question. Further, given the necessity of finding a power purchaser, negotiating a power contract, and obtaining approval from the FERC, completion of construction before 1987 appears highly optimistic.

Estimated final construction costs for project completion by 1986 and 1987 are $365 and $400 millions of dollars, respectively. The difference between the 1986 and 1987 estimated construction costs is inflation. The applicant has estimated that the escalation rate for projects of this type is around 10 percent (EID, C, 23; T, II, 93, 16-99,6) and that a change of one percent in the escalation rate would alter project costs by about 5 percent (T, II, 94, 20-95, 8). It was further estimated that the range of accuracy for the estimated cost of construction forecasts was in the 5-10 percent range (T, II, 97, 7-102, 5).

In 1978 dollars, capitalized mitigation costs amount to about five percent of project construction costs, or two percent of the total cost which includes finance charges. To some extent this figure understates the actual contribution El Dorado is making for project mitigation measures. For example El Dorado has entered into agreements with the Californa Department of Fish and Game, the California Department of Boating and Waterways, and the American River Recreation Association to release water to mitigate the project's impact on fisheries, rafting and kayaking. Although these mitigation measures are not capitalized they nevertheless represent a reduction in project power benefits. Similarly, capitalized mitigation costs do not include annual operation and maintenance costs associated with proposed mitigation measures.

10.1.2 Financing Costs

Financing costs are primarily interest charges associated with borrowing money through the sale of bonds to pay construction costs (EID, 57B). El Dorado evaluated the size of the bond issue required to fund

construction (EID, G, 1). The bond issue was sized at two different rates of interest - 12 percent and 13 percent (T, VIII, 100, 14- 100, 20). It was also assumed that the face value of the bonds would be discounted up to 5 percent at sale. This has the effect of raising the net borrowing rate by about 0.25 percent (EID, G, 2).

Using the $400 million estimated cost of construction for project completion by 1987, it was estimated that the size of the bond issue would have to be $591 million at 12 percent and $604 million at 13 percent (T, VIII, 146, 17-146, 26). The large increase in the size of the bond issue above actual construction costs is the result of borrowing (sale of bonds) to pay interest on borrowed principal during the three and one-half years the project is being constructed and before project revenues commence (EID, G, 3, and EID, G, 5).

Computation of the annual debt service payments for the project at the 12 and 13 percent interests levels shows that each one percent decline in the interest rate will lower annual debt service payments by approximately $7½ million (EID, 57; T, VIII, 146, 17-147, 4). Spread over the expected average output of the 461.5 million kwh, this cost reduction represents a drop of about 10 percent in the calculated cost of power from the project for every one percent drop in the interest rate on the bonds to finance the project. Consequently, the economic attractiveness of the project is very sensitive to the cost of financing.

Waiting for interest rates to decline, however, will create other complications. Every month the start of construction is delayed, the cost of constructing the project escalates due to inflation in the costs of material, labor, and equipment (EID, C, 25). The escalation in construction cost translates into a larger financing requirement. A decision to wait for interest rates to decline, and thus reduce financing costs, must be weighed

against the increase in construction costs due to escalation (T, XVIII, 167, 6-169, 15).

10.2 Size of Bond Issue

The applicant's electorate has approved a $560 million bond issue(T, VIII, 100, 21-100, 23). The maximum legal interest that may be paid on the bond issue is 12 percent (T, VIII, 101, 18-100, 24). The bond issue is not large enough to cover the cost of construction for the optimistic schedule calling for completion of construction by 1987 if interest rates are between 12 and 13 percent. Testimony showed that it is possible to supplement the $560 million bond issue by borrowing from other sources (T, VIII, 103-104, 11-104, 14); however, it was also testified that if more than $30 million were needed to augment the $560 million bond issue some other means of financing would probably be sought (T, VIII, 149, 12-149, 18). It appears that the means of financing the project is in doubt and that another vote by the electorate on a larger bond issue is not out of the question.

10.3 Conclusions Regarding Economics

To summarize, this project is capital intensive with the cost of project construction increasing due to inflation. More time will be needed to commence and complete construction of the project than indicated by El Dorado's planning. Similarly, the cost of project financing is interest sensitive. Escalation of project costs and interest rates make project financing changeable. The cost of financing project construction has already exceeded

the $560 million bond approval and use of the original bond authorization in this amount is in doubt. Finally, the total cost of financing the project's construction must be paid for by utility companies. No utility has entered into a contract to purchase the power.

Given these circumstances, we have reservations whether the project is economically feasible and we are concerned whether the project will be constructed within the foreseeable future. We conclude, therefore that any approval of this project must include conditions to assure that due diligence is exercised in constructing this project and putting water to beneficial use. Without such provisions this project could languish for years in search of a power purchaser while other feasible projects for using South Fork American River water are foreclosed (see conditions 1.2 through 1.5).

11.0 Due Diligence

A person issued a permit to appropriate water is required to construct the works necessary for appropriation and to put the water to beneficial use with due diligence (Water Code Sections 1396 and 1397.) An application may be denied if it does not appear that the applicant will be able to proceed within a resaonable time due to the absence of required financial resources. (23 Cal. Admin. Code 776.) Protestant Friends of the River contends that El Dorado'sapplications should be denied because there has been no showing that the project can be pursued with due diligence (O. Brief, 2-4).

This Board is required to adopt permit conditions that will assure that the works to appropriate and put water to beneficial use will be constructed with due diligence. (Water Code Section 1397.) At a minimum such conditions provide dates by which the permittee shall begin construction, complete construction and put water to full beneficial use.

As previously discussed El Dorado proposes to finance the project through the sale of power to an electric utility. However, El Dorado, thus far, has been unable to find a utility to purchase the power. It was also found that El Dorado had shown that the cost of power from the project, within a wide range of uncertainties, was comparable with other options under consideration by utilities for producing power. And finally, it was concluded that utilities would need to acquire thousands of megawatts of new generating resources in the next ten years.

In our consideration of the project economic feasibility (see Section 10.1), we found that the project was becoming more expensive with the passage of time and that El Dorado's 1987 date for completing construction was optimistic. Further, even though the cost of the project is sensitive to interest rates, the project costs have already exceeded available financing and the method of project financing is uncertain.

Although we have reservations concerning the projects feasibility, consideration must be given to the fact that the project would, if constructed, put unappropriated water to reasonable beneficial use and would increase the total quantity of power being generated by the more efficient use of water appropriated by PG&E. We are especially impressed by the significant agreements El Dorado has negotiated with protestants to mitigate project effects (see paragraph 12.0). In view of these factors, it is concluded that El Dorado should be given a reasonable period of time in which to commence construction of the project (see conditions 1.2 and 1.3).

11.1 Time Control Factors

Whether El Dorado can reach an agreement with buyers for the sale of power is in large measure dependent on interest rates. The record suggests that if interest rates on municipal bonds decreased to 10% or less and appeared to be stable or declining, then SMUD would find the project more attractive (SMUD, 5). Since this factor is outside the control of the applicant, a simple time limit for signing a sales agreement or for commencing construction is unrealistic. Witnesses have indicated the following steps (other than a water right permit) must be completed before construction can commence (T, VIII, 148, 18-149, 11; T, XIX, 95, 19-96, 7):

1. Sign agreement(s) with purchasers for power sale.
2. FERC license proceeding.
3. FERC license obtained.
4. Final engineering design and specification of project components.
5. Construction out for bids.
6. Construction bids received.
7. Winning bid chosen.
8. Bond amount established.
9. Approval of bond by District Securities Division, State Treasurer's Office
10. Bond offering printed and placed on market.
11. Bond bid received.
12. Winning bid chosen.

11.2 Time Span

Steps 2 and 3 require 90 to 180 days (T, XIX, 148, 18-149, 2). Steps 7 through 12 require 60-90 days (T, VII, 95, 19-96,7). Step 4 requires about 11 months and steps 5 and 6 approximately 3-4 months (EID, 11). Altogether then, steps 2 through 12 will require 19 to 24 months. The signing of a power sales agreement is the event which will set these other steps into motion. We conclude, therefore, that a minimum of 24 months be allowed after signing a power sales contract to start construction (see condition 1.3).

12.0 Agreements Mitigating Project Impacts

The Board is required to allow the appropriation of water under such conditions as will in its judgment best conserve the public interest. (Water Code Section 1253.) The Board may reject an application which does not best serve the public interest. (Water Code Section 1255.) Numerous requests for conditions were made to the Board during the hearing.

The applicant has entered into agreements with four protestants to mitigate project impacts and to resolve objections to the project. These protestants include: DFG, The California Department of Boating and Waterways (B&W), The American River Recreation Association (ARRA) and The El Dorado Wine Grape Growers (Association). In addition to the agreements with protestants, El Dorado has entered into anagreement with the United States Forest Service (USFS). Excluding the USFS, the applicant asks the Board to approve the proposed project subject to conditions agreed upon in the agreements. The protestants ask the Board to include the agreed upon conditions in any project

approval although they do not necessarily support approval of the project. In general terms these agreements deal with the subject of mitigation measures for fisheries and wildlife, recreation boating flows and the resevation of project water for agriculture.

12.1 Fishery and Wildlife Mitigation Agreements

The South Fork American River and its tributaries are a significant fishing resource (F&G, A, 10-23). The lands surrounding the project are valued for wildlife habitat including deer habitat (F&G, A, 26-34). Extensive public use is made of South Fork American River and its tributaries for fishing (Staff, 14, Vol 2, 5-12). Similarly the lands surroundings the project are used for camping and hunting (Staff, 15, 3-6). The project and its operation, including development within El Dorado's service area, will directly and indirectly affect fishery and wildlife resources (F&G, A, 4).

The applicant has entered into an agreement with DFG to mitigate the impacts of the project on fish and wildlife. The objective of the mitigation measures is to maintain the ability of the region to support fishery and wildlife communities at preproject levels (Staff, 14, 3-7; EID, 8 and 9; T, XXI, 57, 4-56, 6). The agreements include the following mitigation measures:

I. Fishery Mitigation

a) Sufficient water to sustain aquatic life in streams during construction;

b) The objective that the project would be operated to assure no net fishery loss;

c) Specification of minimum flows and maximum temperatures on various streams;

d) The management of fisheries in Alder and Texas Hill Reservoirs; and

e) Conduct of post project studies to determine if proposed fishery mitigation measures are effective and if not effective what additional measures might be implemented.

II Recreational Mitigation

a) Public fishing corridors along portions of Sly Park and North Fork Weber Creek;

b) Recreation management plan for Alder Reservoir; and

c) An attempt to control second home development on private timber lands within the Alder Resrvoir viewshed.

III Wildlife Mitigation

a) Clearing plan for Alder Reservoir site and an attempt to establish raptor nesting;

b) Acquisition (easements or fee) of 1500 acres of winter deer range and 480 acres of summer range for deer;

c) Acquisition, development and maintenance of 66 acres of wetlands and 10 acres of ponds,

d) Preproject study to determine the need for a fence to divert deer around Alder Reservoir to prevent drowning and, if necessary, construction of the fence.

The applicant has entered into an agreement with the USFS to mitigate the impacts of the project and for management of project facilites on federal lands. This agreement is allied with the DFG agreement and closely supports

it. The agreement includes the following measures:

a) Operation or funding of operation of recreation facilities in the vicinity of Forni and Sherman diversion dams and at the Alder Reservoir;

b) Minimum drawdown of Alder Reservoir:

c) Reduction of project visual impacts associated with pipelines, dams, siphons and borrow areas,

d) Erosion control, spoil storage and stabilization and revegetation of abandoned spoil

e) USFS effort to acquire by exchange certain private lands immediately adjoining Alder Reservoir

12.1.1 Fisheries Mitigation

The South Fork American River and its tributaries are an important fishery resource. Preproject studies were conducted to assess existing fishery resources and to estimate the impact of the project on fishery resources. Based on estimated impacts, mitigation measures were negotiated between El Dorado and DFG (F&G, C). The objective of the mitigation measures is to prevent any net fishery loss (F&G, C, II, 6). Postproject fishery studies and consideration of additional mitigation measures is part of the agreement (F&G, C, II, 6). The Board has been requested to include the agreement in any approval of the project (T, XI, 5, 10-5, 16).

While this is a sound approach to evaluate project effects and to develop mitigation measures, it will be successful only if the preproject evaluation of fishery studies is reasonably accurate. For reasons which we will subsequently discuss, we have not been able to conclude that the preproject fishery studies are adequate.

12.1.2 Study Evaluation

The preproject fishery evaluation was made in the summer of 1978 following the 1976-77 drought in Northern California (T, X, 116, 8). Evidence in the record indicates that the drought adversely affected trout populations, especially adult populations (USFS memo dated August 26, 1982). Estimates of fishery population were based, in part, on actual counts of adult sized fish in representative stream reaches (T, X, 18, 12-19, 16; T, X, 22, 21-23, 6). The applicant's own study assumes that low flows represent a limiting condition on trout populations (T, X, 13, 5-14, 9). These assumptions implicity recognize the adverse effect of the drought on fish populations. An additional problem with the preproject studies is the lack of objective data. Fish counts in some stream segments were estimated by merely having someone with experience look at the stream (T, X, 24, 3-24, 16). Another problem with the studies is that no consistent single method was used in evaluating preproject fish populations.

Finally, fish populations were assumed to be proportional to the cover available in the stream at a given level of flow. Cover includes rocks, logs, ledges, etc. that provide a resting and hiding place for trout. Evaluations of cover were made by walking along or in the stream. This is necessarily a subjective procedure. To keep the results of this method as consistent as possible, the same person should conduct such evaluations both before and after the project is constructed.

In this instance, more then one person conducted preproject evaluations and it is not known who would conduct postproject evaluations. Postproject releases of water for boating flows below Kyburz on the South Fork American River may affect trout populations (see paragraph 12.2). It does not

appear that preproject fishery studies evaluated the project's effect on trout population below Kyburz. For the foregoing reasons, we have not been able to conclude that the preproject fishery evaluations were adequate. We also find that if the mitigation goal of no net fishery loss is to be given a reasonable chance of success, then an additional preproject fishery evaluation should be conducted. Any permits issued by this Board should require the applicant to conduct a study to evaluate preproject fish populations in all waterways affected by the project. Such studies should evaluate the effects of water quantity changes for all trout life history stages and associated habitat needs for the different life stages (see condition 3.14).

12.1.3 Wildlife Habitat Mitigation

The proposed project will result in the loss of about 103 acres of riparian and wet meadow habitat (F&G, A, 4). Riparian and wet meadow habitat are among the least abundant types of California habitats. Such habitat comprised about 710 acres or 0.1 percent of El Dorado County in 1963. The applicant's witness indicated that any loss of this habitat would be significant to wildlife (T, IX, 25, 10-25, 22; Staff, 14, 5-88).

The applicant has agreed to mitigate such losses by attempting to create additional riparian and wet meadow habitat (F&G, C, S). Unfortunately, experience in the creation of wet meadow and riparian habitat is limited and the likelihood of success is unknown (T, XI, 63, 13-64, 15; T, IX, 137, 13-137, 19). The mitigation measures do not require a second effort at habitat creation if the first attempt is unsuccessful. Given the limited quantity and the importance of riparian and wet meadow habitat to wildlife, we conclude that

a second effort to create such habitat should be required and if that effort is not successful, the applicant should acquire existing similiar habitat for the benefit of wildlife (see condition 3.25).

12.1.4 Rare and Endangered Plant Mitigation

The applicant proposes to construct a large reservoir on North Fork Weber Creek near Texas Hill. Laynes Butterweed (Senecio layneae) is a plant identified as being in the area of the reservoir site (Staff, 14, W-6-138). A small portion of this population would be destroyed by the reservoir. This plant has been identified as "rare" by the California Department of Fish and Game, State Endangered Plant Program . As a state-designated rare plant, Laynes Butterweed is afforded legal protective status under the Native Plant Protection Act. Based upon requirements contained in that Act, we expect the applicant to mitigate the projects impact on Laynes Butterweed.

12.1.5 Alder Reservoir Mitigation

12.1.5.1 Deer Mitigation

The proposed large reservoir on Alder Creek would cover a migratory route for the Grizzly Flat Deer Herd (T, IX, 33, 13-33, 18). About 10 to 15 percent of the herd use this route (T, XII, 16, 8-16, 10). Based on past experience, it is anticipated that the deer would attempt to cross the reservoir. Crossing would occur at the time when the lake could be frozen and the water would be very cold (F&G, B, 1 and 2). Deer mortality is anticipated. This could have a significant impact on the popluation of the herd (T, IX, 34, 12-34, 13; T, XII, 19, 15-19, 17).

Mitigation measures have been agreed upon (F&G, C, V). The applicant has agreed with DFG to conduct a study to determine if the deer can be diverted around the lake and whether a fence will be necessary for that purpose. The reservoir would be constructed on federal lands managed by the USFS. The USFS has expressed reluctance to construction of a fence because in the USFS's view the fence could interfere with use of the reservoir for other purposes. However, the USFS has indicated construction of the fence would be permitted if necessary (USFS memo dated 08/05/82). Any permits issued by the Board should include these proposed mitigation measures (see condition 3.27).

12.1.5.2 Raptor Mitigation

In addition to other mitigation measures, El Dorado has agreed to attempt to establish raptors at Alder Reservoir (F&G, C, IV, C, 3; EID, 71, IX). While raptors include all birds of prey, the proposed mitigation is concerned with Bald Eagles or Osprey. To facilitate this effort, El Dorado has agreed to limit recreation uses at the reservoir to less intrusive activities (EID, 71, I; F&G, C, IV, 3).

The agreement with the USFS provides that El Dorado will operate and maintain recreation facilities at the reservoir (EID, 71, I). It is further provided that once every five years the need for additional recreation facilities will be evaluated (EID, 71, I). Too expansive recreation activities at the reservoir could interfere with establishing nesting raptors and with deer movement (T, XII, 20, 25-21, 11). For these reasons DFG has recommended that recreation use be limited for 10 years after filling the reservoir (T, XI, 187, 4-187, 6).

We conclude that recreation activity should be kept at a low level for

10 years. If raptor introduction is unsuccessful and if DFG determines that expansion will not adversely affect other wildlife including deer, recreation may be expanded in accordance with the USFS agreement. Any permits issued to the applicant for this project should prohibit expansion of recreation activities by the applicant for a period of 10 years (see condition 3.21).

12.1.5.3 Viewshed Mitigation

Within the viewshed of Alder Reservoir 2,200 acres of private land has been identified that could be subject to summer home development (T, XI, 151, 16-151, 23; T, XI, 184, 5-184, 8). The viewshed is what would be seen when standing at the reservoir. The private land is composed of large holdings by timber harvesting concerns. Commercial or residential development of these lands could adversely affect the raptor mitigation effort and the deer herd. The area is particularly important to deer because it serves as a holding area along the migration route (T, IX, 23, 21-23, 26; F&G, A, 7).

The private lands are currently zoned as a timber protection zone. The zoning and timber harvesting is not inconsistent with wildlife management (T, XI, 184, 14-184, 19). The applicant's agreement with DFG requires that the applicant request the County Board of Supervisors to continue the current zoning (F&G, C, III, 4). The applicant includes the El Dorado County Water Agency. The governing members of the agency are the same persons who serve as members of the county board of supervisors. This creates the strange circumstance that the applicant is composed, in part, of members of the County Board of Supervisors petitioning the Board of Supervisors not to change the zoning. It appears, nevertheless, that the members sitting as the board could change the zoning.

We find that a change in zoning could have an adverse effect on the deer herd and that any approval of this project should include conditions to assure preservation of habitat in the viewshed (see condition 3.23).

12.2 Recreation Boating Flows

Extensive use is made of the South Fork American River for non-motorized boating recreation. This type of boating recreation includes canoeing, kayaking and rafting (T, XV, 18, 12-18, 13). Diversion of water from the river and its tributaries by the project will reduce the flows available for non-motorized river boating (boating) by about 50 percent (Staff, 15, Table 3-7). The American River Recreation Assocition (ARRA) and the California Department of Boating and Waterways (B&W) filed protests based, in part, on the project's impact on boating recreation.

Testimony presented to the Board indicates that boating recreation is experiencing extraordinary growth (T, XV, 25, 20-26/2). The record also indicates that the water resources suitable for boating recreation (exclusive of flat water) are limited and being diminished by water development projects (T, XV, 28, 25-29, 12). Ten streams used for boating in California are so intensively used that the activity must be regulated (T, XV, 20, 15-21, 12). The South Fork of the American River is one of the regulated streams.

The South Fork American River, a major recreation waterway, is perhaps the most heavily used whitewater waterway in the western United States (T, XV, 21, 14-22, 1). The Chili Bar to Salmon Falls segment of the river is conservatively estimated to have 100,000 boating user days each year (T, XV, 21, 14-22, 6; ARRA, B, 6). The river also supports a number of commerical rafting businesses (ARRA, B, 6).

The applicant has entered into agreements with ARRA and B&W to mitigate the impact of the project on boating recreation. The agreements are substantially similiar. In general terms, the agreements provide that between April 15 to June 30, on Fridays, Saturdays, Sundays and holidays, from 10:30 am to 3:30 pm, El Dorado will operate its diversion works to bypass all flows when the bypass amount plus accretions, as measured at the Kyburz gage, is at least 1,056 cfs but not greater than 1,356 cfs (B&W, 23, 2-3; ARRA, 1, 4-5). The number of days that El Dorado is required to operate its diversion works in this manner varies with the runoff each water year as projected by the California Department of Water Resources. The number of days range from zero, when runoff is less than 50 percent of average, to 30 days, when runoff is greater than 149 percent of normal (ARRA, 1, 5-6; B&W, 23, 4). In a normal year El Dorado would be required to facilitate 20 days of boating recreation, a number which approximates Friday, Saturday, Sunday, and holiday usage in the April 15 to June 30 period during an average water year (ARRA, 5-6; B&W, 24, 4; T, XV, 89, 8-89, 15).

Further, both PG&E and SMUD have facilities for generating power on the South Fork American River and its tributaries. The applicant's agreement with ARRA and SMUD require El Dorado to operate the project in conjunction wih the PG&E and SMUD facilities in a manner that will assure a minimum daily inflow to Slab Creek Reservoir of 1100 acre feet on Fridays, Saturdays, Sundays and holidays between April 1 and September 30 (B&W, 23, 6-7, ARRA, 1, 7-8).

In addition, the cumulative effects of the operation of the project with existing and future projects for the development and use of water may have adverse affect on recreational boating flows. The applicant, ARRA and B&W request the Board to reserve jurisdiction over any permits issued to El Dorado for the purpose of coordinating the operations of the project with the operations of other projects to protect recreational boating flows (B&W, 23, 7).

The proposed recreation flows may have an adverse effect on fish in the Silver Fork and South Fork of the American River. The applicant, B&W and the DFG propose that studies be conducted following construction of the project to determine the effect of boating flows on fish and to determine how project operations could be modified to compensate for unmitigated fishery losses (B&W, 25, 5; F&G, 6, 5-6; T, XI, 40, 2-41, 10).

Finally a mitigating condition included in the ARRA agreement was the adoption of AB 1354. (Stats. 1982, ch. 122.) The passage of AB 1354 was a condition prerequisite to the ARRA and El Dorado agreement becoming effective (ARRA, B, 26). This bill places limitations on water development projects on the South Fork American River between Chili Bar Reservoir and Salmon Falls Bridge which could interfere with boating recreation. The provisions of this bill become effective only if the Board issues a water right permit with conditions acceptable to El Dorado. This decision should contain an order paragraph which integrates permit issuance with permit acceptability for the purposes of AB 1354.

The river represents a boating resource that requires protection. While the agreements preserve recreation boating flows on those days when most recreation occurs (Friday, Saturday, Sundays and holidays), boating recreation flows during weekdays will be sharply reduced by the project. We are favorably impressed with the applicant's agreements to mitigate the effects of the project on boating recreation on the South Fork American River. We conclude, accordingly, that any permits issued by this Board should include conditions that, at a minimum, will provide the agreed upon measures for protecting boating recreation and fisheries on the river (see conditions 3.30 to 3.35).

12.3 Reservation of Water For Agriculture

The applicant based the projected need for water, in part, on the forecasted demand from agriculture (EID, D, 10). In 1980, about one-half of El Dorado's water sales were for agricultural purposes (EID, D, 10). One of the objectives of the county land use plan is to preserve the rural character of the county (EID, B, 4 and 5). The feasibility of this objective is predicated upon water being available for agriculture development at a cost that will support commercial agriculture (EID, B, 6). Application 26376 includes irrigation as one of the consumptive use purposes.

The El Dorado Wine Grape Growers Association (Growers) filed a protest to the project on the grounds that persons engaged in agriculture had no assurances from the applicant that one-half of the water from the project would be used for agriculture. The allegations indicated that there was not a plan for the distribution of project water to agriculture at affordable water rates (Wine, protest). Similiar concerns were raised by protestants Environmental Planning and Information Council (EPIC) and Charlene Hensley.

The applicant has placed great emphasis on the importance of providing agriculture with water for the future. For instance, one of the objectives of the county land use plan is to preserve the rural character of the county (EID, B, 4 and 5). The feasibility of this objective is predicated upon water being available at a cost that would support commercial agriculture (EID, B6). It is indicated that the applicant hopes that the proposed project will provide water for future agricultural needs at a price that agriculture can afford (T, I, 85, 26-86, 5). The land use plan is, of course, subject to changing political and economic conditions that make all such plans tentative. Realistically, the Growers and other protestants must look to their local political institutions

to ultimately resolve question concerning future land use development and water allocation.

The applicant and the Growers jointly approved a policy statement to resolve the Growers protest (Wine, 3). The policy statement includes the following provisions:

a) The applicant will make all reasonable efforts to seek funding for the extension of water facilities for agriculture;

b) The applicant will develop facilities to serve agriculture from the net proceeds of the project; and

c) The applicant will allocate funds for the construction of facilities so that approximately one-half of the water from the project will be made available for agriculture.

The language of the policy statement lacks the specificity necessary to make it enforceable as a water right condition (T, XIV, 218, 13-218, 24; T, XIV, 222, 3-223, 26). Nevertheless, the applicant seeks approval of water right applications that would provide 30,000 afa for consumptive uses and one-half of that amount is requested based on El Dorado's forecasted demand for water from agriculture (EID, D, 10). About one-half of current water sales are to agricultural users. It appears, therefore, that the projected need for water is an extension of the current division of water between agricultural and nonagricultural uses.

Given the importance of supplying water for future agricultural growth to El Dorado, we conclude that any permits issued by this Board should recognize the allocation of water forcasted by El Dorado at the hearing. We note, however, that the applicant may in the future petition the Board to change the purpose of use from agriculture to some other use. (23 Cal. Admin. Code 738; see condition 2.1.)

13.0 Other Matters Raised By Protestants

Several additional matters deserve comment. These include the water quality, fire safety and compensation for loss of cabins.

13.1 Water Quality

The project will reduce flows in the South Fork American River between the Forni diversion dam and PG&E's diversion dam near Kyburz. Several protestants have expressed concern that the reduced flows in this reach could result in poor water quality for consumptive use purposes. These protestants included Arden Hall. It was speculated that the poorer water quality could occur due to lower flows and increased growth of aquatic plants such as algae (T, XXII, 118, 17-118, 31). No technically competent testimony was introduced in regard to this issue.

As previously discussed, El Dorado's agreement with DFG requires minimum bypasses of water at Forni to protect fish populations and this water will be sufficient for the cabin owners. Based on the Board's experience in such matters, increased algae growth in the river is not out of the question; however, there is no evidence that any such growth would be at a significant level. Finally, we find that changing these applications or requiring a greater bypass of water merely to prevent a cabin owner from having to provide some measure of water filtration and treatment of water withdrawn from the river is not in the public interest. We conclude that no conditions should now be included in the water right permits by reason of this concern. However, this concern is related to public health and a period of actual operation will be needed to determine whether the project will cause any

significant deleterious water quality impacts on the cabin owners. Therefore, jurisdiction should be reserved to add a condition including the requirement of a physical solution to mitigate such impacts should they occur (see condition 3.28).

13.2 Fire Protection

The Homes Association represent cabin owners along the upper reach of the South Fork American River between Forni and Kyburz. Several major fires have occured in the vicinity of the cabins since 1950 (Cabin, C, 7, 20-7, 24). The American River Canyon Fire Protection District has been organized to fight structural fires (cabin, etc) in the vicinity. Larger forest fires are fought with equipment from the state and federal government. The District is manned by volunteer firemen (Cabin, C, 2). When fighting fires, equipment is taken to the river and water is pumped from the river. The concern has been expressed that there will be insufficient flows in the river to service pumping equipment used to fight fires.

The capacity of the enumerated pumping equipment used for structural fires is about 3,150 gallons per minute (Cabin, C, 3). Post project minimum flows below Forni approach 11,000 gallons per minute. Post project flows will provide an adequate supply of water to fight structural fires. The applicant has recognized, however, that water may be needed to fight forest fires and has volunteered to release water for the purpose of fighting such fires (EID, opening brief, 48, 24-49). We conclude that any permits issued should require El Dorado to arrange communications with the federal and state government offices responsible for fighting forest fires and to provide a method of

quickly releasing stored water and bypassing flows at Forni and on Silver Fork to fight forest fires (see condition 3.33).

13.3 Compensation For Loss Of Cabins

The project would construct the Forni diversion dam in the vicinity of Sciots Camp. About 11 to 13 cabins would be affected by water impounded or backed up by the dam during high flow conditions. The American River Canyon Association represents cabin owners using Federal land at Sciots Camp. The Board has been requested to adopt conditions that will assure that the cabin owners are fully compensated for the loss of their cabins by reason of flooding or damage by high water (ARCA, opening brief,).

Public agencies, such as the applicant, are required by law to compensate persons for any interests in property taken or damaged for public use. Compensation is arrived at by negotiation, arbitration, or judicial proceedings. California law sets forth how public agencies must proceed in such matters. The Board has no power to involve itself in such matters. We find that no condition should be included in water right permits by reason of this protested issue.

14.0 Cultural Resources

Cultural resources are properties which contain scientific, historic, prehistoric and archaeological data or which have significant value to Native Americans. The applicant conducted cultural resource studies for the project. The studies were designed to: (1) locate and identify all cultural resources in

the project area; and (2) collect and analyze the necessary data to determine whether identified resources are eligible for inclusion in the National Register of Historic Places.

Seventy nine cultural resources were identified by the investigations. Forty-three are of historic origin attributable to European, American, or Asian occupation and 36 are of Native American origin. Only 18 of these 79 sites are located on federal land. The remaining 61 sites are on private property, with the majority (43 sites) located at Texas Hill Reservoir (Staff, 22, 23, 24 and 25). Additional data is needed to evaluate fully historic sites (T,XXV, 90, 3-90, 20).

The reports of investigation will be reviewed by FERC, USFS, the State Historic Preservation Office, California Department of Parks and Recreation, and the Interagency Archaeological Services (National Park Service) under procedures established to comply with federal laws. The USFS is the lead agency for all of the cultural resource investigations, including those involving lands not within the national forest (T, XXV, 124, 1-124, 23). The USFS has a tentative agreement with El Dorado for compiling the additional data needed to fully evaluate historic sites

After compilation, the data will be submitted by the USFS to the Keeper of the National Register (T, XXV, 118, 14-118, 25). If the Keeper of the National Register determines that cultural resources require protection, a memorandum of agreement will be made between El Dorado, the USFS and the State Historic Preservation Office. This memorandum will: (1) define all of the potential impacts, (2) determine which impacts can be mitigated, and (3) formulate a mitigation plan (T, XXV, 125, 21-126, 26 & 128, 14-128, 21). The mitigation measures that will be outlined in the cultural resource plan will be

implemented prior to project construction.

Based on our review of the evidence concerning cultural resources we conclude that any approval of the project should include a condition to assure protection of cultural resources (see condition 3.29).

15.0 Compliance With The California Environmental Quality Act

Two separate environmental documents were prepared for the project. An Environmental Impact Report (EIR) was prepared by El Dorado and an Environmental Impact Statement (EIS) was prepared by the Federal Energy Regulatory Commission. The applicant circulated the EIR through the State Clearinghouse in accordance with California Environmental Quality Act (CEQA) requirements, and filed a "Notice of Determination" for the Final EIR with the State Secretary for Resources on February 3, 1981.

The Act provides that when an action is commenced which alleges that an EIR does not comply with the provisions of CEQA, responsible agencies (this Board) shall assume that the EIR complies with the provisions of CEQA. (Public Resources Code Section 21167.3.) About March 3, 1981, such an action was filed in the Superior Court in El Dorado County (American River Recreation Association, Inc. v. El Dorado County Water Agency, et al., No. 37633). For the purpose of this proceeding the Board will assume the EIR complies with the provisions of CEQA. CEQA further provides that when an action alleges an EIR does not comply with the provisions of Act, that responsible agenies shall approve or disapprove the project in accord with the law. An approval allows an applicant to proceed at his own risk pending determination of the action. (Public Resources Code Section 21167.3(b).)

The applicant has made an agreement with ARRA to resolve the action. Resolution of the action is predicated in part, upon this Board issuing a permit to appropriate water that includes conditions jointly sought by the applicant and ARRA (T, XVI, 118-8, 119-20). Approval of this permit includes such conditions as will in our judgement, best conserve the public interest. (Water Code Section 1253.) Whether these conditions will resolve the CEQA action is a matter that must be determined by the litigants.

The Final Environmental Impact Report circulated through the State Clearinghouse identified significant impacts on the following resources resulting from the project.

1- Fishery resources on waterways affected by the project.

2- 103 acres of critical riparian meadow habitat

3- 2,000 acres of conifer, pine-oak, oak-brush and oak-grass wildlife habitat.

4- Blockage of a migration route and holding areas of a portion of the Grizzly Flat deer herd.

5- Rare and Endangered plants

6- Cultural Resources

The Board has considered these impacts and has adopted conditions in the decision to mitigate the impacts. Consideration of the Notice of Determination and Final Environmental Impact Report and adoption of mitigation measures will satisfy the Board's responsibilities under the provision of the California Environmental Quality Act.

16.0 Conclusions

From the foregoing findings, the Board makes the following conclusions:

A. Application 7938 held in the name of the State Water Resources Control Board for power purposes should be partially assigned and a permit issued to the applicant subject to the special conditions in the order following.

B. Application 7939 held in the name of the State Water Resources Control Board should be released from priority in favor of applications 18063, 18065, 18067, 18069 and 26376.

C. Applications 5645 (insofar as it pertains to the South Fork American River), 18063, 18065, 18067 and 18069 held in the name of the State Water Resources Control Board for consumptive use purposes should be partially assigned and a permit issued to the applicant subject to the special conditions in the order following.

D. Application 26376 should be approved insofar as is required to satisfy the balance of the amounts diverted to storage and a permit issued subject to the special conditions in the order following.

E. All permits issued should be subject to the common conditions in the order following.

F. Application 26375 should be cancelled and the petitions for assignment of applications 18064, 18066, 18068, and 18070, all held in the name of the State Water Resources Control Board, should be denied.

ORDER

IT IS HEREBY ORDERED that application 7938 held in the name of the State Water Resources Control Board be partially assigned and a permit issued to the applicant subject to vested rights. The permit shall contain standard permit terms 5i, 6, 10, 11, 12 and 13 (this Board maintains a list of standard permit terms, copies of which may be obtained upon request) and the common terms contained herein in addition to the following special conditions:

1.1 The water appropriated for power and recreational purposes shall be limited to the quantity which can be beneficially used and shall not exceed 600 cubic feet per second by direct diversion to be diverted from January 1 through December 31 of each year and 200,368 acre-feet per annum by storage to be collected from November 1 of each year through June 30 of the succeeding year as follows:

(a) By direct diversion:

(1) 600 cubic feet per second from South Fork American River

(2) 600 cubic feet per second from Silver Fork American River

(3) 30 cubic feet per second from Forni Creek

(4) 30 cubic feet per second from Station Creek

(5) 30 cubic feet per second from Long Canyon Creek

(6) 60 cubic feet per second from Mule Creek

(7) 40 cubic feet per second from Martin Creek

(8) 40 cubic feet per second from Bark Shanty Creek

(9) 20 cubic feet per second from Girard Creek

(10) 600 cubic feet per second from Alder Creek

(11) 70 cubic feet per second from Plum Creek

(12) 20 cubic feet per second from an unnamed stream tributary to Plum Creek

(b) By storage:

(1) 48 acre-feet per annum in Forni Reservoir on the South Fork American River

(2) 320 acre-feet per annum in Sherman Reservoir on the Silver Fork American River

(3) 200,000 acre-feet per annum in Alder Reservoir on Alder Creek

(c) The maximum rate of diversion to offstream storage shall not exceed the following:

(1) 600 cubic feet per second from South Fork American River

(2) 700 cubic feet per second from Silver Fork American River

(3) 30 cubic feet per second from Forni Creek

(4) 30 cubic feet per second from Station Creek

(5) 30 cubic feet per second from Long Canyon Creek

(6) 60 cubic feet per second from Mule Creek

(7) 40 cubic feet per second from Martin Creek

(8) 40 cubic feet per second from Bark Shanty Creek

(9) 20 cubic feet per second from Girard Creek

The combined maximum rate of diversion to offstream storage from all sources shall not exceed 1,550 cubic feet per second.

(d) The total quantity of water diverted to storage under permits issued pursuant to application 7938 and applications 5645, 18063, 18065, 18067, 18069 and 26376 shall not exceed 225,368 acre-feet per water year of October 1 through September 30.

1.2 The permittee shall secure a power purchaser or purchasers through a contract signed by both parties within 18 months of the date of this permit. If such a contract is not signed within the 18-month period, this permit is revoked unless the Board finds good cause for a time extension.

1.3 Construction work shall begin within thirty-six months of securing a power purchaser. If construction does not begin within this period, this permit is revoked unless the Board finds good cause for a time extension. Once begun, if construction is not prosecuted with reasonable diligence this permit may be revoked.

1.4 Construction work shall be completed by December 1 of the fourth year following the year in which construction begins.

1.5 Complete application of the water to the authorized use shall be made by December 1 of the seventh year following the year in which construction work is completed.

1.6 Before construction work is begun, permittee shall execute an operating agreement with the Pacific Gas and Electric Company. That agreement shall provide that permittee's project will be operated in such a manner that all affected Pacific Gas and Electric Company vested water rights will be fully protected and can be exercised and beneficially used in the joint operation of facilities of Pacific Gas

and Electric Company and permittee. Any such agreement shall include a provision that Pacific Gas and Electric Company will agree to bypass at the El Dorado Canal diversion point any mitigation flows to which Pacific Gas and Electric Company has no water right that permittee may be required to release to implement the no net fishing loss objective.

1.7 The amounts which may be diverted under this permit shall be subject to reduction by future upstream appropriation of water for reasonable and beneficial consumptive use purposes within the South Fork American River watershed up to a maximum total depletion of 3,000 acre-feet per annum. The maximum total depletion limit of 3,000 acre-feet per annum shall remain in effect until project capital costs are fully amortized, and may be increased thereafter by the Board after notice to affected parties and opportunity for hearing.

1.8 Water diverted under this permit is for nonconsumptive uses and is to be released to the South Fork American River within the NE¼ of the NE¼ of Section 22, Township 11 North, Range 12 East, Mount Diablo Base and Meridan.

1.9 No construction shall begin and no water shall be used under this permit until all necessary federal, state and local approvals have been obtained, including compliance with any applicable Federal Energy Regulatory Commission requirements.

1.10 No diversion of water shall be made under this permit until permittee demonstrates to the satisfaction of the Board that from the date of this permit permittee has reduced its annual loss of water by 2,000 acre-feet. The annual loss may be reduced through system improvements, reduction in demand, or both. The 2,000 acre-feet

savings is the same as that required to be saved in the permits issued pursuant to applications 5645, 18063, 18065, 18067, 18069 and 26376.

IT IS FURTHER ORDERED that applications 5645, 18063, 18065, 18067, and 18069 held in the name of the State Water Resources Control Board be partially assigned and application 26376 be approved in part as follows, and permits, subject to vested rights be issued to the applicant for domestic, municipal, industrial, irrigation, frost protection, heat control, recreational and fish enhancement purposes. The permits shall contain standard permit terms 5i, 6, 10, 11, 12, 13 and the common terms contained herein in addition to the following special conditions:

2.1 The water appropriated shall be limited to the quantity which can be beneficially used in the amounts indicated for each of the following applications:

(a) Under the permit issued pursuant to the partial assignment of application 5645, the water appropriated shall not exceed 150 cubic feet per second by direct diversion and 70,000 acre-feet per annum by storage from November 1 of each year through June 30 of succeeding year as follows:

By direct diversion:

(1) 150 cubic feet per second from South Fork American River

(2) 150 cubic feet per second from Silver Fork American River

(3) 30 cubic feet per second from Forni Creek

(4) 30 cubic feet per second from Station Creek

(5) 30 cubic feet per second from Long Canyon Creek

(6) 60 cubic feet per second from Mule Creek

(7) 40 cubic feet per second from Martin Creek

(8) 40 cubic feet per second from Bark Shanty Creek

(9) 20 cubic feet per second from Girard Creek

(10) 150 cubic feet per second from Alder Creek

(11) 70 cubic feet per second from Plum Creek

(12) 20 cubic feet per second from an unnamed stream tributary to Plum Creek.

By Storage:

(1) 48 acre-feet per annum in Forni Reservoir on the South Fork American River.

(2) 44,952 acre-feet per annum in Alder Reservoir on Alder Creek

(3) 25,000 acre-feet per annum in Texas Hill Reservoir on Weber Creek

(b) Under the permit issued pursuant to the partial assignment of application 18063, the water appropriated shall not exceed a total of 70,000 acre-feet per annum to be collected from November 1 of each year through June 30 of the succeeding year as follows:

(1) 69,680 acre-feet per annum in Alder Reservoir on Alder Creek

(2) 320 acre-feet per annum in Sherman Reservoir on the Silver Fork American River

(c) Under the permit issued pursuant to the partial assignment of application 18065, the water appropriated shall not exceed 30,000 acre-feet per annum to be collected from November 1 of each year through June 30 of the succeeding year in Alder Reservoir on Alder Creek.

(d) Under the permit issued pursuant to the partial assignment of

application 18067, the water appropriated shall not exceed 31,000 acre-feet per annum to be collected from November 1 of each year through June 30 of the succeeding year in Alder Reservoir on Alder Creek.

(e) Under the permit issued pursuant to the partial assignment of application 18069, the water appropriated shall not exceed 11,000 acre-feet per annum to be collected from November 1 of each year through June 30 of the succeeding year in Alder Reservoir on Alder Creek.

(f) Under the permit issued pursuant to the approval in part of application 26376, the water appropriated shall not exceed 13,368 acre-feet per annum to be collected from November 1 of each year through June 30 of the succeeding year in Alder Reservoir on Alder Creek.

(g) The maximum rate of diversion to offstream storage in all permits shall not exceed the following:

(1) 600 cubic feet per second from South Fork American River

(2) 700 cubic feet per second from Silver Fork American River

(3) 30 cubic feet per second from Forni Creek

(4) 30 cubic feet per second from Station Creek

(5) 30 cubic feet per second from Long Canyon Creek

(6) 60 cubic feet per second from Mule Creek

(7) 40 cubic feet per second from Martin Creek

(8) 40 cubic feet per second from Bark Shanty Creek

(9) 20 cubic feet per second from Girard Creek

The combined maximum rate of diversion to offstream storage from all sources shall not exceed 1,550 cubic feet per second.

(h) The total quantity of water diverted to storage in Alder Reservoir under permits issued pursuant to applications 5645, 18063, 18065, 18067, 18069 and 26376 and application 7938 shall not exceed 200,000 acre-feet per water year of October 1 through September 30.

(i) The total quantity of water diverted to storage under permits issued pursuant to applications 5645, 18063, 18065, 18067, 18069 and 26376 and application 7938 shall not exceed 225,368 acre-feet per water year of October 1 through September 30.

(j) The maximum amount of water used for consumptive purposes shall not exceed 15,000 acre-feet per annum for agricultural purposes and 15,000 acre-feet per annum for other consumptive purposes.

2.2 Construction work shall begin within fifty-four months of the date of this permit and shall thereafter be prosecuted with reasonable diligence, and if not so begun and prosecuted, this permit may be revoked.

2.3 Construction work shall be completed by December 1 of the fourth year following the year in which construction begins.

2.4 Complete application of the water to be authorized use shall be made by December 1 of the twenty-fifth year following the year in which construction work is completed.

2.5 Prior to any consumptive use under this permit, permittee shall demonstrate to the satisfaction of the Board that from the date of this permit permittee has reduced its annual loss of water by 2,000

acre-feet. The annual loss may be reduced through system improvements, reduction in consumptive demand, or both. No water may be used for consumptive purposes until the foregoing has been done. After using 5,000 acre-feet per annum of water developed for consumptive use under this permit permittee shall again demonstrate to the satisfaction of the Board that an additional 2,000 acre-feet per annum has been conserved through conservation efforts before any part of the next 5,000 acre-feet per annum is consumptively used. Permittee shall continue conservation efforts in a like manner for each subsequent 5,000 acre-feet per annum. Water conserved in excess of 2,000 acre-feet per annum may be applied as a credit when computing the amount of water conserved in the second and subsequent phases of development. That credit may also include water conserved prior to the date of this permit through reduction of consumptive demand (based on a starting rate of 1.0 acre-foot per annum per non-agricultural connection). Prior to licensing the permit, permittee shall demonstrate to the satisfaction of the Board that a total of 12,000 acre-feet or more of water has been conserved through conservation efforts. The initial 2,000 acre-feet savings is the same as that required to be saved in the permit issued pursuant to application 7938.

2.6 The State Water Resources Control Board reserves jurisdiction over this permit to impose any appropriate conditions at some future date to conform the permit to Board policy on use of water for frost protection. Action by the Board will be taken only after notice to interested parties and opportunity for hearing.

IT IS FURTHER ORDERED that all permits issued permittee contain the following common terms:

3.1 Before making any change in the project determined by the State Water Resources Control Board to be substantial, permittee shall submit such change to the Board for its approval in compliance with Water Code Section 10504.5(a).

3.2 If the storage dams will be of such size as to be within the jurisdiction of the Department of Water Resources as to safety, construction shall not be commenced until the Department has approved plans and specifications.

3.3 In accordance with the requirements of Water Code Section 1393, permittee shall clear the sites of the proposed reservoirs. Before clearing the sites, a clearing plan mutually acceptable to the permittee and the California Department of Fish and Game shall be developed.

3.4(a) No water shall be diverted under this permit until permittee has installed devices, satisfactory to the State Water Resources Control Board, which are capable of measuring the flows required by the conditions of this permit. Said measuring device shall be properly maintained.

(b) The devices required to measure bypass flows specified in terms 3.10(a), 3.10(b), 3.10(f) and 3.10(g) shall be a continuous recording device capable of measuring daily flows.

3.4 In accordance with Section 1601, 1603 and 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 permittee.

3.5 In compliance with Fish and Game Code Section 5943, if storage of water authorized by this permit is on a stream naturally frequented by fish, permittee shall accord to the public, for the purpose of fishing, reasonable right of access to the waters impounded by Forni, Sherman, Alder and Texas Hill Dams during the open season for the taking of fish, subject to the regulations of the Fish and Game Commission and for domestic water supply reservoirs, subject to public health requirements of Sections 7623 to 7630, Title 17, California Administrative Code.

3.6 The State Water Resources Control Board reserves jurisdiction over this permit to change the season of diversion to conform to the results of a comprehensive analysis of the availability of unappropriated water in the Sacramento River Basin. Action to change the season of diversion will be taken only after notice to interested parties and opportunity for hearing.

3.7 No diversion is authorized by this permit when satisfaction of inbasin entitlements requires release of supplemental Project water by the Central Valley Project or the State Water Project.

(a) Inbasin entitlements are defined as all rights to divert water from streams tributary to the Sacramento-San Joaquin Delta or the Delta for use within the respective basins of origin or the Legal

Delta, unavoidable natural requirements for riparian habitat and conveyance losses, and flows required by the Board for maintenance of water quality and fish and wildlife. Export diversions and Project carriage water are specifically excluded from the definition of inbasin entitlements.

(b) Supplemental Project water is defined as water imported to the basin by the projects, and water released from Project storage, which is in excess of export diversions, Project carriage water, and Project inbasin deliveries.

The Board shall notify the permittee of curtailment of diversion under this term after it finds that supplemental Project water has been released or will be released. The Board will advise the permittee of the probability of imminent curtailment of diversion as far in advance as practicable based on anticipated requirements for supplemental Project water provided by the Project operators.

3.8 In order to prevent degradation of the quality of water during and after construction of the project, prior to commencement of construction the permittee shall file a report pursuant to Water Code Section 13260 and shall comply with any waste discharge requirements imposed by the California Regional Water Quality Control Board, Central Valley Region, or by the State Water Resources Control Board. Failure of permittee to comply with this term will subject the permit to revocation, after opportunity for hearing.

3.9 This permit shall not authorize the use of any water outside of the county of origin which is necessary for development of the county.

3.10 For the protection of fish and wildlife, permittee shall bypass the

following flows at all times:

(a) On the South Fork American River at a control point 2.3 miles downstream of Forni Dam, 25 cubic feet per second or the actual inflow to Forni Dam, whichever is less, with a flow of at least 5 cubic feet per second, or the actual inflow to Forni Dam, whichever is less, maintained immediately below Forni Dam.

(b) On the Silver Fork American River at a control point 1.5 miles downstream of Sherman Dam, 35 cubic feet per second or the actual inflow to Sherman Dam, whichever is less, with a flow of at least 15 cubic feet per second or the actual inflow to Sherman Dam, whichever is less, maintained immediately below the dam.

(c) On Forni Creek, Station Creek, Long Canyon Creek, Mule Creek, Martin Creek, Bark Shanty Creek and Girard Creek immediately downstream of the diversion structures, one (1) cubic foot per second or the natural flow, whichever is less.

(d) On Alder Creek immediately downstream of Alder Dam, 5 cubic feet per second, except in dry years, 2.5 cubic feet per second. (A dry year shall be defined as any water year, which is the period from October 1 of one year through September 30 of the succeeding year, in which the South Fork American River inflow to Folsom Reservoir, as forecast by the California Department of Water Resources (Department) on April 1 of the water year in question, or as subsequently updated by the Department on the following May 1 will not exceed 50 percent of the average then in use by the Department).

(e) On Plum Creek immediately downstream of the Plum Creek

Powerhouse afterbay outlet to Plum Creek, 0.5 cubic foot per second.

(f) On Park Creek immediately downstream of the Park Creek Powerhouse afterbay outlet to Park Creek, a minimum of 10 cubic feet per second up to a maximum of 50 cubic feet per second, except that during dry years, as defined in paragraph 3.10(d), the minimum may be reduced to 5 cubic feet per second. Project releases shall not exceed 50 cubic feet per second under normal operations, normal operations being defined as operations in other than dry years as defined in paragraph 3.10(d).

(g) On North Fork Weber Creek below the Weber Creek turnout of the Park Creek conduit and in Weber Creek below Weber Reservoir, a minimum of 11 cubic feet per second. In other than dry years, as defined in paragraph 3.10(d), a maximum of 75 cubic feet per second shall not be exceeded upstream of the Camino Conduit turnout and a maximum of 90 cubic feet per second shall not be exceeded below that same turnout.

(h) On Weber Creek immediately downstream of Texas Hill Dam, 2 cubic feet per second, except in dry years, one (1) cubic foot per second.

3.11 For the protection of fish, permittee shall operate project facilities so that the following water temperatures are not exceeded:

(a) On Weber Creek from the tailwater of Texas Hill Reservoir, tailwater being defined as the normal maximum water surface

elevation of Texas Hill Reservoir, upstream to the confluence of North Fork Weber Creek, on North Fork Weber Creek from the confluence with Weber Creek upstream to the Park Creek Conduit turnout, and on Park Creek from the tailwater of Jenkinson Lake (as defined in 3.14(a)(5)) upstream to the Park Creek Powerhouse afterbay outlet to Park Creek a maximum at all times of 23°C, except that during the period June 15 to September 15 each year, 20°C shall not be exceeded for more than three (3) consecutive days.

(b) On the South Fork American River immediately upstream of the confluence with Silver Fork American River a maximum at all times of 23°C, except that during the period June 15 to September 15, 20°C shall not be exceeded for more than three (3) consecutive days. This term shall not apply if the actual inflow to Forni Dam is being released as provided for in term 3.10(a).

(c) On the Silver Fork American River immediately upstream of the confluence with South Fork American River a maximum at all times of 23°C, except that during the period June 15 to September 15, 20°C shall not be exceeded for more than three (3) consecutive days. This term shall not apply if the actual inflow to Sherman Dam is being released as provided for in term 3.10(b).

3.12 Permittee shall not interfere with the ability of the Pacific Gas and Electric Company to substain a minimum flow of 50 cubic feet per second on the South Fork American River immediately downstream of the El Dorado Canal diversion point.

3.13 Permittee shall, during construction of the project, provide

flows sufficient to substain aquatic life in streams affected by construction.

3.14 (a) Permittee, in consultation with the California Department of Fish and Game, United States Forest Service, and the United States Fish and Wildlife Service, shall conduct studies to determine trout populations in the specified reaches of the following streams:

(1) On South Fork American River immediately below Forni Dam downstream to the confluence with Plum Creek.

(2) On Silver Fork American River immediately below Sherman Dam downstream to the confluence with South Fork American River.

(3) On Alder Creek immediately below Alder Dam downstream to the El Dorado Canal diversion Structure.

(4) On Plum Creek immediately below the Plum Creek diversion structure that diverts water into the Park Creek conduit downstream to the confluence with the South Fork American River.

(5) On Park Creek immediately below the Park Creek Powerhouse afterbay outlet to Park Creek downstream to the tailwater of Jenkinson Lake, tailwater being defined as the normal maximum water surface elevation of Jenkinson Lake.

(6) On North Fork Weber Creek immediately below the Park Creek Conduit turnout to North Fork Weber Creek downstream to the confluence of Weber Creek.

(7) On Weber Creek from the confluence of North Fork Weber Creek downstream to the tailwater of the Texas Hill Reservoir, excluding Weber Reservoir.The study program, at a minimum, shall determine trout populations in the specified streams, shall

evaluate the effects of water quantity changes for trout life history stages and associated habitat needs for the different life stages, and shall include temperature and sediment monitoring.

(b) An initial study shall be completed prior to the project going into operation. All field work elements of that study shall be completed prior to the beginning of construction on those reaches of streams (defined in 3.14(a)) that are affected by construction and shall be completed prior to the end of construction on those reaches of streams not affected by construction. Results of the initial study shall serve as a basis of comparison with subsequent studies to determine if the objective of no net fish loss has been achieved.

(c) Subsequent studies shall be conducted at two-year intervals until the study results indicate that the objective of no net fish loss has been achieved.

(d) The State Water Resources Control Board reserves jurisdiction over this permit to impose any appropriate conditions or amend existing conditions for boating, fish mitigation and other instream uses to facilitate achieving the objective of no net fish loss. Action by the Board will be taken only after evaluating the study results conducted pursuant to the foregoing terms 3.14(b) and (c), and after notice to interested parties and opportunity for hearing.

3.15 Permittee shall jointly with the Department of Fish and Game develop a fisheries management plan for Alder and Texas Hill Reservoirs prior to completion of construction.

3.16 In the event permittee fails to meet the flow requirements specified in term 3.10, permittee will increase flows for the period of June 1 to November 15 of the following year by the amount of the reduction as measured in cubic feet per second. Multiple reductions will require increased flows in an additive manner. The provisions of this term shall not apply to circumstances beyond the control of permittee.

3.17 Permittee shall provide a public corridor of at least 25 feet on each side of the center of Sly Park Creek from the powerhouse to Jenkinson Lake with appropriate public access at road crossings to provide full angler access to the reach of the stream enhanced and shall obtain rights necessary to preserve riparian vegetation.

3.18 Permittee shall provide a public corridor of at least 25 feet on each side of the center of the North Fork Weber Creek from the Park Creek Conduit to Weber Reservoir, and of at least 35 feet on each side of the center of the North Fork Weber Creek and Weber Creek from Weber Reservoir to Texas Hill Reservoir, with appropriate public access at road crossings, to provide full angler access to the stream sections improved and to preserve riparian vegetation. In areas of significant riparian regetation this corridor shall be enlarged to include the vegetation areas.

3.19 A minimum pool of 300 acre-feet shall be maintained in Alder and Texas Hill Reservoirs.

3.20 Permittee shall, if determined necessary by Department of Fish and Game, install and maintain at its expense screens of a type necessary to prevent the passage of fish into Project conduits and diversions.

3.21 Permittee, in cooperation with the California Department of Fish and

Game, United States Forest Service, and the United States Fish and Wildlife Service, shall implement a management plan at Alder Reservoir to encourage nesting of raptor species. The plan shall include but not be limited to:

(a) Implementation of a security program during the construction phase to prevent the illegal cutting of trees intended for retention as feeding perches and nesting habitat.

(b) Limitation of boating use to hand propelled craft, sailboats, or boats with small electric motors.

(c) Those provisions in the clearing plan referenced in term 3.3 addressing retention of specified trees for nesting.

3.22 Funding of recreational development at Alder Reservoir beyond the Phase I level of development as specified in the Alder Reservoir Recreation Plan in El Dorado's Federal Energy Regulatory Commission License application dated November 1979 shall not be allowed for a period of 10 years following completion of construction. If at the end of that 10-year period it is mutually determined by the California Department of Fish and Game and the United States Forest Service that the raptor program is unsuccessful and that increased recreational activities would not impact other wildlife resources, including the Grizzly Flat deer herd, then funding of additional recreational development will be allowed.

3.23 Permittee shall request that the County of El Dorado maintain the Timer Protection Zone within the 2,200-acre Alder Viewshed identified by the California Department of Fish and Game for the period of time water is appropriated under this permit. If the County of El Dorado

changes the zone designation of any parcel under its jurisdiction within that 2,200-acre viewshed, then, within 60 days of the change permittee shall take steps to preclude any development or shall demonstrate to the Board that the zoning change is clearly unrelated to the presence of Alder Reservoir or is clearly compatible with the mitigation measures specified in terms 3.10, 3.15, 3.19, 3.21, 3.22, 3.24, 3.25, 3.26 and 3.27. The Board shall, within 60 days of submittal of the foregoing evidence, make a finding of concurrence. The Board may require permittee to take steps to preclude development through acquisition of easements in, or fee title to, the parcels affected or through other means at permittee's disposal. If the Board fails to respond within the 60-day period, or if it concurs with permittee's assertion, no further action by permittee is required.

3.24 Permittee, in addition to the acquisition of the easements described in terms 3.17 and 3.18 shall provide the California Department of Fish and Game with monies for acquisition of easements or fee title for 1,500 acres of land within the critical winter range of the Grizzly Flat deer herd, and 480 acres within the summer range of that same herd.

3.25 In addition to the lands to be acquired under term 3.24, the permittee shall also acquire, develop and maintain 66 acres of wetlands and 10 acres of ponds. If, after a reasonable amount of time, development of the wetlands and ponds proves unsuccessful, the permittee shall, under guidance of the California Department of Fish and Game, modify its development plan. Should the development again prove unsuccessful, the permittee shall then acquire, and preserve as

wildlife habitat, under guidance by the Department of Fish and Game, existing non Federally owned natural wetlands and/or ponds equal in acreage to the balance of lands not successfully developed pursuant to this term.

3.26 Any easements acquired pursuant to terms 3.17, 3.18, 3.24 and 3.25 shall, for the period of time that water is appropriated under this permit, include sufficient rights to provide for wildlife habitat management and improvement programs specified by the California Department of Fish and Game.

3.27 Permittee is to provide sufficient funds to the California Department of Fish and Game to study the need of, and alternatives to a deer proof fence around the perimeter of Alder Reservoir. This study is to be completed prior to the filling of Alder Reservoir. If the Department of Fish and Game determines that a fence is necessary, and the US Forest Service concurs, then permittee shall provide sufficient funds and acquire all necessary rights to build the fence. It shall be constructed prior to the filling of Alder Reservoir.

3.28 The State Water Resources Control Board reserves jurisdiction over this permit to require mitigation of any significant deleterious water quality impacts on public health on the South Fork American River between the Forni diversion dam and Pacific Gas and Electric Company's diversion dam near Kyburz. Jurisdiction reserved herein will be exercised only after notice to interested parties and opportunity for hearing.

3.29 Permittee shall comply with the "Procedure for the Protection of Historic and Cultural Properties" (36 C.F.R. 60 and 36 C.F.R. 800, as

amended on 1-30-79). Pursuant to said procedures, permittee shall prepare a comprehensive management plan to address the cultural resources that will be directly and indirectly impacted on both private and public lands within the sphere of influence of the facilities for which this water right permit is acquired. This plan shall include measures to inventory, evaluate, protect, and mitigate cultural resources and shall be subject to approval by the United States Forest Service and the State Historic Preservation Office. The permittee shall fund all necessary cultural resource studies, which shall be conducted by professional archeologists, historians and anthropologists under contract to the permittee. Unless the cultural resource plan indicates that recovery and protection of cultural resources may occur during preconstruction clearing operations, the permittee shall complete the preparation of a comprehensive management plan and implement its provisions, including the recovery and protection of cultural resources, prior to commencing any construction or land disturbance. Permittee shall fund any cultural resource studies deemed necessary, by the United States Forest Service and State Historic Preservation Office, to identify, evaluate, mitigate and protect any previously unrecorded cultural resources that are discovered during the design and construction phase of the project.

3.30 Following the first time the Alder Creek Reservoir has filled to within 76 percent of its capacity (which, under current design, is approximately 133,000 acre feet), permittee may divert or appropriate the flows of the South and Silver Forks of the American River (as those flows occur naturally or are influenced by regulating facilities

controlled by others), between April 15 and June 30 of each calendar year, provided that instream flows are maintained in accordance with the following criteria:

(a) Permittee shall exercise its rights under this permit in a manner which will result in a stream flow from 900 cfs to 1200 cfs as measured at the gaging station located immediately below the PG&E diversion dam near Kyburz (the Kyburz gage) from 10:30 a.m. to 3:30 p.m. on all days specified in subparagraph (e) below except as provided in subparagraph (b) below.

(b) Permittee may divert the full flows of the South Fork and the Silver Fork of the American River (except any flows required to be bypassed by this permit) if the sum of all the flows into the Forni and Sherman diversion reservoirs plus downstream accretions as measured at the Kyburz gage, less the capacity of PG&E's El Dorado Canal, would be less than 900 cfs at the Kyburz gage.

(c) If the sum of all flows into the two diversion reservoirs plus downstream accretations as measured at the Kyburz guage, less the present capacity of PG&E's El Dorado Canal, would result in flows at the Kyburz gage of greater than 900 cfs, but less than 1200 cfs, no diversion shall be allowed, other than a diversion equal to the amount by which PG&E reduces its diversion at Kyburz into the El Dorado Canal, so long as that amount is not greater than 156 cfs.

(d) If the sum of all flows into the two diversion reservoirs plus downstream accretions as measured at the Kyburz gage, less the present capacity of PG&E's El Dorado Canal, would result in

flows at the Kyburz gage of more than 1200 cfs, permittee may divert all flows in excess of that necessary to provide 1200 cfs at the Kyburz gage.

(e) All days between April 15 and June 30 specified in subparagraph (f) below, shall be Fridays, Saturdays, Sundays and holidays.

(f) The number of days between April 15 and June 30 during which permittee shall be required to operate the project in the manner described above shall be according to the following schedule based upon the projected April through July American River inflow to Folsom Reservoir as annually determined by the Department of Water Resources on April 1 as revised on May 1.

April-July Projected American River Inflow at Folsom Reservoir	Number of Required Days
Greater than 149% of average	30
Greater than 124% of average up to and including 149% of average	25
Greater than 99% of average up to and including 124% of average	20
Greater than 74% of average up to and including 99% of average	15

50% of average up to and
including 74% of average 5

Less than 50% of average 0

(g) Permittee will be in compliance with this condition when the flow of the South Fork of the American River at the Kyburz gage during any year is insufficient to provide flows of from 900 to 1200 cfs for the number of required days as long as permittee has delivered all flows as required by subparagraphs 3.30(b), 3.30(c) and 3.30(d).

(h) For purposes of this condition the present capacity of PG&E's El Dorado Canal shall be deemed to be 156 cfs, and "the sum of all flows" shall be the mean daily average flow for the previous 24 hours ending at 6:00 a.m., or at any other such time as agreed to by the American River Recreation Association, California Department of Boating and Waterways, and the permittee and approved by the Board.

3.31 Permittee shall operate El Dorado Powerhouse No. 2 and the facilities supplying water thereto in such a manner that on all Fridays, Saturdays, Sundays and holidays between April 1 and September 30, each year, Slab Creek Reservoir will receive a minimum daily inflow of at least 1100 acre feet of water, except that permittee shall not be obligated to supply water for Slab Creek Reservoir:

(a) To the extent such supply would impair permittee's ability

to deliver 30,000 acre feet of water annually for consumptive use.

(b) In any year when the projected April through July American River flows to Folsom Reservoir as determined by the Department of Water Resources on April 1 and as revised on the following May 1 are less than 50% of average.

(c) If supplying such water requires permittee to draw Alder Reservoir down below 108,000 acre feet.

(d) In a daily amount in excess of 500 acre feet or the amount of water necessary to bring the total day's inflow into Slab Creek Reservoir, including natural inflow, releases from PG&E's El Dorado Powerhouse and releases from SMUD's Upper American River Project up to 1100 acre feet, whichever is less.

(e) If it is prevented from doing so by circumstances beyond its control.

3.32 The Board reserves jurisdiction over this permit for the purpose of coordinating the operation of the project with other projects subject to the Board's jurisdiction, to provide more effectively for recreation flows below Slab Creek Reservoir dam. Such reserved jurisdiction may be exercised to the extent that the operations can be coordinated without adversely affecting consumptive use yields, power generation capacity or energy production. Once project capital costs are fully amortized, then coordination can reduce power generation capacity or energy production. Power generation capacity shall mean the project adverse water year firm capacity during the amortization period.

3.33 Permittee shall arrange for a means of rapid communication with

the Federal and State governmental offices responsible for fighting forest fires within the influence area of project facilities and shall provide a method for quickly releasing stored waters from the Forni and Sherman Reservoirs if requested to do so by the aforementioned agencies.

3.34 (a) Permittee shall adequately fund all annual operational costs associated with project mitigation programs for the period of time water is appropriated under this permit.

(b) Permittee shall acquire mitigation lands by any means at its disposal at the same time project lands are acquired.

3.35 Reference is hereby made to the agreements between the permittee and (1) the California Department of Fish and Game, dated January 27, 1981; (2) the California Department of Boating and Waterways, dated March 16, 1982; and (3) The American River Recreation Association, dated March 2, 1982, and by this reference the provisions of said agreements are hereby incorporated herein as though fully set forth. Said provisions, insofar as they are not inconsistent with permit terms or conditions specified in other paragraphs of this permit, are incorporated as permit terms or conditions and shall be enforced as such, except that those provision of said agreement which require binding arbitration of differences between the parties shall not bind the Board in interpreting or enforcing, in the public interest, the terms or conditions of this permit. The Board shall maintain continuing authority to change or add terms or conditions necessary to resolve, in the public interest, issues arising from alleged conflicts among the provisions of said agreements.

IT IS FURTHER ORDERED that for the purposes of Stats. 1982, ch. 122, permits ordered issued herein shall be deemed acceptable when issued pursuant to Water Code Section 1540.

IT IS FURTHER ORDERED that application 7939 held in the name of the State Water Resources Control Board be released from priority in favor of applications 18063, 18065, 18067, 18069 and 26376; the petitions for assignment of applications 18064, 18066, 18068, and 18070, all held in the name of the State Water Resources Control Board, be denied; and application 26375 be cancelled.

Dated: November 18, 1982

Carole A. Onorato, Chairwoman

L. L. Mitchell, Vice Chairman

Jill D. Golis, Member

F. K. Aljibury, Member

Warren D. Noteware, Member