STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of:

Applications 29919, 29920, 29921, and 29922 and Petition for Assignment of State Filed Application 5645 by **El Dorado County Water Agency and El Dorado Irrigation District,**

Applications 30062 and 30453 and Petition for Assignment of State Filed Application 5645 by **Kirkwood Associates, Inc. and U.S. El Dorado National Forest,**

Application 30204 by **Kirkwood Meadows Public Utility District and U.S. El Dorado National Forest,**

Application 30219 and Petition for Assignment of State Filed Application 5645 by **Alpine County Water Agency,**

Application 30218 and Petition for Assignment of State Filed Application 5645 by **Amador County,**

Applicants and Petitioners,

Pacific Gas & Electric Company, California Sportfishing Protection Alliance, Gerald and Joan Glasgow, Bryant M. Bennett, Edward C. Hinde, Edwin and Patricia Brennan, Sacramento Municipal Utility District, Amador County Chamber of Commerce, Plasse's Inc., Edwin Allen Bish II, U.S. Bureau of Reclamation, City of Stockton, U.S. Fish and Wildlife Service, Sierra Club Legal Defense Fund, et al., Kit Carson Lodge, Amador County Water Resources, California Department of Fish and Game, Paul J. Cregor, Save the American River Association, San Joaquin County Department of Public Works, Friends of the River, El Dorado National Forest, Curtis Manning, City of Sacramento, California Native Plant Society, El Dorado County Water Agency, El Dorado Irrigation District, Westlands Water District, San Luis and Delta-Mendota Water Agency, and El Dorado County Taxpayers for Quality Growth.

Protestants and Interested Parties.

DECISION 1635

SOURCES: Silver Lake tributary to Silver Fork American River; Caples Lake tributary to Caples Creek and Silver Fork American River; and Lake Aloha tributary to Pyramid Creek all three being tributary to the South Fork American River

COUNTIES: Alpine, Amador, and El Dorado

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CITING THE RECORD AND OTHER ABBREVIATIONS

When citing evidence in the hearing record, the following convention has been adopted:

I. Information derived from the hearing transcript:

93,T,I,12:10-14:19

- 93 — year introduced
- T — identifying abbreviation of the information source
- I — hearing transcript volume number
- 12:10 — beginning page and line number
- 14:19 — ending page and line number (may be omitted if a single line/page is cited)

II. Information derived from an exhibit:

95,SWRCB,9,6

- 95 — year introduced
- SWRCB — identifying abbreviation of the information source
- 9 — exhibit number
- 6 — page number, table, graph, or figure number; or application number if a file is cited

III. Abbreviations of the information sources are:

93	1993 Hearing, June 14, 15, 16, & 21; four volumes
95	1995 Hearing, October 24, 25, 30, & 31; four volumes
ACWA	Alpine County Water Agency
AMADOR	County of Amador
CSPA	California Sportfishing Protection Alliance
DFG	California Department of Fish and Game
EDCTQG	El Dorado County Taxpayers for Quality Growth
EDCWA	El Dorado County Water Agency and El Dorado Irrigation District (co-applicants)
EDNF	El Dorado National Forest (aka FS-USDA in 1995)
FR	Friends of the River
KPUD	Kirkwood Public Utility District

KW . . . . . Kirkwood Associates, Inc.
PG&E . . . . . Pacific Gas & Electric Company
PJC . . . . . Paul J. Creger
SCLDF . . . . . Sierra Club Legal Defense Fund
SJCDPW . . . . . San Joaquin County Department of Public Works
SMUD . . . . . Sacramento Municipal Utility District
SWRCB . . . . . State Water Resources Control Board
T . . . . . Hearing Transcript
USBR . . . . U.S. Department of Interior, Bureau of Reclamation
USFS . . United States Department of Agriculture, Forest Service
USFWS . . . . . United States Fish and Wildlife Service
WWD . . . . . Westlands Water District

IV. Other abbreviations used in this document are:

af . . . . . acre-feet
afa . . . . . acre-feet per annum
cfs . . . . . cubic feet per second
CEQA . . . . . California Environmental Quality Act
CCR . . . . . California Code of Regulations
EDCWQ . . . . . El Dorado County Water Agency
EID . . . . . El Dorado Irrigation District
EIR . . . . . Environmental Impact Report
FEIR . . . . . Final Environmental Impact Report
FERC . . . . . Federal Energy Regulatory Commission
NEPA . . . . . National Environmental Policy Act
SEIR . . . . . Supplemental Environmental Impact Report

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Protestants and Interested Parties.

DECISION 1635

SOURCES: Silver Lake tributary to Silver Fork American River; Caples Lake tributary to Caples Creek and Silver Fork American River; and Lake Aloha tributary to Pyramid Creek all three being tributary to the South Fork American River

COUNTIES: Alpine, Amador, and El Dorado

DECISION APPROVING AND DENYING PETITIONS FOR PARTIAL ASSIGNMENT OF STATE FILED APPLICATIONS AND DENYING APPLICATIONS

BY THE BOARD:

Applications having been filed to appropriate water by El Dorado County Water Agency and El Dorado Irrigation District (El Dorado), Kirkwood Associates, Inc., and U.S. El Dorado National Forest (Kirkwood, Inc.), Kirkwood Meadows Public Utility District (Kirkwood PUD), Alpine County Board of Supervisors and Water Agency (Alpine County), and the County of Amador (Amador County); petitions for partial assignment of state filed Application 5645 having been filed by El Dorado, Kirkwood, Inc., and Alpine and Amador Counties; protests having been filed to the applications and petitions; hearings having been held on June 14, 15, 16, and 21, 1993, and October 24, 25, 30, and 31, 1995; the applicants, petitioners, and numerous protestants having appeared and presented testimony and exhibits; closing briefs having been submitted; the evidence and closing briefs having been duly considered, the State Water Resources Control Board (Board) finds as follows:

1.0 APPLICATIONS TO APPROPRIATE WATER

1.1 Pacific Gas & Electric Company (PG&E) operates Lake Aloha, and Caples and Silver Lakes

PG&E claims the right to divert and use water at Lake Aloha[1] tributary to Pyramid Creek, Caples Lake tributary to Caples Creek, and Silver Lake tributary to Silver Fork of the South Fork American River. (See map.) Pyramid Creek, Caples Creek, and Silver Fork American River are tributary to the South Fork American River. PG&E controls releases of water from these reservoirs for the generation of hydroelectric power, a nonconsumptive use of water. However, up to 15,080 afa are directly diverted and rediverted from storage into the El Dorado Canal at Kyburz for consumptive uses.[2]

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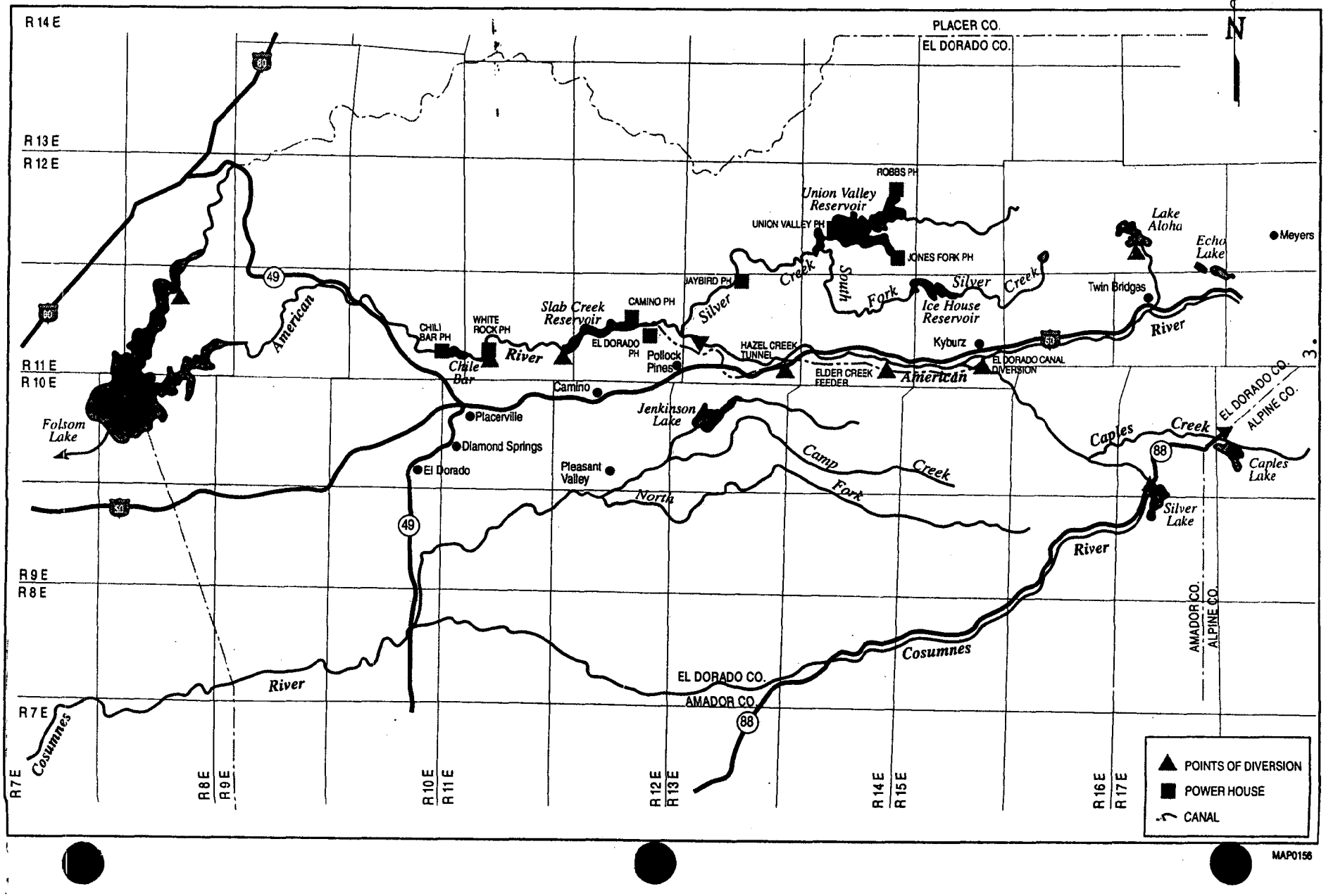
[1] Lake Aloha is sometimes referred to as the Medley Lakes.

[2] This water is delivered per a 1919 agreement between Western State Gas and Electric Company and the El Dorado Water Company.

South Fork American River
Major Reservoirs and Facilities



1.2 Applicants and Petitioners Have Filed Competing Applications and Petitions for Partial Assignment of State Filed Applications to Appropriate Water From PG&E Lakes

El Dorado, Kirkwood, Inc., Kirkwood PUD, Alpine County, and Amador County have filed applications and petitions for partial assignment of state filed Application 5645 for competing projects to appropriate water from Caples and Silver Lakes.[3] El Dorado has filed an application and petition for partial assignment of state filed Application 5645 to appropriate water from Lake Aloha and Caples and Silver Lakes. Kirkwood, Inc., and Alpine County have filed applications and petitions for partial assignment to appropriate water from Caples Lake. Kirkwood PUD also filed an application to appropriate water from Caples Lake. Amador County has filed an application and petition for partial assignment of state filed Application 5645 to appropriate water from Silver Lake.

All of the competing applications and petitions for partial assignment seek to utilize diversion dams and reservoirs operated by PG&E for hydroelectric generation. Further, the competing applications and petitions either seek to: (1) make consumptive use of the same water that PG&E is diverting for nonconsumptive hydropower purposes or (2) use the diversion and storage capacity of PG&E facilities to utilize water that PG&E is diverting for nonconsumptive hydropower purposes.

1.3 With One Exception, Applicants and Petitioners Seek Water for Consumptive Use

With the exception of Amador County, the applications and petitions for assignment seek to appropriate water for consumptive uses. Amador County seeks water only for recreation

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[3] Each person petitioning for assignment of a state filed application must file an application to appropriate water consistent with the proposed assignment and describing the proposed project. Water Code section 10504.01. Thus, each petitioner for a state filing must file an application to appropriate water.

and fish and wildlife uses. El Dorado seeks to appropriate water for domestic, municipal, and irrigation uses; Kirkwood, Inc. seeks to appropriate water for snowmaking; Kirkwood PUD seeks water for municipal uses; and Alpine County seeks water for domestic and fish and wildlife uses. Table 1-1 more fully describes each application and petition for assignment.

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TABLE 1-1

APPLICANTS, APPLICATIONS, SOURCES, AMOUNTS, DIVERSION SEASONS, AND USES

APPLICANT & APPLICATION #	SOURCE	DIRECT DIVERSION		STORAGE		USES[1]
		cfs[1]	Season	afa[2]	Season	
EL DORADO						
29919	Silver Lake	---	---	6,000	11/01 to 08/01	Dom.[3], Mun. & Irr.
29920	Caples Lake	---	---	21,581	11/01 to 08/01	Dom., Mun. & Irr.
29921	Lake Aloha	---	---	5,350	11/01 to 08/01	Dom., Mun. & Irr.
29922	So. Fork American River:[4] ~~Kyburz~~[4] ~~Flange~~[4] Folsom Lake[5]	156 total ~~156~~ ~~120~~ 156	 ~~11/01 to 08/01~~ ~~11/01 to 08/01~~ 11/01 to 08/01	---	---	Dom., Mun. & Irr.
SFA[6] 5645(8). Same as for A-29919, A-29920, A-29921 & A-29922 except diversion season requested is 01-01 to 12-31.						
KIRKWOOD, INC.						
30062	Caples Lake	1.8	11/01 to 03/01	250	11/01 to 03/01	Snowmaking
30453	Caples Lake	2.4	11/01 to 03/01	250	11/01 to 06/30	Snowmaking
SFA[6] 5645(11)	Caples Lake	4.2 total	11/01 to 03/01	500 total	01/01 to 12/31	Snowmaking
KIRKWOOD PUD						
30204	Caples Lake	0.69	11-01 to 06-15			Municipal
ALPINE CO.						
30219	Caples Lake	0.13	11-01 to 07-31	21,581	11-01 to 07-31	Dom., Rec. & F&WL[7]
SFA[6] 5645(9)	Caples Lake	0.13 total	01-01 to 12-31	21,581	01-01 to 12-31	Dom., Rec. & F&WL
AMADOR CO.						
30218	Silver Lake	---	---	8,740	11/01 to 07/31	Rec. & F&WL
SFA[6] 5645(10)	Silver Lake	---	---	8,740 total	01-01 to 12/31	Rec. & F&WL

FOOTNOTES FOR TABLE 1

1 "cfs" = cubic feet per second.

2 "afa" = acre-feet per annum.

3 "Dom." = domestic uses.

4 El Dorado is not currently seeking a permit which would approve the diversion of water at Kyburz or the Flange (at SMUD's White Rock facility).

5 This point of diversion is also the point of rediversion.

6 "SFA" = state filed application. The number "5645" is the number of the application for which a petition for assignment has been filed and the number in parentheses identifies the file folder in which the petition is filed.

7 "F&WL" = fish and wildlife uses.

1.4 El Dorado Amended Application

El Dorado has amended its initial applications and petitions for partial assignment. As amended, the applications and petitions now seek water for storage at only Lake Aloha and Caples and Silver Lakes and direct diversion only at Folsom Reservoir. The total amount of water being sought by direct diversion and rediversion from storage will not exceed 17,000 acre-feet per annum (afa), and the total amount of water to be taken by direct diversion will not exceed 15,000 afa and will be limited to water originating in the South Fork American River watershed upstream of the El Dorado Canal diversion near Kyburz.

2.0 PROJECT DESCRIPTIONS

The following sections provide a brief description of each of the proposed projects.

2.1 El Dorado's Project

El Dorado's petitions and applications are predicated upon PG&E continuing to operate Lake Aloha and Echo, Caples, and Silver Lakes under Federal Energy Regulatory Commission (FERC) requirements as they have been historically operated for hydroelectric purposes.[4] (95,EDCWA,94,2; 95,EDCWA,93,3.) Water released from Lake Aloha and Caples and Silver Lakes will be rediverted at Folsom Reservoir after it passes through PG&E's hydroelectric facilities. (July 13, 1995, letter from Mr. Somach to SWRCB, A-29919, Correspondence File, Folder J; 95,EDCWA,93,4; 95,EDCWA,94,2-4.) El Dorado will also directly divert water at Folsom Reservoir. The water would be pumped from Folsom Reservoir to El Dorado's place of use. In general terms, El Dorado's service area lies: (1) south of the South Fork of the American River, (2) north of the Cosumnes River and the North

[4] PG&E's historical operation of the lakes is at the heart of the concerns raised by most protestants. That is, can PG&E's historical operations of the lakes be meaningfully described in quantifiable hydrologic terms.

Fork of the Cosumnes River, (3) east of the Sacramento County line, and (4) west of Pollock Pines. (95,T,I,97:21-99:9; EDCWA,78, Plate 1.) Water would be used for domestic, municipal, and irrigation purposes.

El Dorado Irrigation District (EID) has also entered into an agreement to purchase PG&E's rights to use the lakes, the water from the lakes, and its hydroelectric generation facilities. (95,EDCWA,94,9.) The agreement is subject to approval by both the California Public Utilities Commission (PUC) and FERC. (95,T,I,105:21-106:9.) El Dorado's petition and applications are not dependent upon the agreement; however, El Dorado's eventual acquisition of PG&E's hydroelectric project could have an effect on the protestants and other competing applications and petitions for water within the lakes operated by PG&E.

2.2 Kirkwood, Inc.'s Project

Kirkwood, Inc.'s petition and applications seek to appropriate water for snowmaking at the Kirkwood Ski Resort. Under two applications, up to 500 afa of water would be diverted to storage in Caples Lake between November 1 and June 30 of the following year. Up to 4.2 cfs would also be directly diverted for snow-making between November 1 and March 1 of the following year. The ski resort is situated within several miles of Caples Lake and near the nexus of Amador, Alpine, and El Dorado Counties. (95,SWRCB,A-30204.)

2.3 Kirkwood PUD

Kirkwood PUD and the U.S. El Dorado National Forest filed an application to appropriate 0.69 cfs of water by direct diversion from Caples Lake between November 1 through June 15 of the following year for municipal use. The water is for municipal use within the district's service area which is in the immediate

vicinity of both Caples Lake and Kirkwood, Inc.'s project. (95,SWRCB,A-30204.)

2.4 Alpine County Board of Supervisors and Alpine County Water Agency (Alpine County)

Alpine County filed an application and petition for partial assignment seeking up to 0.69 cfs of water by direct diversion from Caples Lake between November 1 and July 31 of the following year. Up to 21,581 afa would also be diverted to storage between November 1 and July 31 of the following year. The water would be used principally for recreation and fish and wildlife preservation and enhancement purposes within Caples Lake and for incidental domestic use in an area immediately adjacent to and north of the lake. (95,SWRCB,A-30216.)

2.5 Amador County

Amador County filed an application and petition for partial assignment seeking up to 8740 afa from Silver Lake between November 1 and July 31 of the following year. The water would be used for only recreation, fish and wildlife preservation and enhancement, and fire protection purposes within Silver Lake. (95,SWRCB,A-30218.)

3.0 PROTESTS TO APPLICATIONS AND PETITIONS FOR ASSIGNMENT OF STATE HELD APPLICATIONS

Notice must be given of both applications to appropriate water and petitions for assignment or release of priority of state filings. (Water Code section 1300 et seq. and section 10504.1.) Numerous protests to the subject applications and petitions for assignment of the state filings were filed with the Board. Table 2 identifies each protestant and the general nature of the protest filed in relation to each project for which an application and petition for assignment were filed.

TABLE 2

PROTEST SUMMARY

PROTESTANTS	APPLICANTS				
	EL DORADO		KIRKWOOD PUD	ALPINE	AMADOR
Pacific Gas & Electric Co.	WR		WR	WR	WR
California Sportfishing Protection Alliance (CSPA)		ENV			
Gerald & Joan Glasgow		ENV			
Bryant M. Bennett	WR	ENV			
Edward C. Hinde		ENV			
Edwin & Patricia Brennan	WR				
Sacramento Municipal Utility Dist.	WR		WR	WR	WR
Amador County Chamber of Commerce		ENV			
Plasse's Inc. dba Plasse's Resort		ENV			
Edwin Allen Bish II		ENV			
U.S. Bureau of Reclamation	WR			WR	WR
City of Stockton		ENV			
U.S. Fish and Wildlife Service		ENV		ENV	ENV
Sierra Club Legal Defence Fund et al.	WR	ENV			
Kit Carson Lodge		ENV			
Amador County Water Resources (A-5645)	WR	ENV			
Amador County Water Resources (A-29919)		ENV			
California Department of Fish & Game		ENV		ENV	ENV
Paul J. Creger		ENV			
Save the American River Association (SARA)		ENV			
San Joaquin Co. Department of Public Works	WR	ENV			
Friends of the River		ENV			
El Dorado National Forest		ENV			
Curtis Manning		ENV			
City of Sacramento		ENV			
El Dorado Taxpayers for Quality Growth		ENV			
California Native Plant Society (SFA 5645)		ENV			
California Native Plant Society (SFA 5645)		ENV			

PROTESTANTS	APPLICANTS				
	EL DORADO		KIRKWOOD PUD	ALPINE	AMADOR
El Dorado Co. Water Agency & Irr. District			WR & ENV	WR & ENV	WR & ENV

NOTE: WR = Water Right & ENV = Environmental

3.1 Protests by PG&E

PG&E protested all of the projects encompassed by the applications and petitions for partial assignment of state held applications by El Dorado, Kirkwood, Inc., Kirkwood PUD, and Amador and Alpine Counties. PG&E operates two downstream plants for generating hydroelectric power. The El Dorado Project (FERC 184) and the Chili Bar Project (FERC 2155). Water released from the PG&E lakes is rediverted to the El Dorado Project via the El Dorado Canal near Kyburz. The Chili Bar facility is on the South Fork American River and water released from the PG&E lakes flows to and through the Chili Bar powerhouse. The applications and petitions were protested on the basis that the proposed projects would interfere with PG&E's right to divert and use water for power purposes. (PG&E protests lodged in SWRCB application files for each application and petition.) As earlier noted, all of the applications seek to appropriate water from the lakes which PG&E operates for the production of hydroelectric power.

Following the close of the hearing, PG&E withdrew its protest to the applications and petition for partial assignment filed by Kirkwood, Inc. (A-30062, Correspondence File, Folder B, letter dated December 21, 1995, to Tom Lavenda from Jeffrey D. Butley.) The Board takes administrative notice of this correspondence. Accordingly, PG&E's protest against Kirkwood, Inc.'s applications and petition is dismissed.

3.2 Sacramento Municipal Utility District (SMUD)

SMUD operates the White Rock and Slab Creek hydroelectric power generating facilities on the South Fork American River. Water released from the PG&E lakes flows into the South Fork American River and passes through SMUD's facilities. SMUD protested all of the applications and petitions for partial assignment. The applications and petitions were protested on the basis that the proposed projects would reduce the amount of water available for

power production "under SMUD's senior water rights". (SMUD protests are lodged in SWRCB application files for each application and petition.)

SMUD withdrew its protest to the applications and petition for partial assignment filed by Kirkwood, Inc. (95,KW,16.) Accordingly, SMUD's protest against Kirkwood, Inc.'s applications and petition is dismissed.

3.3 U.S. Bureau of Reclamation (Bureau)

The Bureau protested all of the applications and petitions for partial assignment except the application filed by Kirkwood PUD. The Bureau owns and operates Folsom Dam and Reservoir near Folsom, California. Water is diverted to storage at the dam and directly diverted to the Folsom-South Canal at Nimbus Diversion Dam a few miles downstream of Folsom Dam. The Bureau operates Folsom Dam to generate electric power, supply water for consumptive use purposes, and maintain water quality in the Sacramento-San Joaquin Delta. Water released from the PG&E lakes flows into the South Fork American River and passes through Folsom Reservoir and Dam. The applications and petitions were protested on the basis that the proposed projects would adversely affect power generation and supplying water for consumptive use purposes.

Following the hearing, the Bureau withdrew its protest to the applications and petition for partial assignment filed by Kirkwood, Inc. (A-30062, Correspondence File, February 29, 1996, letter to Edward Anton from Robert F. Stackhouse.) The Board takes administrative notice of this correspondence. Accordingly, the Bureau's protest against Kirkwood, Inc.'s applications and petition is dismissed.

3.4 El Dorado Protests to Competing Applications and Petitions for Partial Assignment

El Dorado filed protests to the applications and petitions for partial assignment filed by Kirkwood, Inc., Kirkwood PUD, and Alpine and Amador Counties.

3.4.1 Alpine County

Regarding Alpine County, El Dorado states that: (1) the proposed diversion from Caples Lake is in direct competition with El Dorado's applications and petition; (2) to the extent Alpine County diverts water for consumptive uses, it would reduce the quantity of water available to El Dorado; and (3) to the extent water is held in the lake for recreation and fish and wildlife purposes, it would interfere with El Dorado's ability to divert water under its applications and petition.

El Dorado contends that it is unclear how lake operations would be modified by the nonconsumptive portion of the application and petition, but that significant environmental effects could occur within the lake, in Caples Creek, and in Silver Fork of the South Fork American River from the consumptive use portion of the application and petition. El Dorado also contends that significant environmental effects could also occur if the nonconsumptive uses altered the manner in which the lake has been historically operated. El Dorado further contends that the application and petition for partial assignment cannot be approved until Alpine County has prepared and certified an EIR.

3.4.2 Amador County

Regarding Amador County, El Dorado states that: (1) the proposed diversion from Silver Lake for recreation and fish and wildlife is in direct competition with El Dorado's applications and (2) to the extent water is held in the lake for recreation and fish and wildlife purposes, it would interfere with El Dorado's ability to divert water under its applications and petition. El Dorado also

contends that it is unclear how lake operations would be modified if Amador's application and petition for partial assignment were approved, but that significant environmental effects could occur within the lake and downstream of the lake in Silver Fork American River. El Dorado further contends that the negative declaration prepared by Amador County is inadequate because it failed to analyze the environmental effects of the proposed project on the lake and in the Silver Fork American River.

3.4.3 Kirkwood, Inc.

Regarding Kirkwood, Inc., El Dorado[5] states that the proposed diversion from Caples Lake is in direct competition with El Dorado's applications and petition and to the extent Kirkwood, Inc. diverts water for snowmaking it would reduce the quantity of water available to El Dorado. El Dorado contends that the proposed project will have adverse environmental effects on the lake, Caples Creek, Silver Fork South Fork American River, and on national forest lands upon which the Kirkwood Ski Resort is situated. On October 24, 1994, El Dorado withdrew its protest to Kirkwood, Inc.'s applications to appropriate water.[6] Accordingly, El Dorado's protest to Kirkwood, Inc's. applications is dismissed.

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[5] In this instance, El Dorado means only the protest of the El Dorado County Water Agency.

[6] EID, EDCWA, and Kirkwood, Inc. entered into an agreement wherein EID and EDCWA agreed, among other things, to withdraw their protests to the issuance and exercise of rights to divert, store and use water as applied for in Applications 30062, 30453, and petition for partial assignment of state filing 5645 (folder 11, Kirkwood, Inc., petition for partial assignment), and Kirkwood, Inc., agreed to certain consideration. These parties have represented to the Board that there is no longer any adversity between their respective rights, and that neither EID nor EDCWA will assert any water rights priority against Kirkwood, Inc.'s water rights, whether based upon existing rights (including those held by the owner of FERC Project 184) or any right they acquire in the future (including any rights issued pursuant to EID and EDCWA Applications 29919, 29920, 29921, 29922, and petition for partial assignment of state filing 5645 (folder 8)).

3.4.4 Kirkwood PUD

Regarding Kirkwood PUD, El Dorado filed the same protest against Kirkwood PUD that it filed against Kirkwood, Inc.; however, El Dorado has not withdrawn its protest to the application filed by Kirkwood PUD. (*Supra*, § 3.4.3.)

3.5 U.S. Fish and Wildlife Service (USFWS)

The USFWS protested only the applications and petitions for partial assignment filed by El Dorado, and Alpine and Amador Counties. Regarding El Dorado, USFWS indicates that: (1) additional reductions of flow in the American River could have cumulative adverse effects on anadromous salmonid populations and (2) reductions in flow could also adversely affect fish in the lakes and in the streams into which the lakes drain. Regarding Alpine County, USFWS indicates that Caples Lake supplies water which supports cold water fisheries in the South Fork American River and its tributaries. Regarding Amador County, USFWS indicates that Silver Lake supplies water which supports cold water fisheries in the South Fork American River and its tributaries. As to all three proposed projects, USFWS indicates that no instream flow incremental methodology or limnological studies have been performed to establish what flow out of the lakes will best protect fish populations and that such studies should be performed by the applicants.

3.6 California Department of Fish and Game (DFG)

The DFG protested only the applications and petitions for partial assignment filed by El Dorado, Alpine County, and Amador County.

3.6.1 El Dorado

Regarding El Dorado, DFG indicates that: (1) Silver and Caples Lakes and the releases of water from the lakes support numerous aquatic and wildlife species in and along Caples Creek, Silver Fork, and the South Fork American River, as well as recreational uses made of these resources and (2) modifications to the release

of water could adversely affect such resources. DFG requests that El Dorado be required to conduct a broad range of studies including instream flow incremental methodology studies on Caples Creek, Silver Fork, and South Fork American River.

3.6.2 Alpine County

Regarding Alpine County, DFG indicates that: (1) the release of water from Caples Lake supports a cold water fishery, amphibian populations, and riparian habitat in and along Caples Creek, and Silver Fork and South Fork American River; (2) modifications to the release of water could adversely affect such resources; and (3) no instream flow incremental methodology or limnological studies have been performed to establish what flows out of the lakes will best protect fish populations. DFG states that it will seek studies from FERC in 2002 and asks the Board to condition any new permit to require conformance with any change in the rate of release imposed by FERC on Project 184.

3.6.3 Silver and Caples Lakes

DFG protests should be dismissed because Silver or Caples Lakes will continue to be operated by PG&E. El Dorado has no agreement with PG&E which would result in PG&E modifying the operation of the lakes and El Dorado has stated that the lakes will be operated in the same manner as they have been historically operated by PG&E. Under such circumstances, it is not appropriate for the Board to require El Dorado to conduct limnological studies. Finally, the Board does not have any authority to adopt a condition requiring PG&E to comply with releases from Caples and Silver Lakes required by FERC. Thus, the DFG protest should be dismissed.

3.6.4 Amador County

Regarding Amador County, DFG indicates that: (1) releases from Silver Lake support a cold water fishery, amphibian populations, and riparian habitat in and along Silver Fork and South Fork

American River; (2) modifications to the release of water could adversely affect such resources; and (3) no instream flow incremental methodology or limnological studies have been performed to establish what flows out of the lakes will best protect fish populations. DFG states that it will seek such studies from FERC in 2002 and asks the Board to condition any new permit to require conformance with any change in the rate of release imposed by FERC on Project 184.

3.7 Westlands Water District (WWD) and San Luis & Delta-Mendota Water Agency (SLDMWA)

WWD and SLDMWA each filed a protest against Kirkwood, Inc. Because SLDMWA failed to participate in the hearing, its protest is dismissed for failure to support the allegations in its protest. During the hearing, WWD withdrew its protest to Kirkwood, Inc. (95,T,III,200:23-201:2.) Although, WWD failed to file a protest against El Dorado's applications and petition, it did submit timely written testimony and exhibits related to El Dorado's applications and petition for partial assignment, and WWD was granted permission to participate as an interested party vis-a-vis El Dorado. (95,T,I,73:4-74:24.)

As previously indicated, WWD was granted standing to participate as an interested party vis-a-vis El Dorado. WWD is an agricultural water district in the San Joaquin Valley. Under contract, the Bureau supplies water to WWD from the Central Valley Project (CVP) and Folsom Reservoir is a unit of the CVP. WWD contends that any reduction in the water available to the Bureau at Folsom Reservoir will affect the Bureau's ability to fulfill its contractual obligations to supply water to WWD. (95,WWD,1,1-2.)

3.8 Protest to El Dorado's Applications and Petition for Partial Assignment

In addition to the foregoing protests, another 21 protests were filed and accepted against El Dorado's proposed project.

3.8.1 City of Stockton (Stockton)

Stockton protested El Dorado's application and petition for partial assignment of water from Silver Lake on environmental, public interest, and public trust grounds. Silver Lake is east of Stockton on State Route 88, the most direct route for Stockton residents to access the Sierra Mountains. Stockton operates a municipal camp during summer months at Silver Lake. (93,T,I, 16:8-20.) Stockton's protest states that it joins in the protest filed by the League to Save Sierra Lakes (League). The League filed a joint protest with numerous other persons and were represented by Sierra Club counsel. The joint filing by the League et al. does not, however, identify Stockton as a co-protestant. Stockton failed to submit testimony or exhibits for the hearing or appear at the hearing. (93,T,I,*i-iii;* 95,T,I,11:6-7.) In addition, Sierra Club counsel did not claim to represent Stockton at the hearing. (93,T,I,*i-iii;* 95,T,I,13:19-14:5.) Stockton appeared and made a policy statement during the 1993 hearing but did not otherwise participate in the hearing as a protestant. Thus, Stockton's protest is dismissed for having failed to support the allegations in its protest.

3.8.2 Amador County Water Resources (Amador County)

Amador County protested El Dorado's application and petition for partial assignment of water from Silver Lake on environmental, public interest, and public trust grounds. Silver Lake is a significant recreation area within Amador County and important to the County's economy. (93,AMADOR,9,4; 95,AMADOR,1.) If El Dorado obtains consumptive rights to the water stored in the lake, Amador County is concerned that water levels in Silver Lake will be more rapidly drawn down by PG&E in response to an agreement with PG&E, or by El Dorado if it obtains PG&E's rights to operate the lakes.

3.8.3 San Joaquin County, Department of Public Works (San Joaquin County)

A protest was filed against El Dorado's applications and petition for partial assignment because San Joaquin County has an application pending to appropriate water from the American River at Nimbus Dam, Application 29657. San Joaquin County seeks assurance that any Board approval of water rights for El Dorado, which do not enjoy the benefit of area of origin statutes, will not impair any right which may be obtained under Application 29657. San Joaquin County did not submit written testimony or exhibits for the hearing nor did a representative appear at either the 1993 or 1995 hearing. (93,T,I,*i-iii;* 95,T,I,*i-iii*.) Thus, the protest of San Joaquin County is dismissed for having failed to support the allegations in its protest.

3.8.4 U.S. Eldorado National Forest (Forest Service)

The Forest Service filed a protest against El Dorado's applications and petitions for partial assignment. PG&E's lakes are operated on national forest lands. One is within a national wilderness area, Lake Aloha. The Forest Service states that its primary concern is maintenance of the scenic, recreational, and fishery values associated with the lakes. Like numerous other protestants, the Forest Service is concerned that if El Dorado obtains consumptive rights to the water stored in the lake, water levels in the lakes will be more rapidly drawn down by PG&E in response to an agreement with El Dorado or by El Dorado if it obtains PG&E's rights to operate the lakes.

3.8.5 City of Sacramento (Sacramento)

Sacramento filed a protest against El Dorado's applications and petition for partial assignment. The American River below Folsom Dam flows through Sacramento and its surrounding environs. The protest states that flow in the lower American River (below Nimbus Dam) is needed for fish, wildlife, vegetation, recreation, and other public trust uses and that the flow is already

insufficient, at times, to support such uses. Sacramento is concerned that El Dorado's proposed project will reduce the flows available for public trust uses made of the lower American River. Sacramento did not submit written testimony or exhibits for the hearings, nor did a representative appear at either the 1993 or 1995 hearing. (93,T,I,*i-iii;* 95,T,I,*i-iii.*) Thus, the protest of Sacramento is dismissed for having failed to appear or support the allegations in its protest.

3.8.6 Sierra Club et al. (Sierra Club) Protests

In addition to itself, the Sierra Club represents the following persons: Kirkwood PUD, League to Save Sierra Lakes, Alpine County, Caples Lake Homeowners Association, Caples Lake Lodge, East Silver Lake Homeowners Association, Lake Kirkwood Homeowners Association, Kit Carson Lodge, Northern Sierra Homeowners Association, Plasse's Resort, South Silver Lake Homeowners Association, Boy Scouts of American 49er Council, and CSPA. (95,T,I,12:17-14:5.) Apart from the protest filed by the Sierra Club, the CSPA, Plasse's Resort, and Kit Carson Lodge filed separate protests to El Dorado's applications and petition for partial assignment.

The entities represented by the Sierra Club include: (1) public entities; (2) people who have second homes, businesses, or who operate nonprofit campgrounds at or near Caples or Silver Lakes and/or; (3) people who recreate and use the waters of Lake Aloha and Caples and Silver Lakes, and the streams which drain the lakes, Silver Fork American River, South Fork American River, and the lower American River below Folsom Dam. The protests are concerned with how the issuance of water rights to El Dorado could affect the timing of withdrawal of water from Lake Aloha and Caples and Silver Lakes and the level of water in the lakes between June 15 and Labor Day, and the volume of water flowing in the streams which drain the lakes. Sierra Club protestants seek to preserve water in Caples and Silver Lakes for domestic use and

to keep the level of water in the lakes as high as possible through Labor Day in order to preserve the fishing, boating, and other recreational uses of the lakes. In addition, the protestants wish to assure sufficient water in the streams which drain the lakes to protect the fishing and other recreational uses made of the streams. CSPA is also concerned that approval of El Dorado's applications and petitions for partial assignment could adversely affect the quantity and temperature of water for fish below Folsom Dam and the mix of freshwater in the Sacramento-San Joaquin Delta. (See protests to A-29919, Folders 5 and 5a.)

3.8.7 Save the American River Association (SARA)

SARA filed a protest to El Dorado's applications and petition for partial assignment. SARA's protest alleges that El Dorado's proposed project could adversely reduce flow below Folsom Reservoir on the South Fork American River. More specifically, SARA is concerned that El Dorado's project will reduce flow below Folsom Dam and that the effect of such reduction will adversely affect water quality, fish and wildlife, esthetics, navigation, and recreation. (See protests to A-29919, Folder 5a.)

A representative of SARA, Mr. Felix Smith, put in an appearance at the 1993 hearing. (93,T,I,15:8-9.) Thereafter, during the 1993 hearing SARA did not make a policy statement, conduct cross-examination, put on witnesses, or offer exhibits. SARA did file a closing statement in the nature of a policy statement. During the 1995 hearing, SARA did not put in an appearance or otherwise participate in the hearing. Accordingly, SARA's protest is dismissed for having failed to support the allegations in its protest.

3.8.8 Friends of the River (FOR)

FOR filed a protest to El Dorado's applications and petition for partial assignment. FOR's protest alleges that the diversion of

water by El Dorado's proposed project may result in: (1) altered or decreased lake levels and (2) flow in the streams which drain the lakes (operated by PG&E) and in the South Fork American River to the detriment of fish, wildlife, and recreational values. FOR also alleges that changes in the flow from the lakes could infringe on the federally reserved water rights implied in the National Wilderness Act and the National Wild and Scenic Rivers Act.[7] (See protests to A-29919, Folder 5a.)

3.8.9 California Native Plant Society (CNPS), El Dorado Chapter

The CNPS filed a protest to El Dorado's petitions for partial assignment. CNPS' protest alleges that water supplied from El Dorado's project to the proposed place of use could adversely affect five rare and endangered plant species within El Dorado County. During the 1993 hearing, CNPS' did not make an appearance, present testimony or exhibits, conduct cross-examination, or file closing arguments. During the 1995 hearing, CNPS's appeared and presented a nonevidentiary policy statement (95,T,I,32:13-34:14); but did not otherwise participate in the hearing as a separate party. Thus, CNPS' protest is dismissed for having failed to make a bona fide effort to support the allegations in its protest.[8] (See protests to A-29919, Folder 5a.)

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[7] The protest also alleged that increased water diversions will adversely affect recreational boating on the South Fork American River. Subsequent to the filing of FOR's protest, El Dorado modified its proposed project so that water released from the PG&E lakes would be rediverted only from Folsom Reservoir. This modification means that no water would be rediverted for consumptive use from the South Fork American River or its tributaries which could affect recreational boating on the South Fork American River.

[8] While CNPS failed to appear at the hearing, other parties addressed the issue raised by the protestant. These parties include El Dorado, DFG, and the Sierra Club.

3.8.10 Paul J. Creger (Mr. Creger)

Mr. Creger filed a protest to El Dorado's applications to appropriate water at the lakes. His protest might best be classified as a public interest protest in that he urges El Dorado's proposed project be evaluated from a systems engineering point of view. While Mr. Creger appeared at the 1993 hearing, (93,T,I,15:3-3) he did not otherwise participate in the 1993 or 1995 hearing. Thus, Mr. Creger's protest is dismissed for having failed to support the allegations in his protest. (See protests to A-29919, Folder 5a.)

3.8.11 Curtis Manning (Mr. Manning)

Mr. Manning filed a protest to El Dorado's applications to appropriate water from the lake. He urges that no further appropriations of water be approved due to unspecified cumulative environmental effects of such withdrawals on streams and in the Sacramento-San Joaquin Delta. Mr. Manning appeared at the 1993 hearing and made a policy statement, but did not otherwise participate in the hearings via the presentations of witnesses, exhibits, the conduct of cross-examination, or the filing of closing statements. (93,T,I,299-35:15.) Thus, Mr. Manning's protest is dismissed for having failed to support the allegations in his protest. (See protests to A-29919, Folder 5a.)

3.8.12 Protests filed by Gerald and Joan Glasgow, Bryant M. Bennett, Edward C. Hinde, Edwin and Patricia Brennan, and Edwin Allen Bish II (Other Protestants)

Other protestants filed protests to El Dorado's applications and petition for partial assignment. In general, the grounds for their protests have been stated previously when identifying the basis of other protests. The Brennans were concerned that El Dorado's proposed project could adversely affect their right

to divert and use water under licensed Application 01887.[9] None of these persons appeared or otherwise participated in the 1993 or 1995 hearing concerning El Dorado's proposed project. Thus, these protests are dismissed for having failed to appear and support the allegations in their protest. (See protests to A-29919, Folder 5.)

3.8.13 El Dorado County Taxpayers for Quality Growth (Taxpayers)

A protest against El Dorado's applications and petitions for assignment was filed by three individuals in the name of Taxpayers. The three were Craig Thomas, Keith Johnson, and Alice Howard. Taxpayers failed to timely submit written testimony or exhibits for the hearing. Notwithstanding, its failure to comply with the requirements for participating in the hearing, Taxpayers were granted permission to participate in this proceeding in a more limited capacity as an interested party. (95,T,I,28:7-14.) As an interested party, Taxpayers allege that: (1) the proposed project will would take water needed for recreation, fish, wildlife, and other public trust values and would damage natural resources; (2) the project should not be approved because El Dorado continues to violate waste discharge requirements at its wastewater treatment facility; (3) El Dorado seeks water in excess of that needed for necessary development; and (4) the project would supply water for a style of development that will create an unsuitable living environment in El Dorado County.

3.9 Protests Withdrawn or Dismissed

In accordance with the discussions set forth in the proceeding sections, the following protests are either withdrawn, settled by agreement, or dismissed:

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[9] Subsequent to the filing of the Brennans' protest, El Dorado modified its proposed project so that water released from PG&E lakes would be rediverted only from Folsom Reservoir. This modification means that no water would be rediverted for consumptive use from the South Fork American River or its tributaries which could affect the exercise of the Brennans' license.

3.9.1 The following protests filed against the applications and petitions for partial assignment by Kirkwood, Inc., have been withdrawn or otherwise settled by agreement

a. PG&E (§ 3.1, *supra*)

b. SMUD (§ 3.2, *supra*)

c. The Bureau (§ 3.3, *supra*)

d. El Dorado (§ 3.4, *supra*)

e. Westland (§ 3.7, *supra*)

3.9.2 The following protests filed against the applications and petitions for partial assignment by El Dorado are dismissed

a. PG&E (§ 3.1, *supra*)

b. SMUD (§ 3.2, *supra*)

c. DFG (§ 3.6.3, *supra*; see § 4.3, *infra*)

d. Stockton (§ 3.8, *supra*)

e. San Joaquin County (§ 3.8.3, *supra*)

f. Sacramento (§ 3.8.5, *supra*)

g. SARA (§ 3.8.7, *supra*)

h. CNPS (§ 3.8.9, *supra*)

i. Mr. Creger (§ 3.8.10, *supra*)

j. Mr. Manning (§ 3.8.11, *supra*)

k. Gerald & Joan Glasgow (§ 3.8.12, *supra*)

l. Bryant M. Bennett (§ 3.8.12, *supra*)

m. Edward C. Hinde (§ 3.8.12, *supra*)

n. Edwin & Patricia Brennan (§ 3.8.12, *supra*)

o. Edwin Allen Bish II (§ 3.8.12, *supra*)

4.0 APPLICABLE LAW

4.1 The Water Code and Public Trust Doctrine

A prerequisite to the issuance of a water right permit is that unappropriated water must be available to supply the applicant. (Water Code § 1375(d).) Unappropriated water does not include water being used by others under paramount rights. (Water Code §§ 1201 and 1202.)

In addition to the quantity of water required to satisfy paramount rights to the use of water, the Board is required to consider the quantity of water required for recreation, the preservation and enhancement of fish and wildlife resources, other beneficial uses, and competing applications for the appropriation of water. (Water Code §§ 1243, 1243.5 and 1257; *National Audubon Society* v. *Superior Court* (1983) 33 Cal.3d 419, 189 Cal.Rptr. 346.) In *Audubon*, the California Supreme Court articulated a public trust doctrine for the waters of California. Among other matters, the decision requires the Board to consider the effect of proposed diversions of water upon interests protected by the public trust, and attempt, insofar as feasible, to avoid or minimize any harm to those interests. (*Audubon*, 33 Cal.3d 419, 426.) The public trust doctrine does not require an appropriator who diverts water to storage at an artificial reservoir on a nonnavigable stream to forego use of water to maintain the reservoir for recreational use by the public. (*Golden Feather Community Association* v. *Thermalito Irrigation District* (1989) 209 Cal.App.3d 1276, 257 Cal.Rptr. 836.)

The Board may reject applications which in its judgment will not best conserve the public interest. (Water Code § 1255.) When approving applications, the Board may impose such terms and conditions as in its judgment will best develop, conserve, and utilize in the public interest the water sought for appropriation. (Water Code § 1253.)

4.2 CEQA Responsibilities

CEQA imposes responsibilities on the Board in addition to those imposed by the Water Code and the public trust doctrine. When approving an application to appropriate water, the Board is either a lead agency or a responsible agency. (Public Resources Code §§ 21065, 21067, and 21069.) When approving an application, responsible agencies must adopt conditions to avoid or mitigate adverse environmental project effects within the scope of their

jurisdiction. Failing to avoid or mitigate adverse effects, responsible agencies must adopt a statement of overriding consideration. (Public Resources Code §§ 21002.1 and 21081.)

Responsible agencies are directed to presume that a final EIR is adequate if litigation is not commenced, unless: (1) substantial changes (a) are proposed for the project or (b) occur with respect to the circumstances under which the project is undertaken or (2) new information becomes available which was not known at the time the EIR was certified as complete. When litigation has commenced, responsible agencies are directed to presume a final EIR is adequate until such time as a court determines otherwise.[10] (Public Resources Code §§ 21166, 21167.2, and 21167.3.)

4.3 Regulation of Hydropower Facilities Regulated by the Federal Energy Regulatory Commission (FERC)

FERC occupies the field of hydropower regulation, preempting state water right requirements except to the extent that a state's requirements relate to the protection of proprietary rights. (*Sayles Hydro Associates* v. *Maughan* (1993) 958 F.2d 451.) The state cannot condition a water right permit for hydropower generation on bypass flow requirements for the protection of instream beneficial uses in excess of flows required by the FERC license for the project. Similarly, the Board has no authority to require that water be retained in reservoirs regulated by FERC for the protection of beneficial uses made of water within a reservoir. (*California* v. *Federal Energy Regulatory Commission* (1990) 495 U.S. 490 (Rock Creek).)

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[10] During the hearing the parties were precluded from presenting evidence on the adequacy of the EIR and Supplemental EIR prepared by El Dorado because of the directive language in Public Resources Code section 21167.3. (95,T,I,7:23-25; II,160:12-16.) The Sierra Club's December 11, 1995, closing memorandum moved the Board to reconsider ruling and urges that consideration be given to its contentions as to the adequacy of El Dorado's environmental documents as set forth in pleadings filed with the El Dorado County Superior Court on December 11, 1995. This motion was denied by letter dated June 5, 1996, from the Board to Mr. Volker.

DFG can seek relief from FERC relative to its protests against El Dorado. It should be noted that these two cases deal only with projects which were operated exclusively for hydropower purposes. Nothing in these cases precludes a state from regulating the consumptive use of water developed in conjunction with hydropower projects subject to the jurisdiction of FERC. That is, the consumptive use component of such projects is subject to state regulation under provisions of the Water Code, the public trust doctrine, and CEQA as sketched in sections 4.1 and 4.2, above, to the same extent as any other project which appropriates water under the laws of the state.

4.4 Access to Streams and Lakes and Right to Appropriate Previously Appropriated Water

One cannot obtain a right to appropriate water unless there exists some means for the actual physical control over the water for which a right is sought. (*California Trout* v. *State Water Resources Control Board* (1979) 90 Cal.App.3d 816, 818; 133 Cal.Rptr. 672, 674.) The Board has no authority nor can the issuance of a water right permit or license confer the right to enter upon land or diversion works possessed by another. (23 CCR §§ 775, 776.) Further, the Board has no authority nor can the issuance of a water right permit or license confer the right to appropriate and use water being diverted or stored under the rights of another. (Water Code §§ 1202, 1375(d), California and United States Constitutions, Article 1, section 19 and the Fifth Amendment, respectively.) Thus, applicants for the appropriation of water under the control of another legal user of water, must obtain by eminent domain, contract, purchase, or other means some right to enter upon the property or diversion works of another for the purpose of appropriating water. Similarly, applicants must obtain by eminent domain, contract, etc. some right of control over water being diverted and used by another legal user of water in order to effectuate an appropriation of water.

4.4.1 *Applicants Must Obtain Access to Water and the Right to Divert and Use Water Being appropriated by PG&E*

Much of the land on the west side of Caples Lake, is owned by the United States Forest Service. (95,USFS,1 and 2.) As previously discussed, Caples and Silver Lakes are situated on public or private lands in which PG&E has a possessory interest. Further, PG&E has prior rights to divert to storage and use the water in these lakes. Thus, as discussed in the preceding section, in order to divert natural flows, the applicants and petitioners for partial assignment must reach some accommodation with either PG&E or the federal agency which controls access to the lakes. In addition, the applicants and petitioners must reach some accommodation with PG&E before they can obtain a right to appropriate and use, either consumptively or nonconsumptively, water developed under PG&E's prior rights to the use of water.

4.5 State Filed Applications and County of Origin Protection

The Legislature has authorized the filing of applications by the state 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 § 10500.) Such applications are held by the Board, and any portion of an application may be assigned or released from priority when ". . . the release or assignment is for the purpose of development not in conflict with such general or coordinated plan or with water quality objectives established pursuant to law". (Water Code § 10504.) Release or assignment of the priority of any state filed application is prohibited, however, when a county in which the water originates would be deprived of water necessary for its development. (Water Code §§ 10505, 10505.5; County of Origin Laws.)

The County of Origin Laws allow persons within the counties within which water originates to obtain water rights having

precedence over rights and water developed under state filed applications, if the water appropriated under the state filed applications is not being applied to use within the county of origin. Further, the County of Origin Laws only apply to projects constructed pursuant to an assignment or release of the priority of state filed applications.[11]

An assignment or partial assignment is a transfer of ownership of all or part of the right which can be initiated under a 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 by the state of the priority of the state application in favor of an application filed by the recipient of the waiver. The effect of a release from priority is to prevent the state or a subsequent holder of the state filing from objecting to the application in favor of which the release was made.

4.6 General or Coordinated Plan

From time-to-time, the state has prepared comprehensive plans for the development of the waters of the state. The first statutory requirement for such a plan was set forth in Water Code § 10000. The section provides:

> "The coordinated plan for the conservation, development, and utilization of the water resources of the State (except the project known as the 'Trinity River Diversion', which is not approved) as set forth in the report thereon formulated and prepared by the Department of Public Works and transmitted to the Forty-Ninth Session of the Legislature pursuant to

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[11] PG&E's right to divert and use the water in the lakes is not based on the release or assignment of a state held application. Thus, the county of origin laws cannot provide a basis for providing persons filing applications for the use of water within Alpine and Amador Counties, with a water right having precedence over PG&E's rights. However, the county of origin laws do give applicants in Alpine and Amador Counties precedence over any rights obtained by El Dorado to divert and store water at Caples and Silver Lakes by a partial assignment of Application 5645.

> Chapter 832 of the Statutes of 1929 shall be known as the 'State Water Plan'."

This section was enacted in 1943 and amended, most recently, during 1957. The Legislature subsequently enacted Water Code sections 10004 through 10010. Section 10004 provides:

> "(a) The plan for the orderly development and coordinated control, protection, conservation, development, and utilization of the state which is set forth and described in Bulletin No. 1 of the State Water Resources Board entitled 'Water Resources of California,' and Bulletin No. 2 of the State Water Resources Board entitled, 'Water Utilization and Requirements of California,' and Bulletin No. 3 of the department entitled, 'The California Water Plan,' with any necessary amendments, supplements, and additions to the plan, shall be known as 'The California Water Plan.'
>
> "(b)(1) The department shall update the California Water Plan every five years . . . ."

"Department" means the Department of Water Resources. Pursuant to this section, the Department has prepared a number of California Water Plans. When section 10000 and related sections are contrasted with section 10004 et seq., it is readily apparent that the more recent enactment requiring preparation of the California Water Plan and regular updates to the plan is the coordinated plan looking toward the development, utilization, or conservation of the water resources of the state, superseding the State Water Plan. Further, a review of the successive California water plans prepared by the Department clearly indicates that the agency responsible for regularly preparing and updating the general plan views the State Water Plan as a historical document only and that each succeeding California Water Plan is the current effective water plan for the development of state

water.[12] (SWRCB, Decision 1587, p. 18.) Thus, in accordance with section 10504, the Board will rely upon the most recent California Water Plan and its updates for the purpose of determining whether a petition for assignment or release of a state filing "is for a purpose of development not in conflict with such general or coordinated plan . . . established pursuant to law".

5.0 WATER IS AVAILABLE FOR APPROPRIATION

This section analyzes the evidence in the hearing record concerning the availability of unappropriated water for the applications and petitions for partial assignment of SFA 564

5.1 Description of Watershed

The South Fork American River is one of three main forks of the American River whose 1921 square-mile watershed is also drained by the North Fork American River and the Middle Fork American River. The South Fork American River meanders through El Dorado County for an approximate distance of 60 miles from its confluence with the North Fork American River at Folsom Lake (elevation 350 feet) to its headwaters. The South Fork American River's watershed is essentially drained via five subwatersheds located in Alpine, Amador, and El Dorado Counties. The subwatersheds are: Weber Creek, Silver Fork of the South Fork American River, Silver Creek, Rock Creek, and Dutch Creek. (SWRCB, Decision 893, pp. 25, 26.)

The physical features of the South Fork American River watershed are typical of the Sierra Nevada region. The main water courses are generally deeply incised and are separated by broad ridges of

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[12] See Bulletin No. 3, The California Water Plan (May 1957), Foreword, Chapter 1, Basis and Authority for State-Wide Water Development Planning, and Previous State-Wide Planning. The 1957 California Water Plan is the foundation document upon which all successive plan updates are based. (California Water Plan Update (October 1994), Volume 1, Foreword, Bulletin 160-93.)

comparatively moderate to steep slopes. Vegetative cover ranges from grasslands and oak woodlands in the foothill areas to heavy stands of timber in the central zone. At the watershed's higher elevations, there are large areas of bare granite dotted with numerous small lakes. (SWRCB, Decision 893, pp. 25, 26.)

5.2 Climate

The climate of the South Fork American River watershed ranges from temperate conditions in the foothill areas to alpine conditions at higher elevations. Precipitation usually occurs during the late fall, winter, and early spring. At higher elevations, precipitation usually is in the form of snow. Summer thunderstorms are frequent in the mountains but, in the aggregate, contribute little runoff. (*Ibid.*)

Precipitation within the South Fork American River watershed has been recorded at measuring stations located at Folsom Dam (elevation 350) for the period 1955-1992, Placerville (elevation 1890) for the period 1948-1992, Pacific House (elevation 3440) for the period 1948-1992, and Echo Summit (elevation 7350) for the period 1948-1992. In addition, a measuring gage located at Twin Lakes (elevation 8000) has recorded precipitation for the period 1948-1992. Average annual precipitation ranges from 23.74 inches at Folsom Dam to 50.4 inches at Echo Summit. Total average annual precipitation at Twin Lakes is 48.6 inches. According to available data, 95 percent of all precipitation within the watershed occurs during the period of October through May. (SWRCB,3,4, and 5.)

5.3 Runoff

Flows of the South Fork American River have been recorded by PG&E in connection with FERC Project 184, under the general supervision of the United States Geological Survey (USGS). Such flows have been recorded at two USGS gaging stations: (1) gaging station (USGS #11444500) located downstream of PG&E's El Dorado

Project's Chili Bar Dam, about 2.5 miles north of Placerville and (2) Gaging station (USGS #11439500) located about 0.8 of a mile downstream of the South Fork American River's confluence with the Silver Fork of the South Fork American River (at Kyburz). USGS gaging station #11444500 records flows that are regulated by storage, diversions, and powerplants within a 598 square-mile drainage area. USGS gaging station #11439500 records flows that are regulated by storage in Lake Aloha, Echo Lake, Silver Lake, and Caples Lake within a 193 square-mile drainage area.

Tables 5-1 and 5-2, respectively, provide tabular summaries of recorded flows at USGS gaging station #11444500 during the period of record of 1912-1920 and 1964-1992, and at USGS gaging station #11439500 during the period of record of 1923-1992. The data summarized in Table 5-1 indicate that the average monthly regulated flows of the South Fork American River downstream of PG&E's Chili Bar Dam range from an October minimum of 417 cfs (25,601 af) to a May maximum of 2,695 cfs (165,395 af). The data summarized in Table 5-2 indicate that the river's average monthly regulated flows downstream of the river's confluence with the Silver Fork of the South Fork American River range from an October minimum of 51 cfs (1,900 af) to a May maximum of 1,174 cfs (72,072 af).

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TABLE 5-1
SOUTH FORK AMERICAN RIVER
(USGS # 1144500 - NEAR PLACERVILLE CALIFORNIA)

WATER YEAR	AVERAGE MONTHLY FLOW (CFS)												AVERAGE ANNUAL TOTAL
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1912	119	161	145	323	247	516	779	2707	2194	361	91	136	7779
1913	91	365	196	355	384	518	1837	2898	1207	328	124	72	8375
1914	82	152	355	3646	2197	2521	3414	4650	3225	1040	186	89	21557
1915	146	147	212	408	1817	1500	2911	4361	3562	905	168	106	16243
1916	96	133	348	1563	2362	3457	4299	3906	3172	883	188	105	20512
1917	339	260	736	494	1774	1311	3009	4024	4483	901	154	112	17597
1918	99	98	152	139	469	1461	2648	2608	1487	141	63	153	9518
1919	296	264	213	228	1413	1387	3079	4067	754	123	92	86	12002
1920	111	91	300	218	230	1128	1891	3217	1391	293	60	55	8985
1964											973	672	1645
1965	321	665	5386	4148	2395	1585	2939	3485	2372	1449	1097	970	26812
1966	840	743	1269	1014	864	1030	1540	1421	845	708	743	530	11547
1967	256	405	1331	1623	1353	1959	2091	4352	4047	2268	1136	929	21750
1968	491	1164	982	936	1293	993	925	1169	991	806	902	546	11198
1969	493	821	982	3497	2883	2571	3707	4749	3262	1339	1225	1064	26593
1970	640	802	1466	4871	2719	1762	1565	1975	1890	1013	985	356	20044
1971	429	1121	1975	1792	1353	1306	1516	2400	2845	1405	1200	721	18063
1972	531	752	1115	1323	991	1338	1221	1609	1434	918	1027	763	13022
1973	419	636	1373	2187	1830	1865	1700	2989	1854	839	727	761	17180
1974	472	1451	1883	2875	1703	2869	3511	3775	3004	1269	1300	1182	25294
1975	592	706	993	1180	1065	1406	1874	3506	2785	1183	1041	1054	17385
1976	579	784	1105	749	648	531	522	734	493	938	959	577	8619
1977	401	271	320	188	125	124	255	295	228	88	142	244	2681
1978	275	106	485	1341	888	2024	2833	3367	2226	986	736	542	15809
1979	316	686	571	1374	1162	1403	1903	3066	1276	953	936	918	14564
1980	588	477	799	4027	3300	2343	2706	3075	1964	1584	965	1328	23156
1981	658	639	885	760	810	993	988	908	583	849	842	759	9674
1982	431	1276	2331	2389	4370	3414	5382	5167	3511	1723	1311	1134	32439
1983	878	1847	2602	2221	3790	5561	4279	5444	6496	3648	1483	1123	39372
1984	935	3806	4633	2975	2209	2364	2491	2410	1483	867	1108	1004	26285
1985	646	943	842	744	1318	1018	1533	1232	583	963	918	889	11629
1986	453	453	1083	1461	6613	5067	2993	3075	2686	1183	1079	1052	27198
1987	523	639	729	410	846	647	878	860	774	761	723	447	8237
1988	204	107	464	554	743	650	546	474	433	409	408	454	5446
1989	216	291	415	416	539	2329	1836	1258	1059	1012	1022	948	11341
1991	516	498	525	426	425	862	874	1103	811	623	712	722	8097
1992	533	361	528	568	822	662	874	670	457	457	521	411	6864
AVERAGE (CFS)	417	670	1104	1484	1610	1735	2149	2695	1996	978	739	622	16199
AVERAGE (AF)	25601	39800	67738	91086	89243	106520	127626	165395	118581	60043	45366	36947	973945

SOURCE: SWRCB EXHIBITS 3 AND 5.

TABLE 5-2
SOUTH FORK AMERICAN RIVER
(USGS #11439500 - NEAR KYBURZ CALIFORNIA)

WATER YEAR	AVERAGE MONTHLY FLOW (CFS)												AVERAGE ANNUAL TOTAL
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1923	33.4	22.5	87.3	82.0	83.1	246.9	740.7	1577.6	905.5	301.4	30.5	55.0	4165.93
1924	52.5	56.7	20.8	9.3	18.1	2.5	172.1	264.8	0.8	0.6	0.7	0.5	599.38
1925	8.3	23.8	31.7	19.1	295.4	342.0	904.0	1559.4	1054.6	187.3	9.1	1.1	4435.74
1926	4.8	5.6	28.4	11.3	16.1	169.5	661.5	601.0	106.5	6.4	0.6	0.6	1612.25
1927	2.5	126.7	73.7	125.7	304.0	460.7	860.6	1581.6	1475.2	257.8	2.8	9.0	5280.37
1928	6.3	95.9	23.6	24.3	6.3	677.4	760.7	1200.5	221.2	4.6	2.9	2.5	3026.48
1929	0.8	0.5	1.5	0.6	7.0	23.2	179.4	743.3	304.8	4.5	1.6	2.1	1269.33
1930	2.6	1.6	36.3	9.8	28.5	158.6	653.5	710.1	550.1	35.1	3.2	3.2	2192.53
1931	3.7	9.6	0.7	1.0	0.8	25.0	231.8	245.3	28.4	0.9	2.0	2.5	551.58
1932	2.8	4.7	1.7	2.2	61.9	221.7	660.2	1373.1	1368.3	317.5	8.7	2.8	4025.68
1933	2.4	1.6	5.5	5.2	2.4	2.4	234.8	535.7	887.6	40.8	2.5	2.4	1723.54
1934	16.4	6.7	44.5	46.5	43.4	285.6	324.2	158.1	43.3	2.8	2.5	2.4	976.49
1935	2.4	16.1	9.7	25.0	53.6	84.1	735.8	1328.2	1026.4	67.2	8.1	8.1	3364.70
1936	5.4	4.8	4.0	87.5	161.3	411.5	1122.9	1741.7	1080.0	149.0	5.6	6.5	4780.09
1937	4.1	2.8	9.1	17.5	105.0	149.9	562.5	1630.4	624.3	46.6	2.3	2.3	3157.00
1938	3.3	8.3	510.4	82.8	109.8	394.0	977.4	2513.6	1945.9	265.8	4.4	2.7	6818.29
1939	7.9	6.1	9.8	9.0	23.6	158.3	616.7	360.8	67.8	2.2	3.1	3.5	1268.93
1940	5.1	6.5	7.9	255.3	260.8	677.4	1092.3	1665.8	604.7	23.5	2.1	3.3	4604.77
1941	1.5	9.2	68.1	30.9	133.3	271.4	522.8	1723.1	970.8	171.6	2.5	3.7	3908.82
1942	2.9	24.2	186.4	262.2	271.2	261.1	861.2	1428.2	1827.0	390.8	2.5	3.7	5521.37
1943	2.2	135.1	155.6	359.4	355.0	730.5	1307.9	1416.6	834.6	187.5	3.8	4.5	5492.66
1944	3.9	2.9	4.3	5.3	3.2	40.1	287.2	1026.0	498.5	57.6	3.0	3.1	1935.23
1945	8.3	117.7	54.2	35.6	414.4	156.2	772.3	1552.2	1037.5	152.5	2.8	4.0	4307.72
1946	49.0	159.5	266.4	209.6	106.8	289.0	1003.7	1517.2	633.5	47.7	6.0	12.3	4300.75
1947	76.8	74.3	12.7	8.2	63.6	139.2	360.4	737.9	157.3	5.4	5.2	6.9	1647.75
1948	54.9	13.8	5.7	47.2	7.2	5.8	370.9	1159.2	1337.5	158.0	5.7	7.0	3172.85
1949	25.4	35.5	6.1	15.3	6.9	15.9	723.4	1112.7	380.3	6.6	6.4	6.6	2341.01
1950	33.1	50.9	5.6	75.6	97.3	192.3	896.4	1522.4	1197.5	157.1	5.6	9.5	4243.28
1951	83.1	1283.4	1587.0	373.7	362.5	290.5	754.6	1037.1	477.6	18.3	7.0	9.6	6284.39
1952	28.2	43.9	52.7	23.5	113.7	171.8	1140.7	2739.7	2049.0	679.6	43.3	10.3	7096.48
1953	26.5	68.8	15.0	91.6	43.7	103.6	670.2	801.2	1310.4	411.0	8.0	7.7	3557.79
1954	36.4	16.4	9.5	7.6	16.2	251.5	751.3	905.6	163.6	5.3	5.5	8.5	2177.51
1955	39.8	23.9	12.9	6.8	18.9	44.3	182.8	911.7	553.1	10.1	6.4	9.0	1819.74
1956	24.4	25.0	939.7	690.4	253.3	355.1	806.2	1962.8	1077.3	318.1	11.0	14.3	7077.45
1957	16.4	12.3	15.8	8.0	178.4	291.9	457.9	1007.8	999.0	60.8	5.9	7.1	3061.42
1958	20.1	10.2	14.6	4.1	136.8	105.7	627.4	2544.5	1522.3	312.0	19.7	9.1	5326.47
1959	24.6	7.9	5.1	39.6	46.6	127.9	439.3	386.2	126.8	5.2	5.4	12.8	1227.36
1960	60.1	5.4	5.7	6.6	49.4	244.1	494.8	522.7	180.8	5.9	7.6	5.2	1588.36
1961	19.8	5.2	7.1	6.7	16.0	18.0	226.5	434.6	153.6	5.5	7.8	8.3	909.09
1962	31.4	6.1	9.3	6.2	49.5	33.9	923.4	972.4	814.6	82.8	8.5	5.3	2943.27
1963	104.8	6.7	43.9	220.4	877.4	73.5	384.8	1742.0	1059.8	121.1	9.0	7.9	4651.42
1964	35.9	123.7	7.3	13.4	18.4	34.3	346.7	702.7	422.4	11.0	7.8	5.0	1728.55
1965	12.6	5.8	1365.1	491.2	294.3	263.0	869.4	1486.2	1203.5	335.9	117.7	20.8	6465.44
1966	121.1	61.8	29.2	16.2	9.7	191.6	755.2	723.7	68.3	7.5	8.1	5.8	1998.17
1967	12.7	51.7	109.8	76.4	137.2	459.7	219.4	1725.4	2432.3	922.5	29.1	14.4	6190.73
1968	21.8	12.4	36.6	19.8	224.4	185.6	453.0	490.9	107.7	8.1	10.1	5.8	1576.17
1969	13.3	70.6	31.8	411.2	145.8	199.0	1053.9	2765.2	1697.0	378.2	8.8	7.8	6782.56
1970	28.2	12.3	210.2	878.2	347.6	325.9	389.3	1048.0	799.4	72.1	8.5	10.0	4129.54
1971	22.0	108.6	60.4	130.4	116.9	202.7	586.3	1241.9	1287.5	211.7	8.2	15.4	3991.71
1972	10.3	36.8	27.0	8.8	19.3	475.2	391.6	926.9	415.5	7.6	6.4	8.8	2334.19
1973	20.8	12.3	104.7	111.4	36.0	70.6	552.3	1839.0	685.7	11.9	20.7	5.8	3471.19
1974	21.8	378.7	169.5	436.7	136.2	420.4	705.7	1830.0	1132.7	210.2	13.4	9.4	5464.79
1975	17.7	9.3	10.0	7.6	23.9	79.2	129.7	1578.3	1743.1	242.6	20.9	12.3	3874.60
1976	91.7	31.5	12.0	12.8	16.3	27.4	99.1	253.8	10.3	9.5	20.8	22.5	607.57
1977	10.8	9.2	8.6	6.3	5.0	6.1	38.9	56.8	63.7	7.8	8.6	10.4	232.28
1978	8.4	3.7	37.5	46.6	40.0	358.6	587.5	1518.5	1472.4	230.7	6.8	36.5	4347.28
1979	21.9	7.6	19.1	108.6	24.9	162.3	528.1	1646.1	586.6	27.5	7.2	13.1	3153.01
1980	30.9	34.3	23.8	937.4	508.3	278.5	792.5	1450.4	1145.5	439.5	9.3	17.6	5668.00
1981	10.3	8.5	13.7	5.8	39.1	36.3	442.0	577.9	93.9	5.4	5.3	12.0	1250.36
1982	11.6	365.1	627.6	216.2	991.0	566.9	1496.7	2187.1	1255.0	379.9	21.5	60.4	8178.94
1983	208.0	300.2	222.5	228.6	367.9	781.1	613.8	2309.3	3551.3	1526.5	343.5	417.0	10869.65
1984	223.4	901.7	999.1	634.0	386.4	569.3	738.6	1606.4	884.7	93.7	8.9	13.0	7059.31
1985	46.7	86.5	55.3	52.7	53.8	63.7	742.9	679.9	134.6	52.1	51.9	38.7	2058.79
1986	49.3	59.4	101.6	242.9	1333.1	1252.5	1024.9	1400.4	992.1	111.4	55.0	58.9	6681.64
1987	61.7	54.7	52.4	54.8	63.5	69.4	344.0	275.5	21.7	20.9	19.8	17.1	1055.46
1988	17.2	18.9	26.4	26.8	23.5	52.5	146.4	139.1	37.2	23.8	23.0	14.9	549.56
1989	19.4	30.2	22.4	24.9	42.1	641.5	1021.7	831.5	533.7	53.0	53.1	61.9	3335.38
1991	20.1	20.6	21.3	22.2	16.2	83.6	198.7	617.5	412.4	24.5	20.9	23.1	1481.11
1992	28.8	20.6	22.8	23.2	81.4	65.8	382.4	156.8	23.9	32.5	21.7	22.9	882.89
AVERAGE (CFS)	31.0	77.9	127.8	124.5	155.1	241.0	610.3	1174.2	803.9	152.8	17.7	18.1	3534.26
AVERAGE (AF)	1900.4	4627.8	7844.0	7644.6	8601.0	14790.5	36249.8	72072.4	47754.4	9378.0	1083.6	1074.6	213021.30

SOURCE: SWRCB EXHIBITS 3 AND 5.

5.4 Effect of Board Decisions and Orders Related to Water Availability

Decision 893 approved the appropriation of water at Folsom Reservoir by the Bureau and other applicants in the American River watershed. Decision 893 evaluated water availability based on hydrologic conditions prior to and subsequent to the 1927 priority date of Application 5645. The decision 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 August through October.[13] Thus, the Board is required to limit the season of diversion for any permits issued pursuant to the pending applications and petitions for partial assignment of Application 5645 to the months of November through July of the following year.

5.5 Existing Water Rights

There are a total of 144 recorded water rights with a higher priority than state filed Application 5645 on file with the Division of Water Rights for the South Fork American River watershed in Alpine, Amador, and El Dorado Counties. (Division of Water Rights, Water Rights Information Management System (WRIMS). Of the total 144 paramount rights, only 11 are located on the main stem of the river, 9 are located within Pyramid Creek's watershed (Aloha Lake), 3 are located within Caples Creek's watershed (Caples Lake), and 10 are located within the Silver Fork American River's watershed (Silver Lake). Table 5-3 provides a summary of the water rights on record.

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[13] The Board takes administrative notice of the findings in Decision 893.

Board Orders WR 89-25 and WR 91-07 (Declarations of Fully Appropriated Streams) declare the American River to be fully appropriated during the period July 1 to October 31 upstream from its confluence with the Sacramento River; however, state filings are expressly exempted from these orders, unless they are filed subsequent to the entry of the orders.

TABLE 5-3

South Fork American River Watershed--Water Rights Summary

TYPE OF WATER RIGHT	SFAR WATERSHED TOTAL WITH HIGHER PRIORITY THAN SFA 5645	PYRAMID CREEK (ALOHA LAKE) WATERSHED TOTAL WITH HIGHER PRIORITY THAN SFA 5645	CAPLES CREEK (CAPLES LAKE) WATERSHED TOTAL WITH HIGHER PRIORITY THAN SFA 5645	SFAM (SILVER LAKE) WATERSHED TOTAL WITH HIGHER PRIORITY THAN SFA 5645	SFAR MAIN STEM TOTAL WITH HIGHER PRIORITY THAN SFA 5645
Application	41	3	3	4	2
Stockpond Certificate	0	0	0	0	0
Small Domestic Use Registration	0	0	0	0	0
Federal Filing	0	0	0	0	0
Statements	103	6	9	6	9
Temporary Permit	0	0	0	0	0
TOTAL RECORDED	144	9	3	10	11

Table 5-4 summarizes the paramount water rights of record within the watersheds of Pyramid Creek, Caples Creek, and Silver Fork, as well as rights located on the South Fork American River. As Table 5-4 indicates, the total annual paramount demand within each of the three watersheds and on the main stem are: Pyramid Creek, 12,091 af; Caples Creek, 25,000 af (or 50,000 af, assuming a cumulative total of PG&E's and Bureau rights); Silver Fork American River, 22,546 af; and main stem of the South Fork American River, 1,423,395 af (1,300,860 af at Chili Bar Powerhouse and 112,741 af at PG&E's El Dorado Intake).

5.6 Water Availability

Table 1-1 summarizes the substance of the applications and petitions for partial assignment of SFA 5645 filed by El Dorado, Kirkwood PUD, Kirkwood, Inc., Alpine County, and Amador County.

The combined total annual demand for all filings is 64,227 afa. The following summarizes each filing:

- **El Dorado:** Under water right Applications 29919, 29920, 29921, 29922, and SFA 5645(8), the total amount of water directly diverted and diverted to storage would not exceed 33,000 afa, the total amount of water to be taken by direct diversion and rediversion of stored water would not exceed 17,000 afa, and the total amount of water to be taken by direct diversion would not exceed 15,000 afa and would be limited to water originating in the South Fork American River watershed upstream of the El Dorado Canal diversion near Kyburz.

- **Kirkwood, Inc.:** Under Applications 30062, 30453, and SFA 5645(11), the total combined direct diversion and storage would not exceed 500 afa.

- **Kirkwood PUD:** Under Application 30204, the total amount diverted would not exceed 310 afa.

- **Alpine:** Under Application 30219 and SFA 5645(9), the maximum annual combined quantity for direct diversion and storage would not exceed 21,581 afa. The applications would appropriate by direct diversion 71 afa and 96.4 afa, respectively.

- **Amador:** Under Application 30218 and SFA 5645(10), the total amount diverted would not exceed 8740 afa.

USGS records relating to the measurement of water downstream of Lake Aloha and Caples and Silver Lakes and the river's main stem are available. (95,SWRCB,3,5.) The following is a brief

description of each gage and the supply of water available at each gage:

- **USGS Gage #11436000** (see Table 5-5): This gage is located in the Silver Fork at Silver Lake's outlet near Kirkwood and has recorded regulated runoff produced by a 15.2 square mile watershed during the period of record 1923-1992. The recorded total average annual flow for the period of record is 25,103 af (minimum--6,348 af [1976]; maximum--61,741 af [1983]).

- **USGS Gage #11437000** (see Table 5-6): This gage is located in Caples Creek at Caples Lake's outlet near Kirkwood and has recorded regulated runoff produced by a 13.5 square-mile watershed during the period of record 1923-1992. The recorded total average annual flow for the period of record is 27,574 af (minimum--8,201 af [1924]; maximum--59,063 af [1983]).

- **USGS Gage #11435100** (see Table 5-7): This gage is located in Pyramid Creek at Twin Bridges and has recorded regulated runoff produced by an 8.8 square-mile watershed during the period of record 1971-1992. The recorded total average annual flow for the period of record is 27,627 af (minimum--11,036 af [1977]; maximum--47,055 af [1982]).

- **USGS Gage #11444500**: This gage is located downstream of PG&E's Chili Bar Dam. The recorded total average annual flow for the period of record is 973,946 af (minimum--161,463 af [1977]; maximum--2,371,178 af [1983]).

- **USGS Gage #11439500**: This gage is located about 0.8 mile downstream of the South Fork American River's confluence with the Silver Fork of the South Fork American River. The recorded total average annual flow for the period of record is

213,021 af (minimum--13,972 af [1977]; maximum--654,585 af [1983]).

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TABLE 5-4
RECORDED WATER RIGHTS - PRE-SFA 5645 PRIORITY

MAIN STEM - SOUTH FORK AMERICAN RIVER

RECORDED APPLICATION	FILING DATE	PERMIT	LICENSE	MAX. D/D	D/D UNIT	MAX. STORAGE (AF)	LAST NAME	COMPANY NAME	SOURCE NAME	TRIBUTARY NAME	USE CODE	D/D SEASON	STORAGE SEASON	TOTAL ANNUAL AMOUNT (AFA)
A001440	09/08/19	000994	002540	86	C	0		PACIFIC GAS & ELECTRIC COMPANY	SOUTH FORK AMERICAN RIVER (EL DORADO INTAKE)	AMERICAN RIVER	P	1/1-12/31		62152 (a)
A004781	09/24/25	002403	000941	950	G	0	RAULIEN		SOUTH FORK AMERICAN RIVER	AMERICAN RIVER	D	6/1-11/1		0.43
S000588	12/28/65			14.5	C	0		COLOMA-LOTUS RANCH DITCH USERS ASSOC.	SOUTH FORK AMERICAN RIVER	AMERICAN RIVER	I	4/1-11/30		7,971
S008187	01/01/75			40	G	0	UNRUH		SOUTH FORK AMERICAN RIVER	AMERICAN RIVER	D	5/1-9/30		0.01
S009034	06/29/76			70	C	0		PACIFIC GAS & ELECTRIC COMPANY	SOUTH FORK AMERICAN RIVER (EL DORADO INTAKE)	AMERICAN RIVER	I	1/1-12/31		50389 (a)
S010599	06/29/81			1800	C	0		PACIFIC GAS & ELECTRIC COMPANY	SOUTH FORK AMERICAN RIVER (CHILI BAR POWERHOUSE)	AMERICAN RIVER	P	1/1-12/31		1,300,160
S010549	09/15/81			200	G	0	DAUER		SOUTH FORK AMERICAN RIVER	AMERICAN RIVER	D	1/1-12/31		0.22
S010717	12/15/81			3	C	0		EL DORADO IRRIGATION DISTRICT	SOUTH FORK AMERICAN RIVER	AMERICAN RIVER	D	1/1-12/31		2,168
S011427	01/08/85			0.056	C	0	WEI		SOUTH FORK AMERICAN RIVER	AMERICAN RIVER	D	1/1-12/31		40
S013591	05/17/88			0.067	C	0	HENDRIX		SOUTH FORK AMERICAN RIVER	AMERICAN RIVER	I	5/1-9/30		20
S014209	08/24/94			0.2	C		MATAGRANO		SOUTH FORK AMERICAN RIVER	SACRAMENTO RIVER	I	1/1-12/31		144
													TOTAL	1,423,945

PYRAMID CREEK WATERSHED

RECORDED APPLICATION	FILING DATE	PERMIT	LICENSE	MAX. D/D	D/D UNIT	MAX. STORAGE (AF)	LAST NAME	COMPANY NAME	SOURCE NAME	TRIBUTARY NAME	USE CODE	D/D SEASON	STORAGE SEASON	TOTAL ANNUAL AMOUNT (AFA)
A000634	04/26/17	000619	000438	0		15000		PACIFIC GAS & ELECTRIC COMPANY	ALONA LAKE - PYRAMID CREEK	SOUTH FORK AMERICAN RIVER	P		1/1-12/31	5,000 (a)
A001441	09/08/19	000995	002541	0		22500		PACIFIC GAS & ELECTRIC COMPANY	ALONA LAKE - PYRAMID CREEK	SOUTH FORK AMERICAN RIVER	P		1/1-12/31	300 (a)
A005618	07/25/27	004020	002542	0		42900		U S BUREAU OF RECLAMATION	ALONA LAKE - PYRAMID CREEK	UNNT	P		1/1-12/31	5,900 (b)
S006968	01/01/71			0.57	C	0		U S ELDORADO NATL FOREST	UNNT	PYRAMID CREEK	I	1/1-12/31		267
S006969	01/01/71			0.1	C	0		U S ELDORADO NATL FOREST	UNNT	PYRAMID CREEK	I	1/1-12/31		72
S009035	06/29/76			0		350		PACIFIC GAS & ELECTRIC COMPANY	PYRAMID CREEK	SOUTH FORK AMERICAN RIVER	M		5/1-8/31	350
S010939	06/21/82			1500	G	0		U S ELDORADO NATL FOREST	UNNP	GASPARINI CREEK	S	4/1-11/30		1
S010940	06/21/82			1500	G	0		U S ELDORADO NATL FOREST	UNNP	GASPARINI CREEK	S	4/1-11/30		1
S013978	02/05/93			200	G	0	BACCHI		BRUSH CREEK	SOUTH FORK AMERICAN RIVER	E	1/1-12/31		0.2
													TOTAL	12,091

CAPLES CREEK WATERSHED

RECORDED APPLICATION	FILING DATE	PERMIT	LICENSE	MAX. D/D	D/D UNIT	MAX. STORAGE (AF)	LAST NAME	COMPANY NAME	SOURCE NAME	TRIBUTARY NAME	USE CODE	D/D SEASON	STORAGE SEASON	TOTAL ANNUAL AMOUNT (AFA)
A000634	04/26/17	000619	000438	0		15000		PACIFIC GAS & ELECTRIC COMPANY	CAPLES LAKE	CAPLES CREEK	P		1/1-12/31	8,000 (a)
A001441	09/08/19	000995	002541	0		22500		PACIFIC GAS & ELECTRIC COMPANY	CAPLES LAKE	CAPLES CREEK	P		1/1-12/31	17,000 (a)
A005618	07/25/27	004020	002542	0		42900		U S BUREAU OF RECLAMATION	CAPLES LAKE	UNNT	P		1/1-12/31	25,000 (b)
													TOTAL	50,000

SILVER FORK AMERICAN RIVER WATERSHED

RECORDED APPLICATION	FILING DATE	PERMIT	LICENSE	MAX. D/D	D/D UNIT	MAX. STORAGE (AF)	LAST NAME	COMPANY NAME	SOURCE NAME	TRIBUTARY NAME	USE CODE	D/D SEASON	STORAGE SEASON	TOTAL ANNUAL AMOUNT (AFA)
A001441	09/08/19	000995	002541	0		22500		PACIFIC GAS & ELECTRIC COMPANY	SILVER LAKE	SILVER FORK AMERICAN RIVER	P		1/1-12/31	5,000 (a)
A003887	03/05/24	001948	001093	8000	G	0	PLASSE		UNNP	SILVER LAKE	D	6/1-10/1		3
A004062	07/01/24	001853	001434	0.05	C	0		CITY OF STOCKTON	UNCR	SILVER FORK AMERICAN RIVER	D	6/1-10/1		13
A005618	07/25/27	004020	002542	0		42900		U S BUREAU OF RECLAMATION	SILVER LAKE	SILVER FORK AMERICAN RIVER	P		1/1-12/31	10,000 (b)
S000597	11/30/65			0.033	C	0		SILVER FORK WATER ASSOC. INC.	SUGAR LOAF CREEK	SOUTH FORK AMERICAN RIVER	I	1/1-12/31		24
S004708	01/01/69			0		8390		PACIFIC GAS & ELECTRIC COMPANY	SILVER FORK OF SOUTH FORK AMERICAN RIVER	SOUTH FORK AMERICAN RIVER	P	1/1-12/31		5,000 (a)
S005473	01/01/70			1500	G	0		U S ELDORADO NATL FOREST	UNNP	SILVER FORK OF SOUTH FORK AMERICAN RIVER	D	6/1-11/30		1
S005505	01/01/70			4600	G	0		U S ELDORADO NATL FOREST	UNNT	SOUTH FORK AMERICAN RIVER	D	4/15-11/30		4
S005528	01/01/70			5.47	C	0		U S ELDORADO NATL FOREST	UNNT	SILVER FORK AMERICAN RIVER	D	1/1-12/31		2,500
S011041	12/13/82			180	G	0		U S ELDORADO NATL FOREST	SHEEP CORRAL CREEK	SILVER LAKE	D	5/1-10/31		1
													TOTAL	22,546

SOURCE: DIVISION OF WATER RIGHTS' WATER RIGHTS INFORMATION MANAGEMENT SYSTEM (WRIMS)

(a) - PG&E EXHIBIT #5

(b) - DIVISION OF WATER RIGHTS APPLICATION 5618

TABLE 5-5
SILVER LAKE OUTLET NR KIRKWOOD CALIF

(USGS GAGE #11436000)

WATER YEAR	AVERAGE MONTHLY RELEASES (AF)												TOTAL ANNUAL
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1923	1642.2	1183.6	781.7	613.8	443.5	1657.3	2732.4	10092.1	5673.1	1571.1	463.1	9.5	26863.5
1924	12.1	11.9	315.8	1718.6	610.2	6.1	11.7	3473.5	303.7	1764.2	1538.5	70.3	9836.6
1925	34.5	361.7	942.5	710.8	1149.4	1237.5	2710.6	11262.2	8114.0	850.4	27.1	861.1	28261.9
1926	2442.7	459.8	477.2	85.1	11.1	11.3	4996.1	5239.1	1466.6	926.6	2358.2	230.9	18704.7
1927	14.7	321.0	429.1	1511.7	1552.3	1718.6	2185.9	10977.1	11975.0	1276.7	2593.8	1787.9	36343.9
1928	279.8	1297.9	811.0	645.5	455.2	1435.9	5039.1	9951.5	1522.4	1727.0	2089.5	590.2	25844.9
1929	17.4	8.7	10.5	9.2	8.3	30.7	183.0	6286.9	2796.8	672.8	1841.4	1940.2	13805.8
1930	6.9	59.2	105.9	196.6	18.2	26.1	2489.5	5882.6	3746.2	3002.7	2255.2	1011.8	18800.9
1931	152.7	143.7	55.2	20.2	30.3	213.8	87.9	1226.4	182.0	238.6	220.6	3819.4	6390.8
1932	545.9	392.4	61.6	61.4	491.0	1087.0	2655.2	9692.1	7991.3	3401.6	2215.6	1801.8	30397.0
1933	644.9	48.9	10.1	12.3	7.7	17.4	791.2	2488.9	6411.2	311.5	364.5	2346.3	13454.9
1934	1880.6	681.7	391.8	198.2	5.5	38.8	1201.5	1335.1	137.0	85.3	55.6	3411.5	9422.8
1935	1452.7	480.7	530.6	628.7	704.9	1047.4	2035.4	7546.2	7261.7	167.1	71.9	3693.3	25620.6
1936	1687.2	99.4	62.2	306.9	574.2	1243.4	4609.4	13660.0	4746.5	398.4	140.8	3529.7	31058.1
1937	2002.8	67.1	12.3	12.3	166.3	429.7	1841.4	12036.4	3735.3	197.0	103.8	2801.7	23406.0
1938	2429.5	219.4	4045.9	1692.9	1473.1	1774.1	2508.7	12020.6	10820.1	1557.3	109.9	3618.1	42269.4
1939	1510.3	1154.9	626.9	45.7	11.1	635.8	1303.6	2222.2	209.7	70.9	56.8	877.9	8725.9
1940	1161.3	2678.5	605.9	1627.6	1154.3	1455.3	3914.5	14325.3	1578.9	88.1	173.1	4158.8	32921.5
1941	996.1	150.3	182.6	736.6	554.4	1037.5	1641.4	13618.4	5478.7	816.0	107.5	3952.1	29271.5
1942	1708.7	457.4	2057.6	1738.4	1419.7	1247.4	1904.8	8973.4	10842.5	2573.2	123.7	2889.0	35935.8
1943	1958.6	53.9	792.8	1164.2	1120.7	1235.5	7906.1	9905.9	3241.3	619.1	64.5	1368.2	29430.9
1944	2009.9	1869.1	185.7	61.4	57.4	184.1	594.0	7010.2	3545.4	158.2	108.3	3028.4	18812.2
1945	2015.6	252.8	1218.7	1595.9	1675.1	1859.2	3203.2	10172.8	5409.8	937.9	40.6	2625.7	31007.4
1946	1234.5	929.6	1837.4	1312.7	589.2	1384.0	6231.1	8959.5	2586.3	105.1	28.5	991.0	26189.1
1947	3318.5	1043.9	448.3	306.9	514.4	9.3	289.5	5913.5	698.9	129.7	1497.5	3124.4	17294.7
1948	966.0	586.7	371.2	738.9	5.3	0.8	498.0	5516.3	8997.1	622.3	81.6	3606.8	21991.1
1949	1631.1	269.7	90.3	92.1	83.2	92.1	4103.7	6872.8	3725.0	118.0	63.6	3348.2	20489.6
1950	1495.7	193.0	52.7	9.9	51.5	940.5	3395.1	9785.2	6468.5	453.0	83.8	2988.4	25917.2
1951	2372.0	6555.8	7139.9	1717.8	13.7	28.5	2621.9	6187.5	2348.9	130.9	110.3	3540.6	32767.8
1952	1205.0	378.0	784.7	81.2	11.5	311.3	3421.4	15018.3	9502.2	4674.8	125.9	1644.2	37158.5
1953	3332.3	985.0	90.9	13.1	5.5	81.0	3336.9	3127.2	8850.6	1851.5	155.0	1787.9	23617.0
1954	2463.1	1091.0	371.1	51.1	55.4	2450.8	3930.1	7267.8	1186.6	190.5	138.4	2811.6	22007.5
1955	1789.9	385.5	310.7	426.3	384.7	514.2	150.5	6445.7	4036.6	175.2	164.1	3234.3	18017.8
1956	1566.2	303.9	3218.1	3049.2	2124.5	1635.5	3407.6	12276.0	8448.7	1166.6	132.5	2949.6	40278.3
1957	2750.2	986.2	690.6	401.5	780.9	1393.9	1968.1	6557.8	8058.6	355.0	1192.8	3478.9	28614.6
1958	1403.8	357.4	216.0	306.1	527.1	853.4	1496.9	15218.3	8731.0	1666.4	106.3	2843.1	33725.7
1959	2560.1	513.4	52.3	364.1	429.1	946.8	1197.1	1662.6	1560.0	55.8	43.6	3196.9	12581.9
1960	1766.2	25.1	0.0	0.0	44.4	534.6	1094.3	3648.3	2383.7	64.9	28.3	2740.3	12330.3
1961	1627.6	378.6	153.3	70.1	247.1	688.8	481.1	1826.2	1526.8	82.0	2149.9	2688.8	11920.2
1962	1006.4	139.4	166.7	174.0	448.5	488.9	4439.2	7401.2	5532.3	447.5	195.8	3702.2	24142.1
1963	909.2	1883.0	772.2	751.2	5169.8	1061.1	1533.7	9388.6	6262.7	571.4	232.1	3280.9	31815.8
1964	1082.1	2005.1	1343.2	1237.5	469.5	443.3	356.4	3474.7	2731.4	161.2	203.7	2642.9	16151.1
1965	1016.1	1269.2	4708.8	2425.5	1588.0	1376.1	2898.7	11844.4	5995.0	2313.2	347.7	2061.0	37843.7
1966	3033.4	1683.0	383.1	514.0	469.1	571.8	2861.1	5456.9	290.1	201.0	207.7	1371.7	17042.8
1967	1355.1	1029.4	1886.9	1073.2	865.3	1661.2	2065.1	8185.3	13388.8	5434.3	188.5	4167.7	41300.8
1968	1198.3	577.6	299.4	241.6	242.2	1225.6	4581.7	2667.9	1137.7	234.0	311.8	3623.0	16340.7
1969	1028.5	15.1	18.4	1609.8	912.8	731.6	4591.6	18790.2	9531.1	2833.2	179.6	2895.9	43137.8
1970	1852.7	1197.7	1264.8	4369.9	3156.1	2366.1	2304.1	6182.0	5565.4	222.6	171.1	514.6	29167.0
1971	1071.0	2715.0	2286.9	469.9	146.7	448.7	3047.2	10612.8	6394.4	790.4	175.4	2100.2	30258.6
1972	2647.1	701.7	690.2	395.7	359.4	2313.0	624.3	6187.9	3212.5	164.1	162.6	3476.1	20934.6
1973	1390.0	708.2	510.0	472.4	238.4	265.9	841.9	13456.1	4658.9	222.2	224.5	3437.1	26425.7
1974	1363.4	4134.0	1841.4	1606.0	774.2	1540.4	3423.4	11737.4	7553.1	1180.9	137.6	4005.1	39297.1
1975	1199.9	341.4	117.1	207.9	461.5	101.6	122.4	8418.4	11383.0	1193.7	172.1	3038.3	26757.2
1976	918.7	740.9	1924.6	1233.1	157.6	270.3	124.7	132.5	134.8	142.0	139.2	430.1	6348.5
1977	2024.9	1443.2	63.5	46.7	27.3	89.8	38.5	84.2	85.1	82.1	103.9	2920.3	7009.6
1978	290.3	852.4	346.1	131.4	322.9	109.9	3506.6	9985.1	10241.0	1701.0	168.9	1690.3	29345.9
1979	147.3	2755.2	1744.4	837.9	813.8	158.8	1476.0	10755.4	3329.6	165.3	196.2	2830.4	25210.3
1980	1607.6	809.6	678.9	2920.6	1813.7	1027.6	5423.2	9628.7	8339.8	2948.0	166.4	1211.9	36576.0
1981	2689.2	1419.5	153.6	174.2	199.2	199.4	1378.7	5094.5	893.0	147.7	137.0	1031.4	13517.4
1982	2560.1	2455.1	5276.7	1372.1	4166.5	1881.0	6926.0	13966.9	9452.5	1820.2	169.3	744.5	50791.0
1983	1449.6	6002.0	1035.7	797.7	751.2	1110.0	1209.8	11291.9	20978.1	11420.6	1261.9	4432.6	61741.2
1984	3296.7	3886.7	3302.6	2936.3	498.8	1031.8	4110.5	10694.0	5031.6	120.6	145.6	1977.0	37032.2
1985	2987.8	1448.6	2343.2	1115.0	726.7	662.7	2836.9	4941.3	1294.3	105.9	152.8	2002.4	20617.6
1986	1450.0	1950.3	583.5	336.8	3776.3	6027.1	7526.0	13135.3	7318.1	468.9	225.1	1000.0	43797.3
1987	2365.3	2554.2	518.4	81.8	96.0	433.6	225.1	2096.4	297.4	245.9	3101.5	1427.8	13443.3
1988	816.9	730.6	236.4	448.5	522.7	596.0	186.9	280.8	497.2	330.3	1273.9	731.2	6651.4
1989	1052.8	1044.4	821.5	800.5	416.0	1530.7	5245.6	6799.3	3989.5	262.9	1318.7	391.0	23673.1
1991	2001.8	1186.0	270.7	63.0	43.0	346.1	363.1	3797.0	3822.8	383.7	498.6	824.1	13599.9
1992	1065.6	670.4	1418.7	1249.2	444.5	359.6	1427.2	1636.5	265.7	311.1	1413.9	379.6	10641.9
AVERAGE	1521.3	1098.3	979.0	788.8	719.4	897.5	2461.8	7736.3	5013.1	1041.7	530.6	2315.1	25102.9

SOURCE: SWRCB EXHIBIT 3 AND 5

TABLE 5-6
CAPLES LK OUTLET NR KIRKWOOD CA
(USGS GAGE #11437000)

WATER YEAR	AVERAGE MONTHLY RELEASES (AF)												TOTAL ANNUAL
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1923	90.1	80.6	73.7	263.9	238.4	307.3	2271.2	7724.0	7953.7	5312.3	867.1	100.2	25282.4
1924	1313.7	559.2	94.6	12.3	11.5	36.8	128.1	61.4	598.6	12.3	2468.7	2904.7	8201.7
1925	1730.9	1016.9	453.4	458.0	11.1	15.6	75.6	50.5	6277.6	1462.8	2482.3	123.4	14158.1
1926	478.0	1962.0	1559.6	2765.7	140.6	34.8	177.7	3597.7	3188.0	961.7	3915.3	5869.7	24650.7
1927	3329.6	1672.3	620.1	129.9	22.2	35.6	100.9	2870.8	7327.6	2498.8	545.3	1342.2	20495.3
1928	4722.7	196.6	1402.2	1163.6	23.0	132.9	651.8	5448.0	2543.3	539.4	1919.2	6791.4	25534.1
1929	6319.8	1859.2	2878.1	657.6	38.8	20.8	63.4	37.0	20.8	1105.6	3641.2	2373.6	19016.0
1930	852.2	666.7	17.2	1805.0	13.5	19.0	71.7	29.7	251.3	852.4	1331.0	4554.0	10463.5
1931	1261.3	6405.3	4959.1	2156.2	602.7	55.0	142.6	24.4	24.0	24.6	1426.4	973.6	18055.1
1932	2131.7	2176.4	1802.8	1335.5	1285.0	126.7	366.2	129.5	2730.4	3942.2	691.0	251.7	16969.1
1933	3457.1	4318.4	4494.6	3112.6	3746.2	482.1	1009.9	105.1	96.2	92.1	587.7	348.7	21850.5
1934	95.0	487.7	2827.4	1847.3	122.4	100.6	305.4	411.0	946.4	959.5	3516.5	157.0	11776.3
1935	2357.8	730.0	2305.7	2356.2	98.6	91.1	290.1	1850.3	8925.8	2506.7	2815.6	2670.6	26998.5
1936	1966.7	5308.4	3692.7	731.6	86.1	96.8	326.7	4672.4	6589.4	3013.6	2726.5	1597.7	30808.6
1937	4950.0	4377.8	3043.3	3880.8	297.0	92.3	271.1	138.6	2209.3	2560.1	3124.4	1089.6	26034.2
1938	1429.8	3096.7	1326.8	91.9	1286.0	7733.9	15561.6	5441.8	11511.7	5470.7	1712.7	875.4	55539.0
1939	326.7	700.9	3342.2	3857.0	2659.1	1102.9	2210.8	228.3	1981.8	2629.0	3498.5	519.0	23056.2
1940	95.4	1950.9	4272.8	1079.5	86.1	96.2	4792.5	2315.2	6530.0	1686.6	3581.8	1545.4	28032.5
1941	3196.7	1586.0	2936.3	625.7	1386.0	1534.5	4354.4	542.9	7524.0	4233.2	1294.9	1058.1	30272.8
1942	4068.9	2332.8	815.8	736.6	4765.9	3235.3	7261.0	118.8	10360.9	6874.6	1401.8	713.0	42685.4
1943	1671.5	249.3	666.7	1445.4	4694.6	3655.1	10776.5	4075.0	7894.3	3750.1	383.5	394.0	39656.0
1944	603.3	2079.0	4274.8	3635.3	2423.5	1380.5	2672.3	80.6	2311.6	2243.1	2630.4	2417.6	26752.1
1945	4191.7	101.0	483.3	1122.9	554.8	598.6	1796.5	5324.2	7304.2	3454.5	2342.3	2319.8	29593.7
1946	1579.0	111.9	2987.2	3197.7	2882.9	644.7	1830.5	5496.5	5940.0	1883.0	3969.9	4959.9	35483.1
1947	2026.7	1193.7	1294.9	1332.5	435.0	236.8	675.8	256.2	2187.3	1397.9	4930.2	2837.3	18804.5
1948	1897.6	670.6	1595.9	874.8	1993.1	812.4	1697.3	148.9	4827.2	2762.1	1445.0	2314.4	21039.3
1949	1192.2	566.9	2968.0	4361.9	2898.7	1047.4	2683.8	279.0	2448.5	756.2	2043.2	2063.8	23309.4
1950	3457.1	3029.4	2522.5	2677.0	917.1	251.1	654.9	756.2	8613.0	2791.8	3284.8	1277.5	30232.3
1951	2701.5	2824.3	6638.9	1985.1	609.8	675.2	4589.5	7993.3	6421.1	1879.0	4072.9	2511.0	42901.7
1952	2610.8	1938.8	2011.3	2391.8	1205.8	1289.0	3705.8	1356.3	10531.6	8486.3	2164.1	882.3	38574.0
1953	3738.2	2696.8	6163.7	2259.2	1087.0	596.6	1314.4	182.6	2181.8	6009.3	2857.1	2070.3	31157.0
1954	2936.3	5845.0	4898.5	1851.3	515.4	169.7	526.3	219.6	164.7	2809.8	5221.3	3099.5	28257.4
1955	3522.4	2406.9	1496.9	2174.0	534.8	343.7	769.0	52.5	30.3	998.3	4207.5	3337.3	19873.6
1956	4276.8	2502.7	628.6	415.0	390.5	418.6	1201.7	5149.2	13252.1	5153.9	1749.3	1094.5	36233.1
1957	4146.1	3456.9	4414.0	2260.8	877.3	204.3	588.1	250.9	7187.4	3150.4	3825.4	2559.3	32920.9
1958	5171.8	2668.2	1570.1	726.7	153.4	165.7	2278.3	6693.8	4504.5	5464.8	1657.3	1672.9	32727.6
1959	4540.1	7591.3	2475.0	1171.8	902.9	430.3	980.0	170.3	199.6	265.3	4445.1	2086.7	25258.4
1960	3183.8	2777.9	1753.5	2013.3	286.5	299.8	729.0	160.4	134.4	973.8	3330.4	1615.1	17257.9
1961	2522.5	1898.8	2007.7	1758.2	223.7	188.7	559.9	198.6	188.1	1524.6	1381.8	882.1	13334.8
1962	2066.7	3286.8	2013.7	2287.9	205.1	1433.7	2982.7	214.4	4756.2	3445.2	6169.7	1588.8	30450.8
1963	668.8	4561.9	3193.7	2260.4	208.5	199.2	571.4	3225.4	9224.8	4031.3	3627.4	917.1	32689.9
1964	1373.3	536.8	743.7	2758.1	2760.1	1723.0	3443.9	180.2	4397.6	1770.5	4276.8	4061.0	28025.0
1965	2527.1	2293.0	213.8	165.7	149.7	165.7	5946.4	4067.5	8502.9	5955.8	3613.9	666.5	34268.1
1966	1917.2	4235.2	4066.9	3377.9	2486.9	576.8	1297.4	207.9	483.5	1649.3	4757.9	4565.7	29622.6
1967	1842.4	2464.5	953.2	206.3	249.1	313.8	917.9	2288.5	12519.5	10525.7	3175.9	1714.5	37171.3
1968	2682.3	5628.7	6336.0	2399.8	829.8	546.1	1307.2	187.1	211.9	1542.4	2447.3	1476.5	25595.0
1969	1876.8	1701.6	4647.1	1473.1	1330.6	1473.1	4256.0	4542.1	15647.9	6318.8	1886.3	1865.2	47018.6
1970	1982.4	4358.0	6418.0	893.2	918.7	1037.5	2728.2	763.5	8517.8	3490.5	6195.7	4388.7	41692.1
1971	310.9	1818.6	2043.4	544 9	197.6	186.9	570.6	301.0	8493.6	3942.2	2163.7	1693.3	22266.7
1972	4472.8	4583.7	5049.0	2391.8	954.0	312.4	709.4	274.0	280.0	340.8	3653.1	1877.4	24898.5
1973	2167.7	4757.9	1945.9	351.1	306.7	349.5	1033.5	2670.0	7438.9	1607.8	2840.3	3065.0	28534.3
1974	2189.9	1329.0	205.9	707.3	972.2	861.3	4124.1	8656.8	10406.0	4305.3	946.4	2982.1	37686.1
1975	4335.4	6937.9	3876.8	762.3	321.0	233.2	628.6	246.7	4816.0	3976.4	1505.0	2150.3	29789.6
1976	487.9	513.6	1883.0	2397.4	3997.8	1407.4	2863.8	171.5	216.0	943.5	4896.5	1248.0	21026.4
1977	346.3	1926.5	2840.9	937.9	140.8	75.5	201.9	78.7	262.0	579.3	5615.3	864.3	13869.5
1978	96.0	207.3	693.6	85.1	151.3	226.5	598.0	455.2	9416.9	5021.3	2027.1	946.8	19925.2
1979	186.3	2804.3	5286.6	2785.4	2104.7	423.7	998.3	2531.8	5925.5	2075.0	4524.3	1748.3	31394.4
1980	2264.1	4546.5	4306.5	230.3	177.4	228.9	664.3	1977.4	8224.9	8056.6	2385.9	514.2	33577.0
1981	1945.0	6444.9	5957.8	2267.1	468.1	169.3	540.5	226.7	310.9	957.3	6151.9	1259.9	26699.3
1982	1510.3	489.1	326.7	370.3	371.3	438.2	6842.8	8933.8	9082.3	6551.2	1483.6	1168.4	37567.9
1983	2671.2	2969.2	1203.8	2461.1	3025.4	881.1	2550.6	5791.5	16927.0	9151.6	4084.7	7345.8	59063.1
1984	1030.6	1469.0	4041.2	1352.3	879.1	1245.4	4367.7	8102.2	8252.6	2836.2	2057.2	5074.7	40708.2
1985	3983.8	2280.0	4358.0	1202.7	725.9	354.6	1001.0	317.4	378.8	1413.7	6947.8	2060.4	25024.0
1986	1104.4	2037.6	381.3	386.3	303.3	373.6	4095.8	5288.6	12297.8	3597.7	6583.5	2892.4	39342.4
1987	2152.9	3221.5	3225.4	2169.1	515.0	462.3	1275.2	454.4	472.6	496.6	606.1	522.9	15574.0
1988	459.8	448.1	1002.1	999.7	489.5	409.5	1165.5	409.9	450.1	833.6	1523.0	2349.9	10540.4
1989	551.2	726.5	1250.6	1912.5	2103.9	510.2	1485.5	699.9	5955.8	2863.1	3801.6	3746.2	25607.0
1991	1137.1	2387.9	2277.0	1421.2	392.6	384.9	1110.2	426.3	460.2	425.1	1452.3	1803.4	13678.3
1992	2411.4	938.5	951.4	1601.8	1497.3	612.4	1758.3	498.2	486.9	721.9	2376.0	2187.3	16041.4
AVERAGE	2215.9	2434.8	2542.9	1592.5	1010.7	672.1	2065.2	2012.0	5054.0	2926.3	2945.9	2101.4	27573.8

SOURCE: SWRCB EXHIBIT 3 AND 5

TABLE 5-7
ALOHA LAKE OUTLET-PYRAMID CREEK AT TWIN BRIDGES
(USGS GAGE #11435100)

WATER YEAR	AVERAGE MONTHLY RELEASES (AF)												TOTAL ANNUAL
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1971	353.2	2820.7	780.7	1352.9	904.9	859.3	1984.0	7177.5	8888.2	2847.2	4494.6	1199.9	33663.2
1972	188.3	675.0	816.2	613.0	567.6	2411.6	1607.8	5516.3	5146.0	4296.6	2261.0	276.8	24376.1
1973	565.7	740.9	1494.7	990.0	693.0	736.6	2730.4	9450.5	5049.0	2853.2	2995.3	550.2	28849.6
1974	832.0	3196.3	1487.0	1936.4	1011.8	1421.6	1970.1	9838.6	7866.5	3926.3	5536.1	646.5	39669.3
1975	76.2	415.0	533.0	737.7	754.4	936.1	875.2	6007.3	9062.5	3316.5	4901.3	1044.8	28660.1
1976	1788.1	1405.8	767.6	636.8	634.3	986.0	1423.6	3263.0	1805.8	3457.7	653.0	283.3	17105.1
1977	885.5	258.0	118.6	254.6	272.3	437.6	1686.6	1811.7	1549.2	3493.7	210.7	57.6	11035.9
1978	25.8	239.3	1088.6	863.3	702.9	1380.1	1550.3	8195.2	10385.1	3467.0	4175.8	2078.2	34151.7
1979	215.0	282.5	561.1	1385.4	683.7	1211.8	2061.2	8591.2	4720.3	2817.5	2854.6	878.1	26262.5
1980	1029.4	1088.0	907.4	3459.1	1177.6	1059.3	2682.9	8133.8	5579.6	5296.5	3249.2	1459.9	35122.7
1981	1159.5	415.0	644.3	604.1	985.6	833.6	2694.8	3764.0	2073.1	4011.5	154.8	16.6	17356.8
1982	689.4	2799.7	3219.5	1370.2	3084.8	3876.8	3975.8	7524.0	7569.5	5252.9	3908.5	3783.8	47055.0
1983	2166.1	1362.2	1239.5	1120.7	1081.1	1322.6	1247.4	5779.6	12670.0	10701.9	3213.5	4599.5	46504.3
1984	2168.1	3013.6	1908.7	1269.2	1038.1	1510.7	1982.0	8854.6	8306.1	4102.6	4932.2	459.4	39545.1
1985	1049.2	1758.2	881.1	569.4	503.1	684.7	3201.7	4280.8	2441.3	4752.0	563.5	400.4	21085.4
1986	748.6	623.3	1001.9	1564.2	2053.3	3074.9	3118.5	7918.0	9349.6	5611.3	4258.2	428.9	39750.7
1987	718.1	633.8	207.9	289.3	546.3	803.3	3356.1	3336.3	1091.0	3094.7	988.6	35.7	15101.1
1988	20.8	421.9	1005.4	745.9	665.1	1231.6	2180.0	2706.7	1289.0	2616.2	1649.7	76.4	14608.6
1989	15.0	760.5	566.1	550.6	768.6	2667.1	3520.4	5765.8	6607.3	4130.3	2827.8	548.3	28727.8
1991	11.0	43.8	118.4	138.0	196.0	1459.1	1716.7	3847.1	3936.2	1980.0	3253.1	252.5	16951.9
1992	103.5	995.7	401.9	366.3	791.8	863.3	2843.3	2195.8	1851.3	3360.1	737.6	66.3	14576.9
AVERAGE	705.2	1140.4	940.5	991.3	910.3	1417.5	2305.2	5902.8	5582.7	4066.0	2753.3	911.6	27626.7

SOURCE: SWRCB EXHIBIT 3 AND 5

Table 5-8 provides an accounting of the data summarized above:

TABLE 5-8

Water Availability Accounting

	CAPLES CREEK WATERSHED	SILVER CREEK WATERSHED	PYRAMID CREEK WATERSHED	SFAR MAIN STEM
PARAMOUNT RIGHTS	25,000 afa (power)	22,546 afa (power - 20,000 afa)	12,091 afa (power - 11,200 afa)	112,741 afa at El Dorado Canal 1,300,860 afa at Chili Bar Power House
RECORDED AVERAGE ANNUAL TOTAL RUNOFF (1977 runoff)	27,574 afa (13,869 afa)	25,103 afa (7,009 afa)	27,627 afa (11,036 afa)	213,021 afa–Kyburz 973,945 afa–Chili Bar
UNAPPROPRIATED DEMAND:				
El Dorado[14]	21,581 afa (consumptive)	6,000 afa (consumptive)	5,350 afa (consumptive)	15,000 afa (consumptive)
Kirkwood, Inc.	500 afa (consumptive)	0	0	0
Kirkwood PUD	310 afa (consumptive)	0	0	0
Alpine	21,581 afa (nonconsumptive) 71 afa (consumptive) 96.4 afa (consumptive)	0	0	0
Amador	0	8,740 afa (nonconsumptive)	0	0
WATER AVAILABLE	YES	YES	YES	YES

As can be seen from Table 5.8, based on historic average annual runoff conditions and critical dry conditions such as occurred during 1977, there appears to be sufficient water available for

[14] El Dorado's maximum direct diversion and rediversion of water from storage limited to 15,000 afa and 17,000 afa, respectively.

all of the consumptive use applications and/or petitions for partial assignment of SFA 5645. However, this analysis does not evaluate water availability during the dry periods of the year. Decision 893 evaluated water availability using flow records prior to 1927 and, as stated earlier, that analysis was used to determine the season of availability.

6.0 PG&E'S EL DORADO PROJECT OPERATION

6.1 History

During the period of 1860-1876, portions of the El Dorado Project were built for gold mining purposes. After 1884 water from the project was used for industrial, irrigation, and domestic purposes within the Placerville area. In 1916 Western States Gas and Electric Company acquired the project for power development. Improvements to the project were made during the period 1917-1919. In 1922 the Federal Powers Commission issued a 50-year license, which was transferred in 1928 to PG&E. (PG&E,2, License for the El Dorado Project (FERC 184), p. 1.)

6.2 Project Facilities

The hydroelectric facilities associated with the El Dorado Project covered under FERC's License 184, as well as PG&E's Chili Bar, License 2155, include the following:

- **Lake Aloha (aka Medley Lakes)**: Used since the late 1800s, this reservoir is located in El Dorado County on Pyramid Creek and has a storage capacity of 5,063 af.

- **Echo Lake**: This reservoir is located in El Dorado County and is on a tributary to Lake Tahoe. Water is diverted from the lake through the Echo Lake conduit to the South Fork American River. The reservoir has been used since the late 1800s and has a storage capacity of 1890 af.

- **Caples Lake**: This 21,581 af reservoir is located in Alpine County on Caples Creek.

- **Silver Lake**: This 8,590 af reservoir is located in Amador County on the Silver Fork of the South Fork American River.

- **El Dorado Canal**: Since 1856 the canal has diverted water (including water released from the above identified four upstream reservoirs) from the South Fork American River at a point just below the river's confluence with Silver Fork American River near Kyburz, California. The canal is approximately 22 miles long and has a maximum capacity at its intake of 156 cfs. The canal discharges into the El Dorado Forebay.

- **El Dorado Forebay**: This 285 af reservoir is located at the end of the El Dorado Canal near the town of Pollock Pines.

- **El Dorado Powerhouse**: The powerhouse is operated under FERC License 184. The powerhouse uses 1910 feet of head and a flow rate of 163 cfs to produce power. The normal operating capacity of the powerhouse is 21 megawatts (MW).

- **Chili Bar Forebay**: This 3139 af reservoir is located near the City of Placerville and is the forebay to the Chili Bar Powerhouse.

- **Chili Bar Powerhouse**: The powerhouse is operated under FERC License 2155. The powerhouse uses 80 feet of head and a flow rate of 2700 cfs. The normal operating capacity for the powerhouse is 7.8 MW. (93,PG&E,5; 93,EDCWA,47,1-2.)

6.3 Associated Water Rights With the El Dorado Project

Table 6-1 summarizes PG&E's water rights for its facilities on the South Fork American River. (93,PG&E,5.)

TABLE 6-1

Summary of PG&E Water Rights for PG&E's South Fork American River Hydropower Project

TYPE OF RIGHT	ID. NUMBER	DATE OF PRIORITY	AMOUNT	SEASON	POINT OF DIVERSION
PRE-1914 POST-1914	S-9034 A-1440	1856 1919	70 cfs 86 cfs	all year	Intake of El Dorado Canal
PRE-1914	S-?	1860	30 cfs	all year	Echo Creek trib. to Upper Truckee River to Echo Canal
POST-1914	A-6383	1929	15 cfs	12/1-6/15	Alder Creek to alder feeder
PRE-1914 POST-1914	S-? A-654	1860 1917	2,000 afa 2,000 afa	all year	Echo Reservoir
PRE-1914 POST-1914 POST-1914	S-9035 A-654 A-1441	1875 1917 1919	360 afa 5,000 afa 500 afa	all year	Lake Aloha (aka Medley Lakes)
PRE-1914 POST-1914	S-4708 A-1441	1875 1919	5,000 afa 5,000 afa	all year	Silver Lake
POST-1914	A-654 A-1441	1917 1919	8,000 afa 17,000 afa	all year	Caples Lake

6.4 Operation of the El Dorado Project

PG&E has historically released water from Lake Aloha, Echo, Caples, and Silver Lakes to augment the El Dorado's Project water requirements during periods of each year when the natural flow of the South Fork American River is insufficient for meeting the Project's power, irrigation, recreation, and the instream flow releases required by FERC License 184. In the winter and spring seasons, the lakes store runoff for later release. Evidence presented by Amador County describes the physical operation of the four lakes associated with the El Dorado Project in the following manner:

". . . The amount of streamflow available in the river at the El Dorado Diversion Dam without releases from project storage generally falls below the required canal diversion needs during the first or second week of July. At that time, water is released from Lake Aloha to maintain diversion requirements. By late summer, as the stream flow further decreases and Lake Aloha storage becomes depleted, drafts from Caples Lake and Silver Lake are used to supplement Aloha Lake water. After Labor Day, when Lake Aloha has been drawn down completely, Echo Lake storage is drawn down. The storage of Echo Lake is quickly depleted and releases from Caples and Silver Lakes maintain power operations until the last two weeks of October, when, generally, the project shuts down for repair and maintenance. When the project resumes operations in November, releases from Caples and Silver Lakes, plus increased natural stream flow from winter storms and snowmelt, provide water to the canal throughout the winter period.

"Other factors which are considered in the use of project storage are as follows. Echo Lake water is not available for release until after Labor Day holidays . . . . The same consideration applies to Silver Lake. There are extensive private and public recreation developments which require maintenance of a high lake level throughout the summer . . . . Under project operations, Lake Aloha reaches maximum drawdown by September, while Caples, Silver, and Echo Lakes reach maximum drawdown in the fall and winter months . . . ." (95,AMADOR,18.)

Any spills and runoff below the reservoirs are diverted into the El Dorado Canal, which delivers water to the El Dorado Forebay. A portion of the water delivered into the El Dorado Forebay is rediverted by EID for irrigation and domestic use supplies under a contract with PG&E that dates back to the 1920s. The majority of the water diverted into the forebay is used for power generation at the El Dorado Powerhouse. The water returns to the South Fork American River, just upstream of SMUD's Slab Creek Reservoir. From the Slab Creek Reservoir, water is either diverted through SMUD's White Rock Powerhouse or allowed to flow downstream. All water that is diverted through SMUD's powerhouse or allowed to flow downstream enters PG&E's Chili Bar Reservoir

and is diverted through PG&E's Chili Bar Powerhouse. From Chili Bar the water is discharged back into the river and flows to Folsom Lake. (93,PG&E,5.)

6.5 Operational Constraints Contained in FERC License 184

FERC License 184 imposes constraint on the operation of the El Dorado Project. These constraints fall under two general categories: recreation and fish protection. (PG&E,2,FERC 184, Revised Exhibit R,1-3.)

6.5.1 Recreation

"Exhibit R" of License 184 outlines PG&E's plan for recreational development of project lands and facilities associated with the El Dorado Project. PG&E's plan recognizes that both Silver and Caples Lakes provide natural outdoor recreational environments. (*Ibid.*)

Recreational uses associated with Silver Lake include boating, fishing, swimming, and camping. Three resorts have been developed to provide a variety of goods and services at the lake: Kay's, Plasse's, and Kit Carson. These resorts provide cabins, rental boats, boat launching ramps, docks, and sanitary facilities. Additionally, a Camp Fire Girls and Boys Scout camps have been developed along Silver Lake's eastern shore, the City of Stockton operates a municipal camp at the south end of the lake, a 96-unit public campground has been developed at Silver Lake East and Silver Lake West, and other facilities have been developed to support picnicking and swimming opportunities. (*Ibid.*)

Recreational use associated with Caples Lake is limited to fishing because of high winds and low water temperatures which create a less attractive environment than that of Silver Lake. To support this use, a lake shore resort, a 35-unit forest

service campground, and fishing access have been developed. (*Ibid.*)

License 184 does not impose specific reservoir level requirements at either Silver Lake or Caples Lake to support recreational opportunities. With regard to Silver Lake operations, Exhibit S of PG&E Application for relicensing states:

> "Silver Lake water surface will be maintained at as high a level as possible during the summer months. Never the less, at times seepage from the reservoir and fish water releases may exceed inflow, making it impossible to maintain the lake at its full level for recreational purposes." (PG&E, Exhibit 2, FERC License 184's Exhibit S, p.5.)

This implies no withdrawal of water from Silver Lake between the end of snowmelt runoff and Labor Day, excepting the requirement to release water from Silver Lake to provide instream flow for fish.

With regard to Caples Lake operation, Exhibit S states:

> "Caple Lake water surface will be maintained as high as possible during the recreation season consistent with project demands. In the summer months of all years, water will be released from the reservoir for fish life and to meet downstream water demands for domestic, irrigation, industrial, and power purposes." (*Ibid.*)

The operational restriction on Caples Lake differs from that for Silver Lake because "project demand" may be met from Caples Lake during the summer recreational season along with releases for fish and "domestic, irrigation, and industrial purposes".

6.5.2 Fish Protection

In 1984 License 184 was amended by revising "Exhibit S", which relates to fishery protection requirements. Pursuant to Article 34 of License 184, PG&E is required to comply with the

following requirements for the protection and enhancement of fishery resources:

1. Minimum Streamflow Releases

a. A continuous minimum flow of 2.0 cfs and 5.0 cfs from Silver Lake and Caples Lake, respectively, or the inflow to the respective reservoirs, whichever is less.

b. A continuous minimum flow release of 2.0 cfs from Lake Aloha, or the inflow to the reservoir, whichever is less.

c. The following continuous minimum flows from the El Dorado Diversion Dam near Kyburz:

BYPASS PERIOD	MINIMUM FLOW (NORMAL YEAR)	MINIMUM FLOW (DRY YEAR)
11/01 to 08/31	50 cfs	18 cfs
09/01 to 09/30	38 cfs	10 cfs
10/01 to 10/31	43 cfs	15 cfs

A normal water-year is defined as any year when the South Fork American River annual runoff, at the inflow to Folsom Reservoir, as forecasted on April 1 and corrected on May 1 by the California Department of Water Resources, is greater than 50 percent of the 50-year average. All other years are defined as dry.

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2. Flow Release Rate

The rate of change in flow releases from Silver Lake and Caples Lake is limited according to the following schedule:

CHANGE IN WATER LEVEL OF STREAM (FEET/HOUR)	FLOW RANGE (CFS)
0.5	1-75
1.0	75-175
1.5	ABOVE 175

3. Reservoir Storage Volume

The minimum pool in Caples Lake shall be maintained at 2000 af. (93,PG&E,2, Order Amending License and Approving Revised Exhibit S,4-6.)

7.0 LAKE OPERATIONS EVALUATION

USGS records and other available records relating to PG&E's operations at Lake Aloha and Caples and Silver Lakes[15] were analyzed to determine the historic lake levels during five (5) types of water years. These water-year types are defined as "critical", "dry", "below normal", "above normal", and "wet".

7.1 Water-Year Type Definition

The five water-year types are based on an evaluation of runoff produced by the South Fork American River's 193 square-mile drainage area above the river's confluence with the Silver Fork American River. This area includes the three lakes and is the drainage area from which water would be appropriated under the applications and petitions filed by the parties.

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[15] SWRCB,3-5; 95,KW,6B, Table 1; 95,EDCWA 101, Sierra Hydrotech Data, 10/24/95; EDCWA,47, Historical Operation of PG&E Lakes, February 1993.

The development of the five water-year types includes an evaluation of historic precipitation data recorded at Caples Lake and recorded South Fork American River total flow data as measured at USGS Gage #11439501 near Kyburz. The purpose of this evaluation was to develop a "water-year hydrologic classification index" for measured flows at USGS Gage #11439501. The water-year types were developed using the following methodology:

1. Precipitation data were initially evaluated for the period (October to June) of record 1949-1991, based on a straight frequency distribution of 20 percent. Table 7-1 provides a tabular summary of recorded precipitation. Table 7-2 ranks annual precipitation data and groups the data into five water-year types.

2. Based on the ranked distribution of precipitation data (Table 7-2), corresponding South Fork American River flow data (USGS Gage #11439501) was evaluated and grouped by precipitation water-year types, to determine the average recorded runoff during the typical snowmelt/runoff period of April through July for each type of water-year. Table 7-3 provides a tabular summary of river flow data for the following water-year types: "critical", "dry", "below normal", "above normal", and "wet". The average April through July figure is then used for indexing purposes.

3. Based on the results of Step 2 (i.e., average April through July figure), Table 7-4 ("Water Year Hydrologic Classification Index") was developed to evaluate historic South Fork American River flows measured at USGS Gage #11439501 during the period 1923-1991:

TABLE 7-4

South Fork American River (USGS Gage #11439501)
Water-Year Hydrologic Classification Index

CLASSIFICATION	INDEX APRIL THROUGH JULY (THOUSANDS OF ACRE-FEET - TAF)
CRITICAL	EQUAL TO OR LESS THAN 87.9
DRY	GREATER THAN 87.9 BUT LESS THAN OR EQUAL TO 130.7
BELOW NORMAL	GREATER THAN 130.7 BUT LESS THAN OR EQUAL TO 208.4
ABOVE NORMAL	GREATER THAN 208.4 BUT LESS THAN OR EQUAL TO 255.9
WET	GREATER THAN 255.9

4. Based on the water-year classification index defined in Table 7-4, the data summarized in Table 7-5 is evaluated and associated with corresponding water-year type classifications. The purpose of this evaluation is to develop water-year type groupings for the following lake level evaluation.

7.2 Lake Level Evaluations

Tables 7-6, 7-7, and 7-8 group average end-of-month (EOM) storage for levels for Silver Lake, Caples Lake and Lake Aloha based on the five water-year types provided by Table 7-5. Figures 7-1, 7-2, and 7-3 illustrate each lake's average historic EOM storage and gage heights for the five water-year types. Similarly, Tables 7-6A, 7-7A, and 7-8A group average monthly EOM storage for each type of water-year beginning in 1985, the effective date for minimum flow required at each lake by FERC License 184. Related Figures 7-2A, 7-3A, and 7-4A graphically illustrate these post-1985 EOM data. (EDCWA,47,Table 1,7.) As shown in the following sections, the operation of the lakes differ in several respects.

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TABLE 7-1
TWIN LAKES (CAPLES LAKE) RECORDED PRECIPITATION

WATER YEAR	TOTAL MONTHLY PRECIPITATION (INCHES)												OCT to JUN WATER-YEAR TOTAL
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1949	1.07	2.52	8.11	4.7	7.35	10.37	1.85	4.06	0.06	0.5	1.15	0	40.09
1950	1.34	2.82	2.79	19.3	4.71	10.79	6.37	2.67	1.47	0.37	0.23	1.57	52.26
1951	4.92	14.79	11.92	8.27	4.22	2.42	4.3	2.18	0.22	0	0.25	0	53.24
1952	3.8	6.86	14.68	17.88	6.82	11	2.51	0.8	1.17	2.02	0.02	1.3	65.52
1953	0.1	3.18	12.44	9.32	1.39	5.48	6	5.73	1.38	0.39	1.29	0.13	45.02
1954	1.9	3.6	2.77	7.78	7.35	10.88	2.22	0.38	1.4	0.3	0	0	38.28
1955	0	4.88	8.45	6.8	5.47	1.88	6.61	2.21	0.94	0.09	0.4	0.8	37.24
1956	0.42	7.25	29.41	13.96	6.02	1.35	4.19	5.24	0.61	2.17	0.22	1.28	68.45
1957	7.17	0.4	3.95	6.54	8.69	7.83	2.97	6.47	0.09	0.58	0	0.25	44.11
1958	1.75	4.89	6.62	7.41	12.15	11.84	8.81	1.54	2.51	3.04	1.64	1.45	57.52
1959	0.43	2.84	1.4	8.25	10.75	1.93	1.15	2.18	0	1.11	0.3	3.56	28.93
1960	0.06	0.03	2.8	6.17	10.71	6.03	3.45	0.76	0	1.25	0	0.7	30.01
1961	2.45	6.46	2.18	1.42	5.5	8	3.4	2.91	0.71	0.7	1.77	2.82	33.03
1962	2.82	5.02	3	5.14	18.45	10.62	1.47	3.02	0.54	0.25	0.19	0.17	50.08
1963	10.06	1.89	2.99	10.26	6.86	10.32	13.61	5.6	2.71	0.25	0.38	2.26	64.3
1964	4.15	11.89	1.7	9.24	0.58	5.26	2.36	5.09	1.94	0.73	0.24	0.08	42.21
1965	1.34	0	30.01	11.96	2.3	3.24	6.98	1.27	1.21	0.57	6.36	1	58.31
1966	0.46	13.28	7.98	3.74	3.9	2.41	2.82	1.54	0.53	0.08	0.6	0.12	36.66
1967	0	9.15	10.45	16.59	0.7	16.6	12.2	2.53	1.98	0.14	2.15	1.45	70.2
1968	1.34	3.91	4.23	7.77	6.32	4.3	0.9	2.02	0.2	0.12	2.27	0.12	30.99
1969	2.03	8.54	11.39	30.24	14.34	3.35	5.21	1.42	0.86	0.56	0	0.63	77.38
1970	4.08	4.04	11.13	18.17	5.22	2.74	3.8	0.15	5.22	0.03	0	0.09	54.55
1971	1.48	13.7	17.41	4.9	1.56	6.77	2.05	3.85	1.95	0.48	0.56	0.93	53.67
1972	1.24	8.44	13.46	3.4	2.93	2.11	5.02	0.47	1.29	0.04	0.22	2.73	38.36
1973	3.65	5.7	7.78	11.16	8.52	4.45	1.7	1.86	0.28	0.6	1.86	0.29	45.1
1974	4.09	16.13	12.47	5.9	2.96	10.48	5.54	0.54	0.08	4	0	0	58.19
1975	1.74	2.74	5.28	4.8	11.43	10.95	6.15	1.42	0.95	0.02	1.92	0.71	45.46
1976	8.78	3.16	0.98	1.43	5.3	3.33	2.07	0.94	0.5	2.01	2.86	1.86	26.49
1977	1.71	1.28	0.22	3.14	3.72	3.79	0.47	3.92	1.7	0.46	0.01	1.02	19.95
1978	0.6	4.6	11.22	12.24	9.25	6.98	6.74	0.88	1	0.15	0.3	4.49	53.51
1979	0.16	3.57	5.33	10.4	10.49	6.07	3.35	2.93	0.21	1.36	0.13	0	42.51
1980	4.16	4.33	7.62	16.19	13.97	4.72	3.43	2.2	0.96	0.67	0.39	0.43	57.58
1981	1.27	0.75	3.38	9.53	4.12	5.41	2.65	2.5	0	0.17	0	1.15	29.61
1982	4.77	12.34	11.98	10.93	6.49	14.15	9.64	0.32	1.81	0.02	0.41	4.85	72.43
1983	7.21	9.82	8.27	11.26	12.79	12.14	5.71	1.6	0.92	0	2.54	3.54	69.72
1984	2.88	17.8	14.03	0.89	6.65	4.79	3.56	1.08	2.63	0.92	0	0.97	54.31
1985	4.2	10.78	1.96	1.19	3.12	8.14	0.85	0.07	0.44	0.53	0.33	3.54	30.75
1986	2.61	9.54	3.57	6.97	23.06	8.7	0.92	1.1	0.53	2.2	0.08	2.09	57
1987	0.11	0.52	1.27	5.2	5.03	3.67	0.94	3.14	0.88	0.11	0.03	0.3	20.76
1988	1.65	2.92	8.41	5.23	0.25	1.09	2.9	1.33	0.87	0.51	0.16	0.1	24.65
1989	0.05	9.01	5.63	2.92	3.74	13.67	2.79	1.96	1.59	0	0.76	2.81	41.36
1990	4.79	7.06	0.06	6.03	5.06	2.8	3.56	3.25	0.29	0.67	1.33	0.92	32.9
1991	1.07	1.4	2.19	0.23	2.25	16.82	1.72	2.95	0.84	0.68	0	0.72	29.47
1992	4.22	2.43	2.47	2.1	5.69	3.26	1.09	0.79					
AVERAGE	2.6	6.1	7.6	8.3	6.8	6.9	4.0	2.2	1.1	0.7	0.8	1.2	48.3

SOURCE: SWRCB EXHIBIT 4

TABLE 7-2
TWIN LAKES
ANNUAL PRECIPITATION RANKING

RANK	OCT to JUN WATER-YEAR	TOTAL ANNUAL (INCHES)	WATER YEAR TYPE
1	1977	19.95	CRITICAL
2	1987	20.76	CRITICAL
3	1988	24.65	CRITICAL
4	1976	26.49	CRITICAL
5	1959	28.93	CRITICAL
6	1991	29.47	CRITICAL
7	1981	29.61	CRITICAL
8	1960	30.01	CRITICAL
9	1985	30.75	CRITICAL
10	1968	30.99	DRY
11	1990	32.9	DRY
12	1961	33.03	DRY
13	1966	36.66	DRY
14	1955	37.24	DRY
15	1954	38.28	DRY
16	1972	38.36	DRY
17	1949	40.09	DRY
18	1989	41.36	DRY
19	1964	42.21	BELOW NORMAL
20	1979	42.51	BELOW NORMAL
21	1957	44.11	BELOW NORMAL
22	1953	45.02	BELOW NORMAL
23	1973	45.1	BELOW NORMAL
24	1975	45.46	BELOW NORMAL
25	1962	50.08	BELOW NORMAL
26	1950	52.26	BELOW NORMAL
27	1951	53.24	BELOW NORMAL
28	1978	53.51	ABOVE NORMAL
29	1971	53.67	ABOVE NORMAL
30	1984	54.31	ABOVE NORMAL
31	1970	54.55	ABOVE NORMAL
32	1986	57	ABOVE NORMAL
33	1958	57.52	ABOVE NORMAL
34	1980	57.58	ABOVE NORMAL
35	1974	58.19	ABOVE NORMAL
36	1965	58.31	ABOVE NORMAL
37	1963	64.3	WET
38	1952	65.52	WET
39	1956	68.45	WET
40	1983	69.72	WET
41	1967	70.2	WET
42	1982	72.43	WET
43	1969	77.38	WET

TABLE 7-3

SOUTH FORK AMERICAN RIVER (USGS #11439501) - (ACRE-FEET)

WATER-YEAR TYPE EVALUATION FOR HYDROLOGIC CLASSIFICATION INDEXING

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL	TOTAL APR-JUL
CRITCAL WATER-YEAR														
1977	5581.9	4878.5	3904.4	2702.6	2128.3	3294.9	10555.4	12711.8	11571.1	6076.6	6524.7	5371.5	75301.7	40914.9
1987	7445.4	7531.9	4653.2	4288.6	4867.1	8691.4	28737.7	26718.7	7288.4	5795.5	5001.2	2757.9	113777.1	68540.3
1988														
1976	9716.5	10965.2	10035.6	8562.5	8632.0	11134.3	15093.5	25214.9	7496.3	6457.2	7856.6	3730.3	124895.0	54261.9
1959	8470.4	9438.7	4195.3	8734.4	8770.6	17211.0	35307.4	33298.7	16542.9	7506.8	7267.4	7531.9	164275.4	92655.7
1991	4827.5	4779.9	3504.8	2744.3	2090.6	11318.5	21217.7	47692.3	33959.0	7893.5	7163.0	4377.8	151568.9	110762.4
1981	8212.6	10246.5	9434.1	5314.3	8133.0	9906.7	34885.6	44856.5	14214.4	7887.3	7826.0	3617.5	164534.6	101843.9
1960	6346.7	3480.8	2710.5	3894.6	7373.5	22753.6	38093.2	41278.1	19851.5	7175.3	7635.7	6320.2	166913.6	106398.1
1985	11944.5	13578.8	11711.3	7408.6	7567.6	11588.5	52058.2	50927.0	16091.5	9372.7	9262.2	6795.4	208306.3	128449.3
												AVERAGE APRIL TO JULY		87978.3
DRY WATER-YEAR														
1968	10839.7	8310.1	7826.0	6831.6	19736.6	20365.9	35942.9	39798.8	15604.4	7623.4	8022.4	7591.3	188493.0	98969.5
1990	8587.1	8114.0	7273.5	8323.1	7179.5	16597.2	37873.4	29002.1	17855.6	8065.3	7267.4	4197.8	160336.0	92796.5
1961	5290.3	3615.7	4181.8	3627.6	5560.6	7727.7	21805.7	35833.6	18384.3	6862.3	6905.3	6682.5	126477.5	82886.0
1966	9409.6	13044.2	10606.5	9759.4	8332.6	21096.3	54250.0	54124.9	12123.5	8010.1	8936.9	8149.7	217843.8	128508.5
1955	6586.1	4523.3	5737.8	6469.5	6497.6	10606.5	19958.4	65124.2	42696.7	10403.9	9507.8	9319.9	197431.5	138183.2
1954	8120.6	10014.8	8697.5	5810.8	7345.8	23784.8	52943.2	64449.0	19435.7	9237.7	9385.0	9100.1	228325.0	146065.6
1972	9360.5	9028.8	10360.9	8132.9	8061.0	37920.6	31921.6	65983.5	34083.7	9207.0	8034.6	8054.6	240149.6	141195.8
1949	4885.8	3847.3	5916.4	6500.1	5452.0	5966.1	50644.4	77522.9	31963.1	7715.5	7408.6	7050.8	214873.2	167846.0
1989	2514.7	4730.0	4857.0	5947.7	8293.8	47907.1	69438.6	60250.6	40962.2	9673.5	9084.2	6967.6	270627.2	180324.9
												AVERAGE APRIL TO JULY		130752.9
BELOW NORMAL WATER YEAR														
1964	5631.0	15545.0	9262.2	9974.3	9264.0	11146.6	29248.6	52001.1	34321.3	9728.7	9716.5	9527.8	205367.1	125299.7
1979	2469.3	8405.1	10054.0	15265.2	9275.1	18567.5	39970.3	110299.9	44419.3	11668.3	10360.9	8013.1	288768.0	206357.8
1957	10907.2	9100.1	9931.3	6923.7	15634.1	26178.6	36287.5	71139.4	68963.4	13380.8	9673.5	9557.5	287677.0	189771.1
1953	9489.3	6142.0	9943.6	14749.6	10544.7	15222.2	48393.2	57973.4	86842.8	35115.5	9728.7	9521.8	313666.8	228324.9
1973	6420.3	9765.4	14657.5	14878.5	9763.0	12988.0	41354.3	121839.3	50056.4	10182.9	8464.3	9177.3	309547.3	223432.9
1975	7512.9	9795.1	7212.2	5354.2	6115.0	12638.1	15592.5	105143.9	112800.6	24944.8	11177.3	9628.7	327915.4	258481.9
1962	5191.5	5090.6	5126.5	5257.2	8914.8	10176.8	63142.2	68500.1	57754.6	15007.4	10342.5	9444.6	263948.8	204404.3
1950	6966.6	5308.6	4043.7	11257.1	13000.7	20906.0	61776.0	102872.9	80902.8	19236.5	9250.0	9123.8	344644.7	264788.2
1951	8525.7	77279.4	104223.2	33335.5	29871.1	27001.1	54107.5	73042.2	37968.5	10514.4	9826.9	9147.6	474843.0	175632.5
												AVERAGE APRIL TO JULY		208499.3
ABOVE NORMAL WATER-YEAR														
1978	1277.3	2332.6	7304.2	11152.7	9801.8	30241.9	42892.7	101829.4	96762.6	24196.0	10256.6	10056.4	348104.4	265680.8
1971	3318.2	15503.4	12331.2	14197.2	14364.5	21262.0	42964.0	84827.2	85417.2	22790.4	10213.6	7377.5	334566.5	235998.8
1984	14013.1	53739.2	61564.1	39228.0	21782.4	35391.7	45132.1	106617.1	62132.4	15701.0	10538.9	10240.6	476080.5	229582.6
1970	8120.6	7615.1	22391.4	62239.3	27032.5	28596.9	31476.1	72919.4	56637.9	14105.1	10195.2	9254.5	350584.1	175138.5
1986	6009.1	7668.5	8789.6	21255.9	78281.3	82494.7	68844.6	95752.8	68607.0	16689.2	12883.7	6635.0	473911.4	249893.6
1958	8709.8	6142.0	6150.3	5351.7	14924.4	14946.0	42304.7	164437.0	99613.8	29394.9	11300.1	10139.6	413414.3	335750.4
1980	8126.7	11238.5	10747.6	64940.0	36036.0	25828.7	55764.7	98208.0	77457.6	37018.3	10496.0	6361.7	442223.9	268448.6
1974	6518.6	30757.3	19021.7	35305.8	15667.3	34483.3	50151.4	121532.4	76685.4	22857.9	10704.7	10003.0	433688.7	271227.1
1965	4777.8	7128.0	89123.8	35140.1	24033.2	25092.1	60112.8	100110.8	80902.8	30782.1	17033.0	11167.2	485403.6	271908.5
												AVERAGE APRIL TO JULY		255958.8
WET WATER-YEAR														
1963	9642.8	10014.8	11244.8	19807.3	54525.2	13853.5	31143.4	115517.2	72111.6	17211.0	10109.3	9444.6	374625.5	235983.1
1952	6653.6	7294.3	11036.1	9182.4	13582.8	18941.9	74844.0	176774.4	130739.4	51375.1	11999.8	9664.4	522088.2	433732.9
1956	7764.6	4943.9	61871.0	44930.2	21056.1	29548.3	55693.4	129634.6	109414.8	29775.4	10152.3	10329.7	515114.2	324518.2
1983	22416.0	25821.2	21740.8	22317.8	27204.4	51718.8	39435.7	144365.8	211523.4	94341.1	21937.2	25203.4	708025.4	489665.9
1967	4229.1	9331.7	15658.0	11870.9	15528.7	34170.2	20498.9	114289.6	152895.6	66658.7	11631.5	10632.6	467395.6	354342.8
1982	7660.2	28434.8	47293.3	21593.5	62425.4	43285.2	91060.2	140498.8	82922.4	32838.3	10790.6	13145.2	581947.9	347319.7
1969	5318.6	10412.8	10066.3	32826.0	15573.1	21041.1	70329.6	178308.9	109652.4	32979.5	9698.0	9486.2	505692.5	391270.4
												AVERAGE APRIL TO JULY		368119.0

SOURCE: SWRCB EXHIBIT 3 AND 5

TABLE 7-5
SOUTH FORK AMERICAN RIVER
(USGS #11439501 - NEAR KYBURZ CALIFORNIA - TOTAL FLOW)

WATER YEAR	AVERAGE MONTHLY FLOW (ACRE-FEET)												ANNUAL TOTAL	APR-JUL TOTAL	WATER-YEAR CLASSIFICATION
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP			
1923	4561.1	3512.9	7408.6	7476.1	6630.6	17628.3	43997.6	98085.2	56727.0	21667.1	5159.0	6532.0	279185.66	220476.96	AN
1924	5035.0	3443.4	3619.6	4711.5	6752.6	4702.3	17059.7	23883.0	5907.9	4912.9	4763.1	3281.3	88072.20	51763.42	C
1925	3153.1	6498.4	6837.7	7568.2	21266.8	26356.6	59269.3	102381.8	70626.6	20703.5	8979.9	6480.5	340122.36	252981.23	AN
1926	6009.1	5338.9	6573.8	5921.9	5507.4	17137.3	47015.1	43543.0	15123.2	9704.2	8433.6	7609.1	177916.66	115385.49	D
1927	4515.1	11464.2	9520.0	12767.0	21616.1	33703.8	56905.2	104223.2	95871.6	24895.7	9102.7	9260.5	393845.09	281895.77	W
1928	9096.5	11410.7	7371.7	7936.4	6037.4	46630.4	52943.2	82678.9	21960.2	9145.6	8900.1	8518.0	272629.17	166727.88	BN
1929	7451.5	5470.7	4270.2	2210.9	2300.8	7402.4	16643.9	53020.0	26539.9	9029.0	8826.4	6064.7	147230.60	105232.84	D
1930	1529.0	1493.3	6586.1	6075.4	7977.8	16965.4	45357.8	51755.6	41306.8	11410.5	9207.0	8785.3	208450.02	149830.76	BN
1931	2927.2	8577.4	6518.6	3983.6	3460.0	7813.7	22322.5	24153.0	8512.0	4601.7	4760.6	6379.6	104009.80	59589.23	C
1932	5837.5	4009.5	4095.3	4389.3	9197.5	20089.7	40772.2	91149.3	87199.2	25883.9	6850.0	6409.3	303882.58	245004.61	AN
1933	5824.3	5293.1	5518.7	4689.4	5455.3	4854.5	20047.5	39350.7	59275.3	9428.0	6948.2	4676.0	171361.06	128101.45	D
1934	4026.5	4036.8	7445.4	7862.8	7423.4	22630.8	25399.4	18352.6	10424.7	7003.5	5951.4	5137.5	125694.87	61180.22	C
1935	5282.4	5951.9	6119.0	7150.8	7684.0	9919.0	47722.0	87589.3	68725.8	13159.9	9618.2	9141.7	278063.78	217196.89	AN
1936	6340.6	7567.6	5378.1	9280.7	13211.4	30125.3	71814.6	115026.1	72250.4	17959.8	9292.9	8963.5	367190.84	277030.91	W
1937	8826.4	5754.1	5018.4	5604.0	8981.3	13178.3	37564.6	103302.5	44793.5	11846.3	8863.3	6545.9	260278.64	197506.98	BN
1938	6071.7	6534.0	36557.9	10698.5	11271.0	28738.1	61182.0	158176.3	123908.4	25908.5	9342.0	8981.3	487369.71	369175.16	W
1939	6481.7	5811.1	7647.9	7298.1	6791.4	16185.9	40231.6	30745.2	12592.8	7353.3	7156.9	3986.3	152282.39	90922.99	D
1940	6106.1	6225.1	7562.0	21568.9	19842.0	46740.9	68963.4	108274.3	44502.5	10459.2	8943.1	8440.7	357628.15	232199.35	AN
1941	6039.8	4479.4	9342.0	9096.5	14225.9	24239.0	33982.7	113798.5	66171.6	19954.6	9200.9	8927.8	319458.74	233907.50	AN
1942	8132.9	8286.3	19709.1	23416.5	21372.1	23035.9	57944.7	92561.0	116483.4	33384.6	8777.3	8636.8	421740.59	300373.72	W
1943	5467.7	10496.0	18045.7	28805.6	25868.3	49785.3	79477.2	90658.3	57047.8	20384.3	8102.2	5498.7	399637.02	247567.52	AN
1944	4931.5	5739.2	6389.7	6444.9	5593.9	10391.6	20059.4	71814.6	38485.3	12840.7	9022.9	8036.8	199750.20	143199.94	BN
1945	8040.8	8915.9	10649.4	9912.9	29871.1	16664.7	46985.4	99312.8	70151.4	18991.0	9624.4	8927.8	338047.58	235440.61	AN
1946	7598.8	10187.1	22514.2	21390.9	13943.2	26098.8	63379.8	102013.6	46510.2	12300.6	9765.6	9688.1	345390.80	224204.11	AN
1947	8691.4	8013.1	8065.3	6230.1	10328.5	16983.8	29961.4	54309.0	18289.3	9182.4	9145.6	8013.1	187212.96	111742.09	D
1948	8298.6	5761.8	4518.8	9955.8	6225.9	6365.1	29658.4	79364.3	88506.0	19334.7	9679.6	8613.0	276282.11	216863.46	AN
1949	4885.8	3847.3	5916.4	6500.1	5452.0	5966.1	50644.4	77522.9	31963.1	7715.5	7408.6	7050.8	214873.18	167845.99	BN
1950	6966.6	5308.6	4043.7	11257.1	13000.7	20906.0	61776.0	102872.9	80902.8	19236.5	9250.0	9123.8	344644.70	264788.17	W
1951	8525.7	77279.4	104223.2	33335.5	29871.1	27001.1	54107.5	73042.2	37968.5	10514.4	9826.9	9147.6	474843.01	175632.53	BN
1952	6653.6	7294.3	11036.1	9182.4	13582.8	18941.9	74844.0	176774.4	130739.4	51375.1	11999.8	9664.4	522088.18	433732.86	W
1953	9489.3	6142.0	9943.6	14749.6	10544.7	15222.2	48393.2	57973.4	86842.8	35115.5	9728.7	9521.8	313666.85	228324.89	AN
1954	8120.6	10014.8	8697.5	5810.8	7345.8	23784.8	52943.2	64449.0	19435.7	9237.7	9385.0	9100.1	228325.03	146065.59	BN
1955	6586.1	4523.3	5737.8	6469.5	6497.6	10606.5	19958.4	65124.2	42696.7	10403.9	9507.8	9319.9	197431.50	138183.21	BN
1956	7764.6	4943.9	61871.0	44930.2	21056.1	29548.3	55693.4	129634.6	109414.8	29775.4	10152.3	10329.7	515114.23	324518.24	W
1957	10907.2	9100.1	9931.3	6923.7	15634.1	26178.6	36287.5	71139.4	68963.4	13380.8	9673.5	9557.5	287676.97	189771.12	BN
1958	8709.8	6142.0	6150.3	5351.7	14924.4	14946.0	42304.7	164437.0	99613.8	29394.9	11300.1	10139.6	413414.28	335750.38	W
1959	8470.4	9438.7	4195.3	8734.4	8770.6	17211.0	35307.4	33298.7	16542.9	7506.8	7267.4	7531.9	164275.35	92655.68	D
1960	6346.7	3480.8	2710.5	3894.6	7373.5	22753.6	38093.2	41278.1	19851.5	7175.3	7635.7	6320.2	166913.62	106398.07	D
1961	5290.3	3615.7	4181.8	3627.6	5560.6	7727.7	21805.7	35833.6	18384.3	6862.3	6905.3	6682.5	126477.49	82885.97	C
1962	5191.5	5090.6	5126.5	5257.2	8914.8	10176.8	63142.2	68500.1	57754.6	15007.4	10342.5	9444.6	263948.75	204404.31	BN
1963	9642.8	10014.8	11244.8	19807.3	54525.2	13853.5	31143.4	115517.2	72111.6	17211.0	10109.3	9444.6	374625.50	235983.13	AN
1964	5631.0	15545.0	9262.2	9974.3	9264.0	11146.6	29248.6	52001.1	34321.3	9728.7	9716.5	9527.8	205367.07	125299.75	D
1965	4777.8	7128.0	89123.8	35140.1	24033.2	25092.1	60112.8	100110.8	80902.8	30782.1	17033.0	11167.2	485403.61	271908.45	W
1966	9409.6	13044.2	10606.5	9759.4	8332.6	21096.3	54250.0	54124.9	12123.5	8010.1	8936.9	8149.7	217843.76	128508.53	D
1967	4229.1	9331.7	15658.0	11870.9	15528.7	34170.2	20498.9	114289.6	152895.6	66658.7	11631.5	10632.6	467395.63	354342.78	W
1968	10859.7	8310.1	7826.0	6831.6	19736.6	20365.9	35942.9	39798.8	15604.4	7623.4	8022.4	7591.3	188493.03	98969.51	D
1969	5318.6	10412.8	10066.3	32826.0	15573.1	21041.1	70329.6	178308.9	109652.4	32979.5	9698.0	9486.2	505692.50	391270.37	W
1970	8120.6	7615.1	22391.4	62239.3	27032.5	28596.9	31476.1	72919.4	56637.9	14105.1	10195.2	9254.5	350584.15	175138.52	BN
1971	3518.2	15503.4	12331.2	14197.2	14364.5	21262.0	42964.0	84827.2	85417.2	22790.4	10213.6	7377.5	334566.46	235998.77	AN
1972	9360.5	9028.8	10360.9	8132.9	8061.0	37920.6	31921.6	65983.5	34083.7	9207.0	8034.6	8054.6	240149.65	141195.78	BN
1973	6420.3	9765.4	14657.5	14878.5	9763.0	12988.0	41354.3	121839.3	50056.4	10182.9	8464.3	9177.3	309547.26	223432.90	AN
1974	6518.6	30757.3	19021.7	35305.8	15667.3	34483.3	50151.4	121532.4	76685.4	22857.9	10704.7	10003.0	433688.71	271227.13	W
1975	7512.9	9795.1	7212.2	5354.2	6115.0	12638.1	15592.5	105143.9	112800.6	24944.8	11177.3	9628.7	327915.38	258481.87	W
1976	9716.5	10965.2	10035.6	8562.5	8632.0	11134.3	15093.5	25214.9	7496.3	6457.2	7856.6	3730.3	124895.03	54261.90	C
1977	5581.9	4878.5	3904.4	2702.6	2128.3	3294.9	10555.4	12711.8	11571.1	6076.6	6524.7	5371.5	75301.74	40914.92	C
1978	1277.3	2332.6	7304.2	11152.7	9801.8	30241.9	42892.7	101829.4	96762.6	24196.0	10256.6	10056.4	348104.41	265680.76	W
1979	2469.3	8405.1	10054.0	15265.2	9275.1	18567.5	39970.3	110299.9	44419.3	11668.3	10360.9	8013.1	288768.01	206357.78	BN
1980	8126.7	11238.5	10747.6	64940.0	36036.0	25828.7	55764.7	98208.0	77457.6	37018.3	10496.0	6361.7	442223.89	268448.60	W
1981	8212.6	10246.5	9434.1	5314.3	8133.0	9906.7	34885.6	44856.5	14214.4	7887.3	7826.0	3617.5	164534.59	101843.87	D
1982	7660.2	28434.8	47293.3	21593.5	62425.4	43285.2	91060.2	140498.8	82922.4	32838.3	10790.6	13145.2	581947.94	347319.72	W
1983	22416.0	25821.2	21740.8	22317.8	27204.4	51718.8	39455.7	144365.8	211523.4	94341.1	21937.2	25203.4	708025.43	489665.88	W
1984	14013.1	53739.2	61564.1	39228.0	21782.4	35391.7	45132.1	106617.1	62132.4	15701.0	10538.9	10240.6	476080.51	229582.58	AN
1985	11944.5	13578.8	11711.3	7408.6	7567.6	11588.5	52058.2	50927.0	16091.5	9372.7	9262.2	6795.4	208306.30	128449.33	D
1986	6009.1	7668.5	8789.6	21255.9	78281.3	82494.7	68844.6	95752.8	68607.0	16689.2	12883.7	6635.0	473911.42	249893.62	AN
1987	7445.4	7531.9	4653.2	4288.6	4867.1	8691.4	28737.7	26718.7	7288.4	5795.5	5001.2	2757.9	113777.14	68540.31	C
1988															
1989	2514.7	4730.0	4857.0	5947.7	8293.8	47907.1	69438.6	60250.6	40962.2	9673.5	9084.2	6967.6	270627.19	180324.94	BN
1990	8587.1	8114.0	7273.5	8323.1	7179.5	16597.2	37873.4	29002.1	17855.6	8065.3	7267.4	4197.8	160336.04	92796.46	D
1991	4827.5	4779.9	3504.8	2744.3	2090.6	11318.5	21217.7	47692.3	33959.0	7893.5	7163.0	4377.8	151568.88	110762.39	D
AVERAGE (CFS)	112.6	169.1	227.5	221.8	262.4	358.9	732.8	1323.2	959.5	291.1	150.0	136.5	4945.34	3306.52	
AVERAGE (AF)	6913.0	10047.2	13965.9	13615.2	14545.0	22028.8	43528.1	81216.8	56992.7	17866.2	9205.7	8106.4	298031.00	199603.80	

SOURCE: SWRCB EXHIBITS 3 AND 5.
WATER-YEAR TYPE CODE: C - "CRITICAL" ; D -"DRY" ; BN - "BELOW NORMAL" ; AN - "ABOVE NORMAL" ; W - "WET"

TABLE 7-6
SILVER LAKE
AVERAGE E.O.M. STORAGE

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
	HISTORIC AVERAGE E.O.M. STORAGE (1920-1991) (AF)											
1923-1991	1567	1156	1115	1184	1348	2208	4554	6792	7987	7053	5693	3068
	CRITICAL-YEAR E.O.M. STORAGE											
1924	4750	4712	4171	2115	600	1250	4071	5592	5112	2780	920	125
1931	640	277	125	180	356	1345	6456	8566	7831	6408	5410	1304
1934	1270	859	650	1075	2090	5620	8600	8590	8115	6810	5870	2210
1961	888	585	485	485	485	1000	5182	8590	8090	6718	4068	1455
1976	3498	3612	2346	753	996	1690	3992	7790	6718	5575	3010	4454
1977	2210	540	234	182	156	260	3300	5755	6600	5500	4730	1816
1987	3182	880	260	260	260	710	6350	8540	7865	6580	3600	2074
AVERAGE	2348.3	1637.9	1181.6	721.4	706.1	1696.4	5418.7	7631.9	7190.1	5767.3	4229.7	1919.7
	DRY-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1926	662	381	387	451	609	3350	5750	5952	4942	3700	360	282
1929	25	0	0	280	532	812	3244	5947	6256	1246	2885	415
1933	250	250	250	50	0	0	2550	6400	8600	7300	5860	3100
1939	1865	955	245	234	335	2150	7505	8600	8090	6855	5870	4690
1947	1740	990	842	694	925	2750	7585	8590	8240	6925	4680	1300
1959	1150	650	600	300	0	1000	5985	8590	7990	6856	5755	2620
1960	820	743	714	714	714	1000	6348	8590	7890	6626	5575	2600
1964	1690	1784	1600	970	484	1180	5025	8590	8540	7132	5990	2934
1966	2176	1240	940	1140	917	2580	6672	8315	7740	6475	5397	3800
1968	1450	975	675	475	500	1500	4571	8290	8165	6580	5565	1816
1981	2108	340	0	0	1300	2100	6300	8240	7780	6396	5268	3800
1985	1912	1180	650	800	800	1270	5440	8440	8190	7132	6074	4030
1990	2874	1600	900	650	800	2244	7600	8665	8140	6626	5530	4200
1991	1931	635	297	37	0	1549	4052	7810	8681	7528	6147	4813
AVERAGE	1475.2	837.4	578.6	485.4	565.4	1691.8	5616.2	7929.9	7803.1	6241.2	5068.3	2885.7
	BELOW NORMAL-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1928	183	783	525	593	424	4674	5538	6215	5825	3775	1370	150
1930	437	442	1490	1857	2723	4592	7699	8146	8531	4656	2040	772
1937	182	26	0	0	255	1105	3010	5845	8600	7625	6395	3385
1944	2910	890	1300	2155	2670	3520	4367	8230	8590	7640	6475	3067
1949	627	1195	1715	2330	2700	3220	4800	8590	8590	7150	5995	2470
1951	975	3840	3000	2555	3715	4600	7417	8590	8505	7178	6074	2255
1954	1838	900	0	900	1250	3000	6600	8590	8590	7086	5870	2940
1955	1000	835	859	859	970	1270	3500	7156	8490	7224	5960	2520
1957	1290	840	400	100	0	0	4000	8300	8590	7317	5268	1998
1962	344	78	105	155	400	670	3805	5790	8590	7600	6212	2100
1970	1784	194	0	0	0	1730	2630	8240	8590	7552	6258	4960
1972	1150	430	260	250	250	2462	5177	8240	8440	7028	5800	2250
1979	4650	2008	550	1400	600	2200	4500	7900	8590	7458	6160	2950
1989	2625	1848	1500	656	946	4201	7364	8140	8465	7270	5332	4370
AVERAGE	1428.2	1022.1	821.7	986.4	1207.4	2660.3	5029.1	7712.3	8356.1	6897.1	5372.1	2584.8
	ABOVE NORMAL-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1923	2000	900	100	0	0	0	2830	5645	6336	5902	4802	4675
1925	750	1055	942	500	1000	2650	4370	5452	5592	5482	4985	3812
1932	430	100	0	0	880	1210	3360	4810	8600	6190	3420	1330
1935	428	610	660	705	785	855	4220	7405	8600	7725	6560	2430
1940	3878	925	315	760	1059	2210	5060	5590	8680	7390	6200	1725
1941	210	120	860	205	960	1420	2310	4355	8190	8140	6835	2585
1943	1300	2273	2714	2912	3093	3437	4473	6731	8590	8140	6841	4917
1945	1080	2000	2195	2255	2780	2145	4550	5517	8590	7940	6672	3512
1946	3073	3966	3940	3885	3840	3970	4580	7583	8590	7505	6375	4925
1948	915	214	411	1000	1825	2290	4610	7270	8590	7825	6488	2660
1953	1730	762	0	495	945	1595	4000	7100	8490	8090	6787	4454
1963	2980	1300	1690	1720	3570	3764	4000	7364	8590	7740	6350	2660
1971	3870	2450	1480	2040	2000	4030	4030	4300	8290	8090	6672	3992
1973	975	512	1944	2520	2915	3250	6510	8090	8590	7364	6074	2260
1984	2450	3800	3840	2220	2660	4068	4068	7740	8390	7790	6718	4454
1986	2500	815	1350	2980	4270	4290	4493	6028	8540	7990	6800	5230
AVERAGE	1785.6	1362.6	1402.6	1512.3	2036.4	2574.0	4216.5	6298.8	8203.0	7456.4	6161.2	3476.3
	WET-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1927	412	300	2067	2060	1970	2168	4685	5422	5304	5851	2868	360
1936	245	115	130	360	685	1800	5205	5140	8600	7815	6605	2800
1938	290	500	1105	2495	1910	1420	4085	5485	8565	8600	7295	3295
1942	507	456	1646	1925	1440	1550	3954	4220	8040	8185	6885	3475
1950	630	570	585	920	1225	1560	3480	7505	8590	7599	6385	3169
1952	1033	1195	1292	1390	1480	1700	3640	4730	8540	8590	7495	5139
1956	830	512	210	62	0	0	1270	3770	8390	8460	7086	3800
1958	714	512	200	100	200	0	3330	4530	8440	8340	7086	3754
1965	1720	859	3840	3164	2600	3425	4220	4532	8555	8240	7990	5220
1967	2802	2312	1912	1660	1660	3423	1965	4575	7505	8540	7270	2600
1969	540	2575	2838	1838	1000	2000	3200	4980	8590	8540	6850	3498
1974	830	3054	2695	3840	3840	4087	4125	7364	8590	8040	6700	2312
1975	975	260	430	685	786	1360	2158	6565	8540	8340	6764	3275
1978	1450	130	975	1660	1880	3275	4200	6810	8340	8440	7000	5311
1980	1250	838	540	3750	3992	3840	4493	6304	8240	8490	7040	5030
1982	1510	4060	4000	3880	3950	4580	4520	7018	8240	8590	7482	7080
1983	8590	3992	3810	3800	3900	3925	3990	5053	7458	8590	8390	4571
AVERAGE	1431.1	1308.2	1663.2	1975.8	1912.8	2359.6	3689.4	5529.6	8148.6	8191.2	6893.6	3805.2

SOURCE: (1) SWRCB EXHIBIT 3 AND 5
(2) KIRKWOOD ASSOCIATES, KW6B, TABLE 1
(3) EDCWA/EID EXHIBIT #101, SIERRA HYDROTECH DATA SUBMITTED 10/24/95.
(4) EDCWA EXHIBIT 47.

TABLE 7-7
CAPLES LAKE
AVERAGE E.O.M. STORAGE

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
	HISTORIC AVERAGE E.O.M. STORAGE (1920-1991) (AF)											
1923-1991	12643	10704	8907	7943	7548	7645	9779	16607	19881	19719	16969	14726
	CRITICAL-YEAR E.O.M. STORAGE											
1924						916	2778	7864	7923	7769	5393	2764
1931	13775	7615	2958	1135	700	966	3702	9182	10681	10545	9000	7923
1934	17017	16506	14370	12839	13195	15148	19451	21581	21182	20114	16168	15752
1961	8741	7098	5332	3801	3965	4300	6728	12636	16932	13752	14344	13452
1976	18628	18770	17103	14982	11580	10807	12132	17516	18221	17420	12914	11752
1977	11434	9496	6749	5873	5912	6067	7607	9912	12894	12246	6595	5618
1987	10822	7604	4615	2790	2564	2427	5707	11303	12326	11806	10989	10300
AVERAGE	13402.8	11181.5	8521.2	6903.3	6319.3	3804.4	8300.7	12827.7	14308.4	13664.6	10771.9	9648.7
	DRY-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1926	17000	15360	14100	11825	12200	13000	17916	21060	20520	19531	15388	8992
1929	5303	3531	975	250	333	474	1718	8846	13400	12975	9136	6672
1933	16932	12661	8298	5821	2350	2013	2833	6384	16639	18194	17416	16750
1939	19330	18880	15720	12390	10090	10090	13510	20970	21270	18590	14560	14050
1947	10112	9420	8342	7265	7223	7948	10774	20235	21581	20358	15150	11988
1959	15148	7992	5593	4895	4612	4752	8342	13555	17796	17970	13298	11400
1960	8167	5258	3640	1880	2031	2427	5631	12137	17161	16422	13041	11206
1964	15970	16985	16814	14498	11988	10726	13244	20234	21581	20781	16418	11791
1966	18794	14982	11400	8209	5820	5858	10536	19510	21580	20355	15308	10441
1958	16249	10966	5475	3657	3922	4634	7663	14945	19229	18034	15555	13803
1981	17390	10774	4857	2676	2398	3359	6566	13905	17425	16450	9996	8555
1985	10870	9511	5221	4788	4067	4415	8211	16196	20114	19152	11988	9958
1990	11900	10183	8000	6800	5300	5900	9880	13921	16932	16874	12915	10800
1991	10205	7326	4969	3578	3368	3874	4561	9925	16421	17321	15613	13815
AVERAGE	13812.1	10987.8	8100.3	6323.7	5407.3	5676.4	8798.9	15130.2	18689.2	18071.9	13984.4	11442.9
	BELOW NORMAL-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1928	12550	13080	11000	10045	10477	12183	15888	21150	21162	21102	18781	11535
1930	5750	5071	5468	4120	4353	5267	8500	14853	21240	21192	19750	15083
1937	11668	7098	4472	1239	1394	1614	2834	14450	21365	20874	17477	16085
1944	20296	18088	13973	10918	9056	7785	9011	17738	21581	21365	18558	15807
1949	15974	15532	13092	8475	5956	5379	8387	17796	21581	21417	19318	16676
1951	14556	21458	20600	19872	20054	20114	21028	21580	21580	21152	16932	14400
1954	14167	8564	4030	2593	2454	3866	7948	17564	21458	19692	14237	11013
1955	7689	5332	4300	2564	2292	2160	2995	10300	19451	19752	15422	11791
1957	15690	12586	8519	6606	6606	7265	9146	16874	21520	20722	16874	14131
1962	11400	8080	6327	4267	4967	4030	7905	14825	21581	21089	15203	13247
1970	16854	12511	7211	9282	9940	10042	11255	20107	21168	20264	13797	9182
1972	12854	8491	3730	1425	493	2258	4467	13062	19648	20004	15941	13893
1979	19630	16903	11732	9560	8915	9368	11240	20391	21543	21192	16450	14504
1989	11100	10650	9600	8167	6150	8080	13500	21151	21581	21273	17161	13092
AVERAGE	13584.1	11674.6	8861.0	7080.9	6649.1	7100.8	9578.9	17272.9	21175.6	20792.1	16850.1	13602.8
	ABOVE NORMAL-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1923								2889	2350	1479	1250	1406
1925	1468	968	733	666	1396	2262	5840	16944	19500	19762	17528	17500
1932	5946	4150	3044	1905	918	1166	2878	11988	21550	21580	21120	20661
1935	13478	13041	11061	9237	9465	10066	12485	19751	21520	21120	18499	15422
1940	14343	12535	8342	8497	9280	10680	8790	19990	21580	20630	17390	15505
1941	12310	10770	8650	8500	7450	6330	5740	18440	21270	21580	20720	19480
1943	18416	18914	19050	18988	14498	12087	13869	21181	21550	21581	21550	21028
1945	11752	12386	12560	11791	12611	12889	15094	20054	21581	21581	19272	16591
1946	15918	17333	15974	13869	11642	11448	15863	20966	21581	21520	17274	11889
1948	10536	10159	8741	8435	6728	6407	7948	14825	21581	21581	19993	16989
1953	16000	13349	7561	5898	5002	4967	8254	12788	21458	21581	19212	17103
1965	14127	10019	7349	5591	10441	11449	12938	19570	21580	21457	18086	17155
1971	8772	7608	6260	6587	7020	7672	9555	16322	21248	21562	19277	17562
1973	12112	7480	6502	7069	7399	7603	9588	20769	21518	21198	18204	14831
1984	15150	17275	15455	15049	14986	15231	15974	21089	21316	21384	20255	14906
1986	9178	7507	7567	8019	10121	12897	14290	21520	21581	21581	15884	12882
AVERAGE	11967.1	10899.6	9243.3	8673.4	8597.1	8876.9	10593.7	17442.9	20172.8	20073.6	17843.4	15681.9
	WET-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1927	6058	4752	4839	5714	6104	7149	9500	16972	20670	21170	20586	18781
1936	13529	8189	4931	4877	5650	6111	10421	17796	21335	21365	18736	16845
1938	14878	11816	16252	16932	17218	9741	11158	17105	21427	21581	20447	19362
1942	15258	13504	15723	16449	11988	9146	10702	17854	21520	21531	21054	20144
1950	13144	10112	7775	5936	5332	5782	9237	18736	21581	21581	18264	16740
1952	11693	10206	9056	7561	6728	6150	7432	18796	21458	21581	20800	19993
1956	7689	5148	8652	10489	10774	11497	14663	19932	20905	21581	20600	19571
1958	9146	6810	5744	5368	5859	6367	6447	12839	21581	21581	21335	19812
1963	9190	7307	13449	15145	15748	16418	14022	18380	21519	21580	21334	20720
1967	8963	6443	6228	6209	6978	8232	8845	14361	19926	21519	20204	18617
1969	11999	11255	7165	6995	6276	5367	6567	20440	21192	21537	20574	18611
1974	12768	16063	17299	18522	18263	18755	18433	20598	21592	21531	21022	17993
1975	13642	6740	3589	2819	2907	2907	2936	11459	20800	21555	20470	18422
1978	5467	5355	5087	5637	5958	6700	8473	17304	20562	21457	20143	20005
1980	12286	7839	3934	4835	5823	6390	11610	18557	21457	21580	19975	19402
1982	7160	8831	12216	13339	15351	16540	14126	17172	21065	21544	21458	21408
1983	21015	19511	19392	18205	15389	15707	15768	16926	18052	21347	21341	15586
AVERAGE	11405.1	9403.6	9478.3	9707.8	9549.8	9348.2	10608.2	17366.2	20978.9	21507.1	20490.6	18941.8

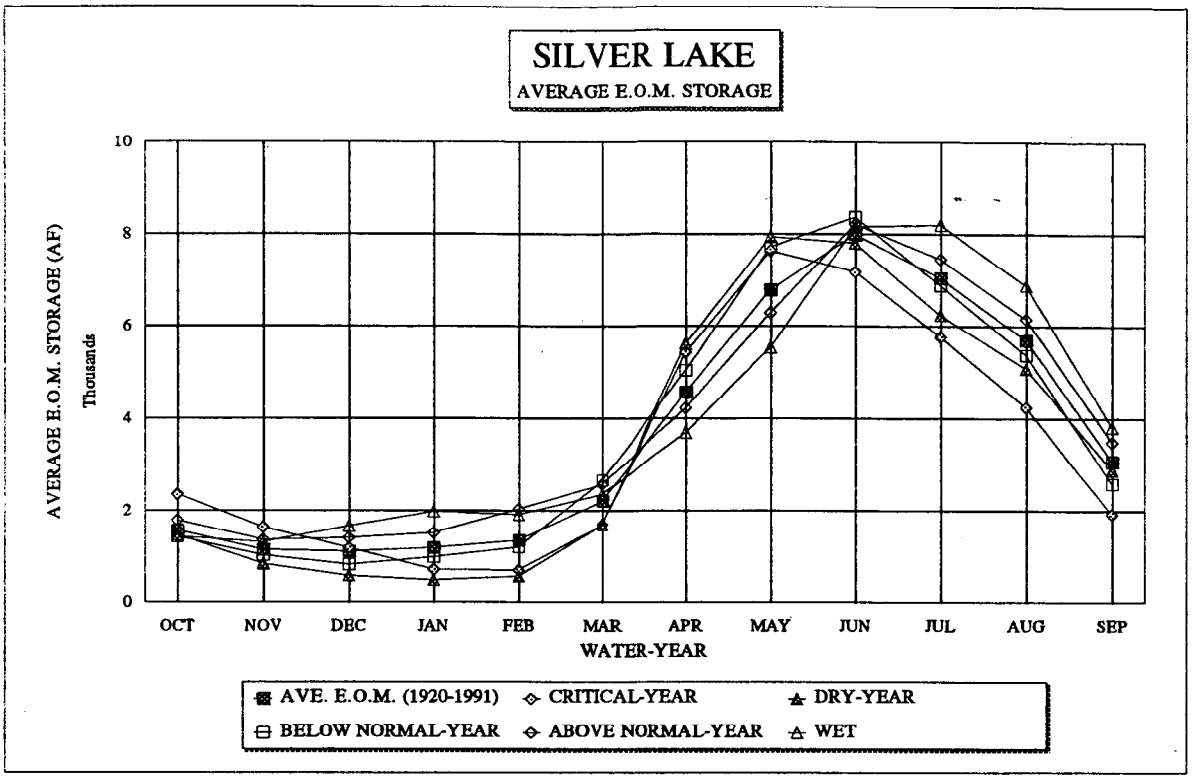
SOURCE: (1) SWRCB EXHIBIT 5 AND 5
(2) KIRKWOOD ASSOCIATES, KW6B, TABLE 1.
(3) EDCWA/EID EXHIBIT #101, SIERRA HYDROTECH DATA SUBMITTED 10/24/95.
(4) EDCWA EXHIBIT 47.

TABLE 7-8
ALOHA LAKE
AVERAGE E.O.M. STORAGE

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
	HISTORIC AVERAGE E.O.M. STORAGE (1920-1991) (AF)											
1934-1991							1225.3	3030.4	4407.7	3446.0	1108.4	341.8
	CRITICAL-YEAR E.O.M. STORAGE											
1934							1058.4	3140.3	4538.0	4538.0	837.7	97.0
1961							1058.4	3767.1	4959.2	3951.1	2356.4	1058.4
1976							981.1	2268.6	3034.2	429.7	97.0	97.0
1977							1058.4	3767.1	4959.2	3767.1	1195.9	97.0
1987							1195.9	2182.8	3889.1	1407.1	97.0	97.0
AVERAGE							1070.4	3025.2	4276.0	2818.6	916.8	289.3
	DRY-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1939							97.0	3359.7	4959.2	3034.2	337.9	141.3
1947							1712.6	2730.1	4675.7	5105.0	429.7	429.7
1959							837.7	2182.8	5105.0	2058.3	97.0	97.0
1960							981.1	3140.3	5105.0	2930.5	1344.5	630.4
1964							981.1	1712.6	5105.0	5105.0	3951.1	1112.1
1966							907.5	4959.2	4959.2	4816.1	4205.4	2829.1
1968							981.1	1712.6	3951.1	5105.0	2058.3	97.0
1981							224.6	907.5	3647.6	5179.0	2182.8	429.7
1985							837.7	2182.8	5105.0	2058.3	97.0	97.0
1990							837.7	2356.4	4816.1	3647.6	97.0	97.0
1991							1899.5	3889.1	3359.7	750.2	97.0	97.0
AVERAGE							936.1	2648.5	4617.2	3617.2	1374.3	550.7
	BELOW NORMAL-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1937							630.4	1504.6	3248.8	5105.0	1977.9	1112.1
1944							837.7	1407.1	5105.0	4675.7	1195.9	224.6
1949							981.1	3416.0	4470.2	4675.7	1977.9	429.7
1951							1058.4	3034.2	3951.1	5105.0	2538.8	97.0
1954							1712.6	3647.6	4959.2	2930.5	557.9	224.6
1955							1058.4	3359.7	5105.0	5179.0	2268.6	429.7
1957							907.5	4959.2	4959.2	4959.2	1899.5	224.6
1962							3248.8	4675.7	4538.0	4205.4	1641.3	97.0
1970							97.0	97.0	3359.7	5105.0	1058.4	97.0
1972							2538.8	2633.3	4538.0	2730.1	224.6	97.0
1979							4336.5	4959.2	4959.2	4959.2	1977.9	1058.4
1989							1823.2	3767.1	4816.1	1572.0	97.0	97.0
AVERAGE							1602.5	3121.7	4500.8	4266.8	1451.3	349.1
	ABOVE NORMAL-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1935							837.7	1407.1	3767.1	4538.0	1407.1	557.9
1940							981.1	3248.8	4675.7	5105.0	1112.1	97.0
1941							97.0	1058.4	2058.3	4538.0	1823.2	224.6
1943							630.4	3647.6	5179.0	3889.1	429.7	97.0
1945							1195.9	3140.3	5179.0	3951.1	1112.1	429.7
1946							1572.0	4959.2	4959.2	1112.1	97.0	97.0
1948							1283.7	3140.3	4816.1	3034.2	429.7	224.6
1953							981.1	4538.0	5105.0	3140.3	1344.5	429.7
1963							1058.4	1823.2	4816.1	3248.8	688.6	97.0
1971							1407.1	3416.0	5179.0	1823.2	97.0	97.0
1973							3034.2	3034.2	4205.4	5105.0	429.7	97.0
1984							97.0	1823.2	3140.3	4675.7	907.5	97.0
1986							1283.7	2058.3	3767.1	981.1	97.0	97.0
AVERAGE							1112.2	2868.8	4372.9	3472.5	767.3	203.3
	WET-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1936							97.0	3416.0	4675.7	3889.1	688.6	97.0
1938							1899.5	4205.4	4816.1	3034.2	1058.4	750.2
1942							1344.5	4205.4	5179.0	5179.0	1195.9	224.6
1950							630.4	4205.4	4959.2	3359.7	688.6	97.0
1952							907.5	1641.3	4077.0	4816.1	2730.1	688.6
1956							1058.4	3889.1	4538.0	3889.1	1504.6	97.0
1958							1058.4	3140.3	4675.7	1112.1	97.0	97.0
1965							981.1	4077.0	5105.0	1977.9	97.0	97.0
1967							1058.4	2446.5	3889.1	1977.9	97.0	97.0
1969							3034.2	3767.1	5329.0	3951.1	2633.3	429.7
1974							97.0	1823.2	3140.3	4675.7	907.5	97.0
1975							1112.1	2829.1	2633.3	97.0	97.0	688.6
1978							708.7	2446.5	4140.9	2829.1	750.2	97.0
1980							1572.0	3647.6	4336.5	97.0	97.0	97.0
1982							1058.4	2182.8	2058.3	1899.5	3767.1	1641.3
1983							2930.5	3647.6	3889.1	4675.7	688.6	97.0
AVERAGE							1221.8	3223.2	4215.2	2966.3	1068.6	337.1

SOURCE: (1) SWRCB EXHIBIT 3 AND 5
(2) KIRKWOOD ASSOCIATES. KW6B, TABLE 1.
(3) EDCWA/EID EXHIBIT #101. SIERRA HYDROTECH DATA SUBMITTED 10/24/95.
(4) EDCWA EXHIBIT 47.

FIGURE 7-1


SILVER LAKE
AVERAGE E.O.M. STORAGE
AVERAGE E.O.M. STORAGE (AF)
Thousands
10
8
6
4
2
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
WATER-YEAR
AVE. E.O.M. (1920-1991)
CRITICAL-YEAR
DRY-YEAR
BELOW NORMAL-YEAR
ABOVE NORMAL-YEAR
WET

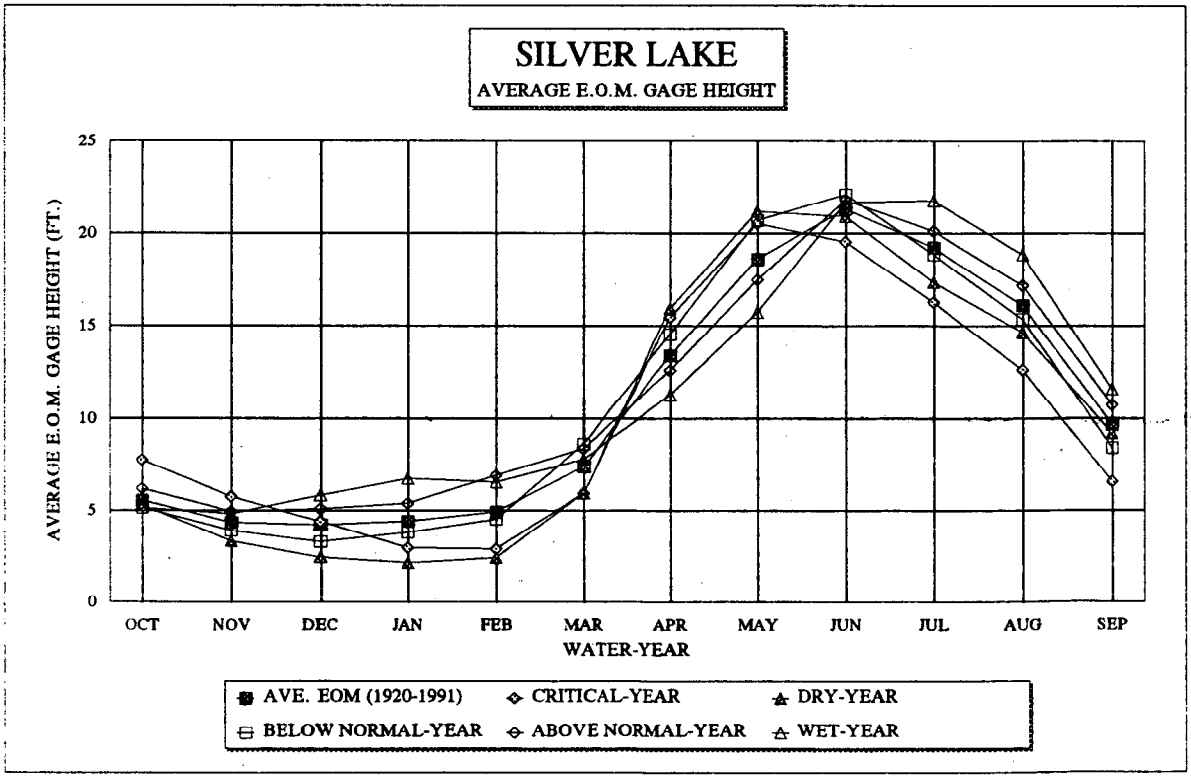
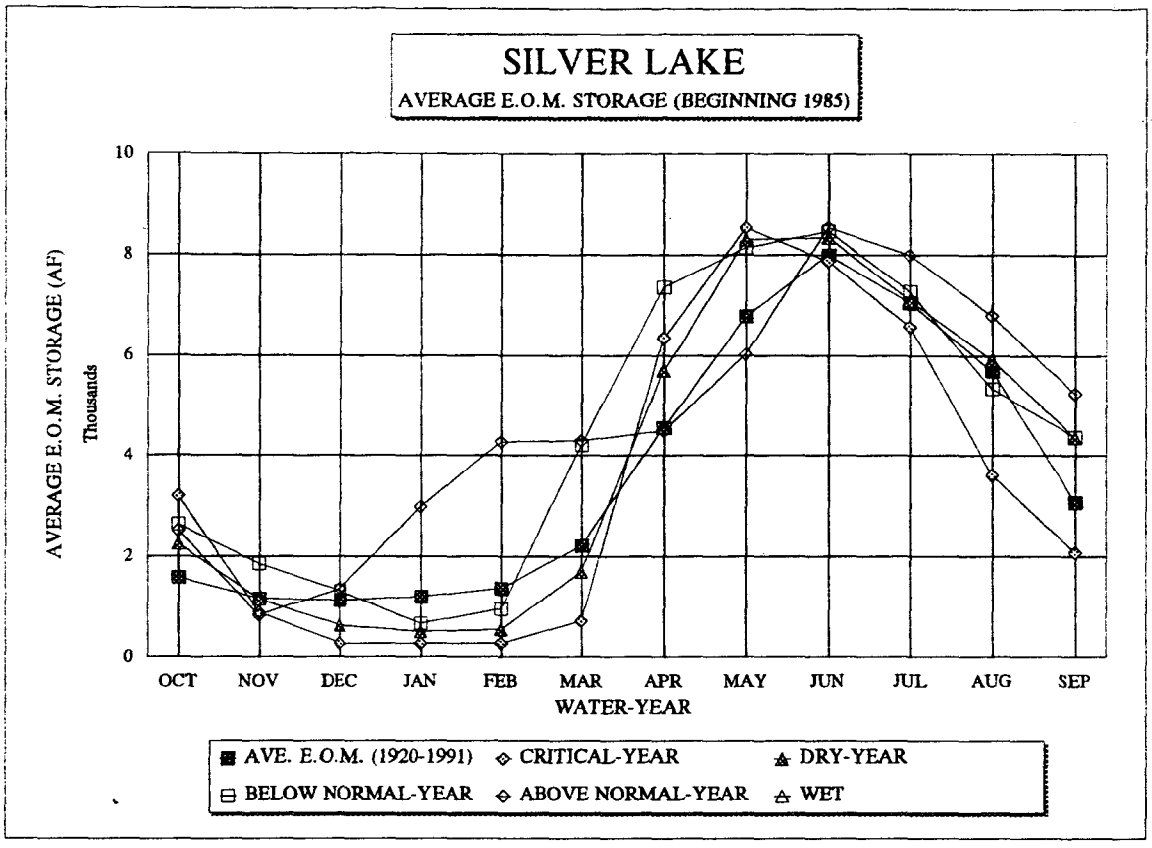

SILVER LAKE
AVERAGE E.O.M. GAGE HEIGHT
AVERAGE E.O.M. GAGE HEIGHT (FT.)
25
20
15
10
5
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
WATER-YEAR
AVE. EOM (1920-1991)
CRITICAL-YEAR
DRY-YEAR
BELOW NORMAL-YEAR
ABOVE NORMAL-YEAR
WET-YEAR

FIGURE 7-1A


SILVER LAKE
AVERAGE E.O.M. STORAGE (BEGINNING 1985)
AVERAGE E.O.M. STORAGE (AF)
Thousands
10
8
6
4
2
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
WATER-YEAR
AVE. E.O.M. (1920-1991)
CRITICAL-YEAR
DRY-YEAR
BELOW NORMAL-YEAR
ABOVE NORMAL-YEAR
WET

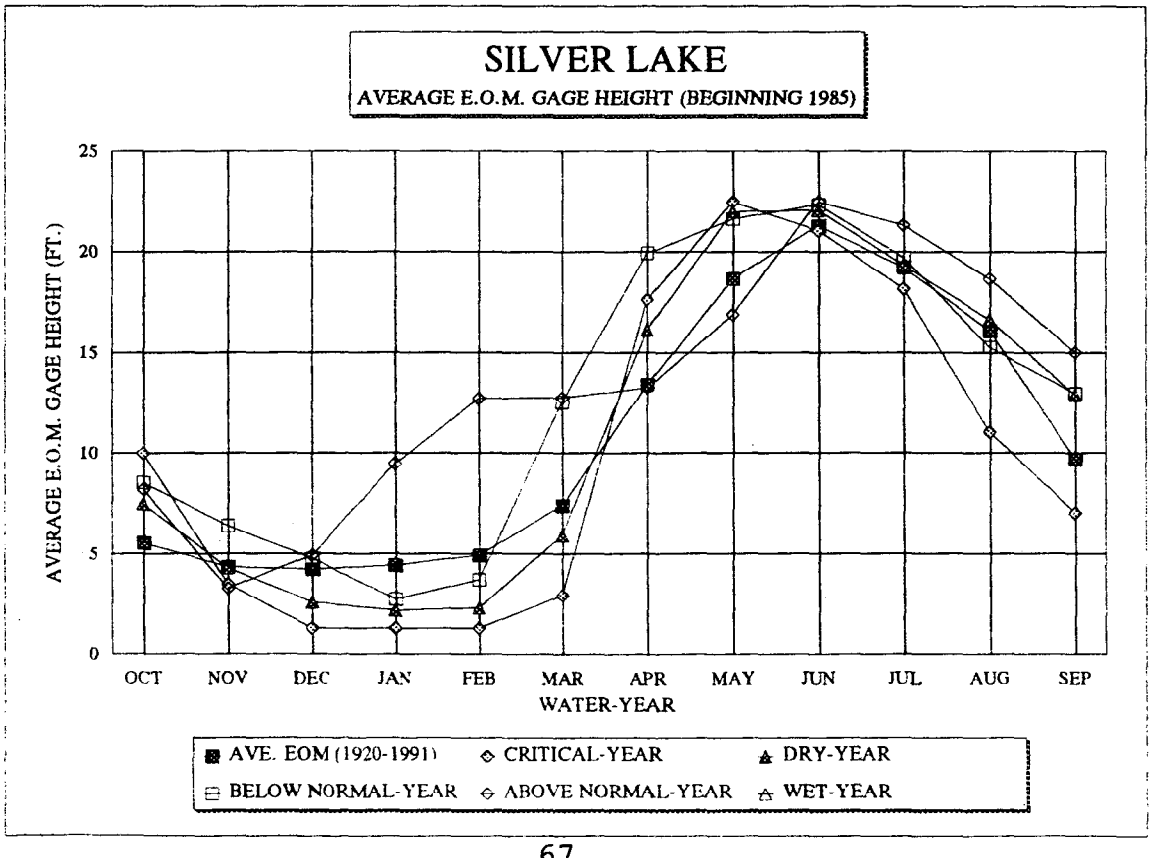
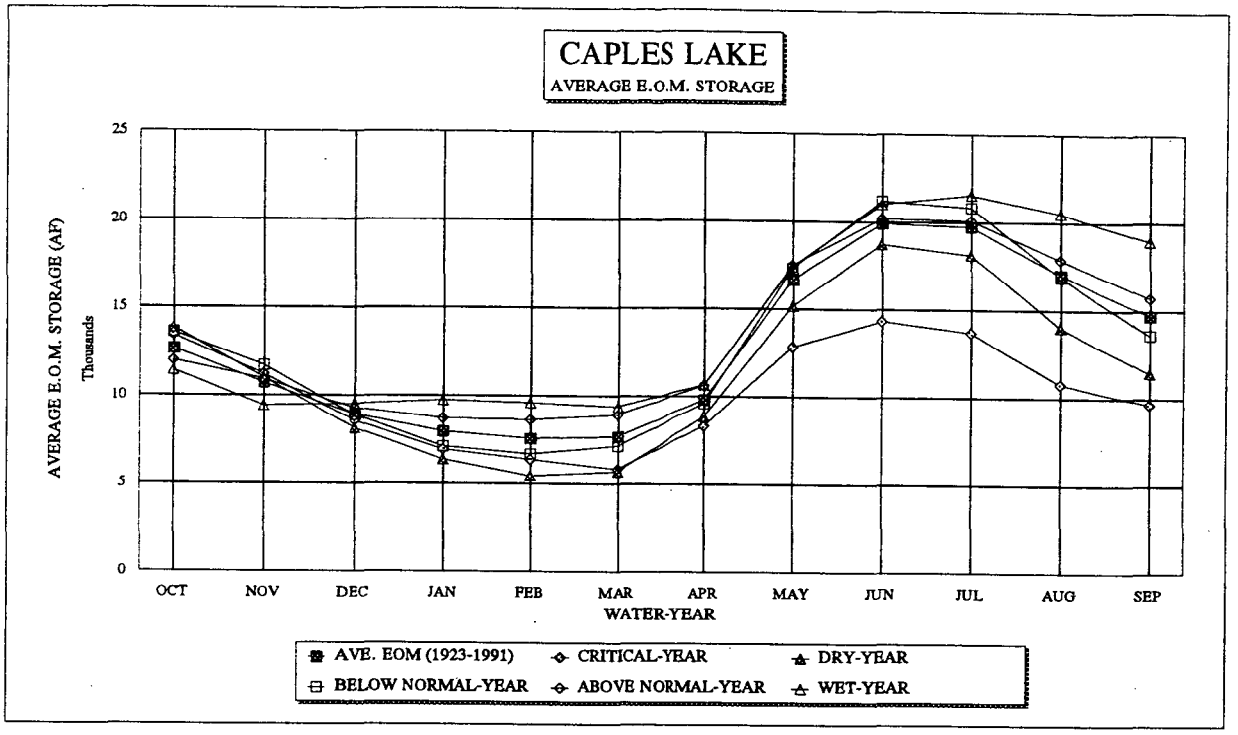

SILVER LAKE
AVERAGE E.O.M. GAGE HEIGHT (BEGINNING 1985)
AVERAGE E.O.M. GAGE HEIGHT (FT.)
25
20
15
10
5
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
WATER-YEAR
AVE. EOM (1920-1991)
CRITICAL-YEAR
DRY-YEAR
BELOW NORMAL-YEAR
ABOVE NORMAL-YEAR
WET-YEAR

FIGURE 7-2


CAPLES LAKE
AVERAGE E.O.M. STORAGE
AVERAGE E.O.M. STORAGE (AF)
Thousands
25
20
15
10
5
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
WATER-YEAR
AVE. EOM (1923-1991)
CRITICAL-YEAR
DRY-YEAR
BELOW NORMAL-YEAR
ABOVE NORMAL-YEAR
WET-YEAR

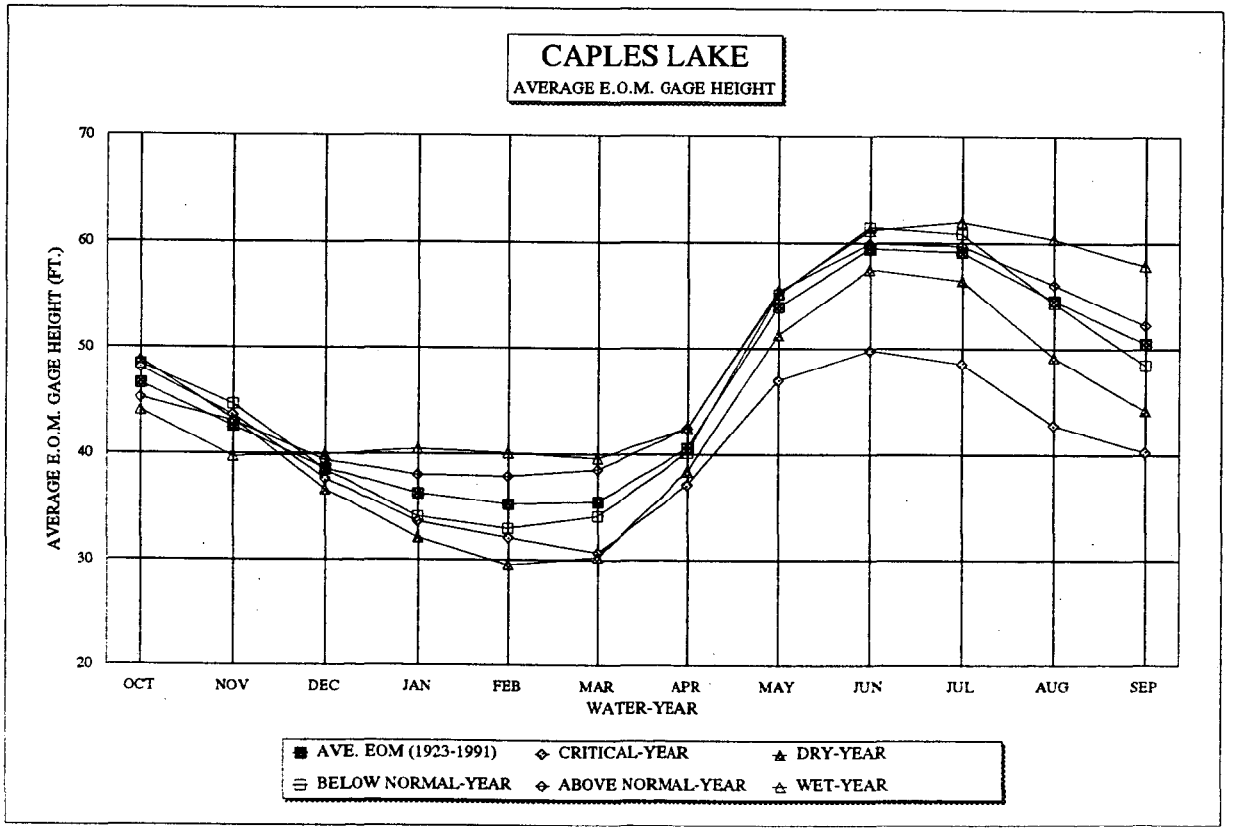
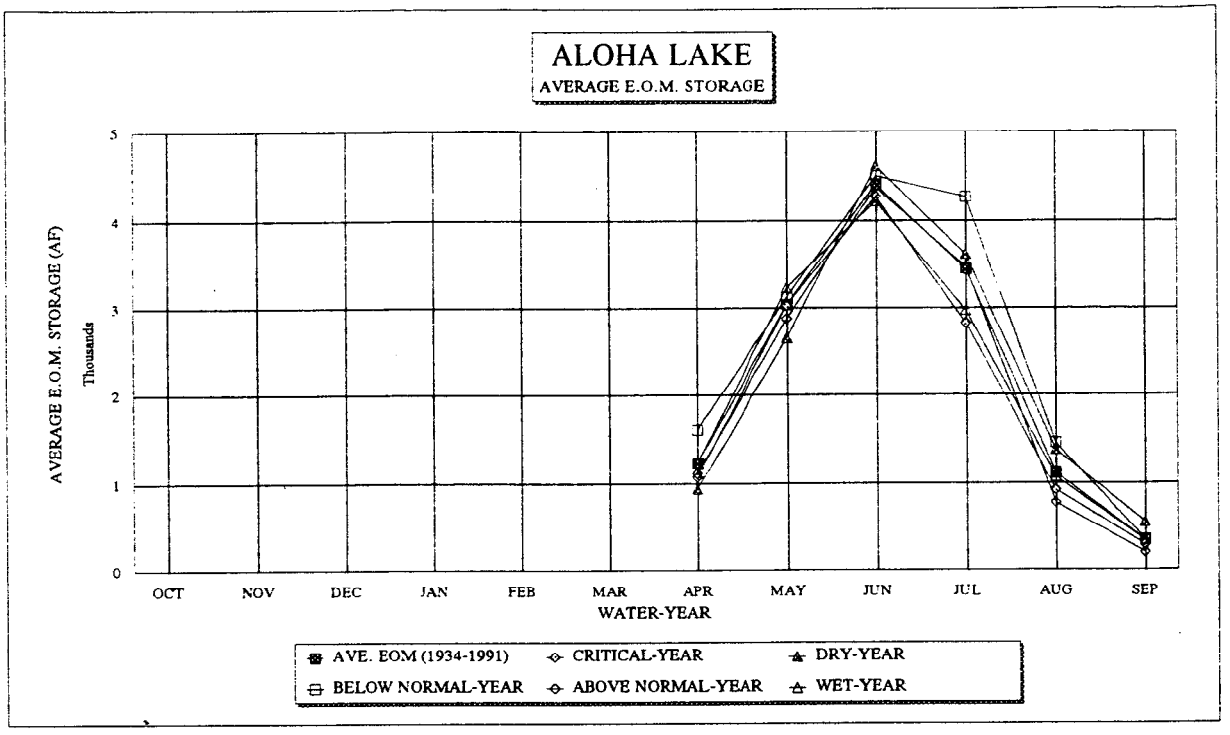

CAPLES LAKE
AVERAGE E.O.M. GAGE HEIGHT
AVERAGE E.O.M. GAGE HEIGHT (FT.)
70
60
50
40
30
20
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
WATER-YEAR
AVE. EOM (1923-1991)
CRITICAL-YEAR
DRY-YEAR
BELOW NORMAL-YEAR
ABOVE NORMAL-YEAR
WET-YEAR

FIGURE 7-3


ALOHA LAKE
AVERAGE E.O.M. STORAGE
AVERAGE E.O.M. STORAGE (AF)
Thousands
5
4
3
2
1
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
WATER-YEAR
AVE. EOM (1934-1991)
CRITICAL-YEAR
DRY-YEAR
BELOW NORMAL-YEAR
ABOVE NORMAL-YEAR
WET-YEAR

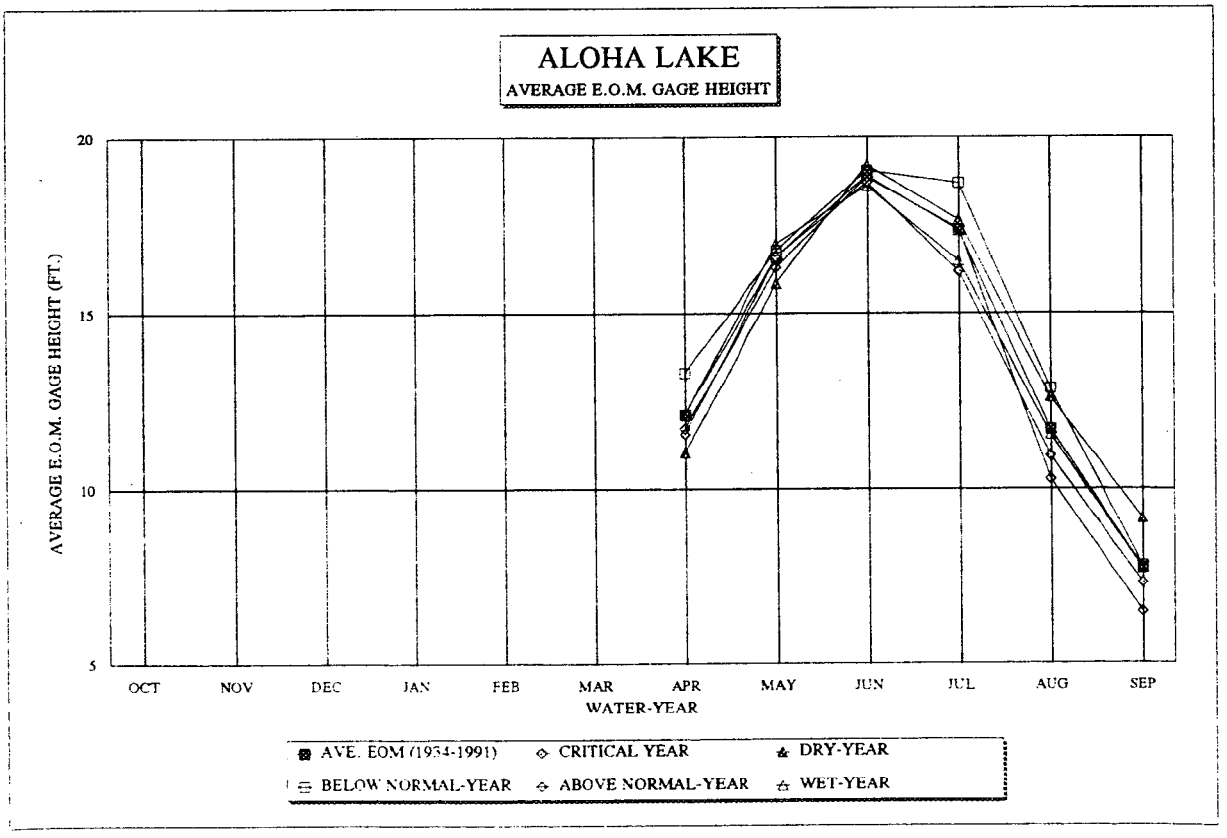

ALOHA LAKE
AVERAGE E.O.M. GAGE HEIGHT
AVERAGE E.O.M. GAGE HEIGHT (FT.)
20
15
10
5
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
WATER-YEAR
AVE. EOM (1934-1991)
CRITICAL YEAR
DRY-YEAR
BELOW NORMAL-YEAR
ABOVE NORMAL-YEAR
WET-YEAR

TABLE 7-6A
SILVER LAKE
AVERAGE E.O.M. STORAGE - BEGINNING 1985

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
	HISTORIC AVERAGE E.O.M. STORAGE (1920-1991) (AF)											
1923-1991	1567	1156	1115	1184	1348	2208	4554	6792	7987	7053	5693	3068
	CRITICAL YEAR E.O.M. STORAGE											
1924												
1931												
1934												
1961												
1976												
1977												
1987	3182	880	260	260	260	710	6350	8540	7865	6580	3600	2074
AVERAGE	3182.0	880.0	260.0	260.0	260.0	710.0	6350.0	8540.0	7865.0	6580.0	3600.0	2074.0
	DRY-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1926												
1929												
1933												
1939												
1947												
1959												
1960												
1964												
1966												
1968												
1981												
1985	1912	1180	650	800	800	1270	5440	8440	8190	7132	6074	4030
1990	2874	1600	900	650	800	2244	7600	8665	8140	6626	5530	4200
1991	1931	635	297	37	0	1549	4052	7810	8681	7528	6147	4813
AVERAGE	2239.0	1138.3	615.7	495.7	533.3	1687.7	5697.3	8305.0	8337.0	7095.3	5917.0	4347.7
	BELOW NORMAL YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1928												
1930												
1937												
1944												
1949												
1951												
1954												
1955												
1957												
1962												
1970												
1972												
1979												
1989	2625	1848	1300	656	946	4201	7364	8140	8465	7270	5332	4370
AVERAGE	2625.0	1848.0	1300.0	656.0	946.0	4201.0	7364.0	8140.0	8465.0	7270.0	5332.0	4370.0
	ABOVE NORMAL YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1923												
1925												
1932												
1935												
1940												
1941												
1943												
1945												
1946												
1948												
1953												
1963												
1971												
1973												
1984												
1986	2500	815	1350	2980	4270	4290	4493	6028	8540	7990	6800	5230
AVERAGE	2500.0	815.0	1350.0	2980.0	4270.0	4290.0	4493.0	6028.0	8540.0	7990.0	6800.0	5230.0
	WET-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1927												
1936												
1938												
1942												
1950												
1952												
1956												
1958												
1965												
1967												
1969												
1974												
1975												
1978												
1980												
1982												
1983												
AVERAGE	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR

SOURCE: (1) SWRCB EXHIBIT 3 AND 5
(2) KIRKWOOD ASSOCIATES, KW6B, TABLE 1.
(3) EDCWA/EID EXHIBIT #101, SIERRA HYDROTECH DATA SUBMITTED 10/24/95.
(4) EDCWA EXHIBIT 47.

TABLE 7-7A
CAPLES LAKE
AVERAGE E.O.M. STORAGE (BEGINNING 1985)

	HISTORIC AVERAGE E.O.M. STORAGE (1920-1991) (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1923-1991	12643	10704	8907	7943	7548	7645	9779	16607	19881	19719	16969	14726
	CRITICAL YEAR E.O.M. STORAGE											
1924												
1931												
1934												
1961												
1976												
1977												
1987	10822	7604	4615	2790	2564	2427	5707	11303	12326	11806	10989	10300
AVERAGE	10822.0	7604.0	4615.0	2790.0	2564.0	2427.0	5707.0	11303.0	12326.0	11806.0	10989.0	10300.0
	DRY-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1926												
1929												
1933												
1939												
1947												
1959												
1960												
1964												
1966												
1968												
1981												
1985	10870	9511	5221	4788	4067	4415	8211	16196	20114	19152	11988	9958
1990	11900	10183	8000	6800	5300	5900	9880	13921	16932	16874	12915	10800
1991	10205	7326	4969	3578	3368	3874	4561	9925	16421	17321	15613	13815
AVERAGE	10991.7	9006.7	6063.3	5055.3	4245.0	4729.7	7550.7	13347.3	17822.3	17782.3	13505.3	11524.3
	BELOW NORMAL-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1928												
1930												
1937												
1944												
1949												
1951												
1954												
1955												
1957												
1962												
1970												
1972												
1979												
1989	11100	10650	9600	8167	6150	8080	13500	21151	21581	21273	17161	13092
AVERAGE	11100.0	10650.0	9600.0	8167.0	6150.0	8080.0	13500.0	21151.0	21581.0	21273.0	17161.0	13092.0
	ABOVE NORMAL-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1923												
1925												
1932												
1935												
1940												
1941												
1943												
1945												
1946												
1948												
1953												
1963												
1971												
1973												
1984												
1986	9178	7507	7367	8019	10121	12897	14290	21520	21581	21581	15884	12882
AVERAGE	9178.0	7507.0	7367.0	8019.0	10121.0	12897.0	14290.0	21520.0	21581.0	21581.0	15884.0	12882.0
	WET-YEAR E.O.M. STORAGE (AF)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1927												
1936												
1938												
1942												
1950												
1952												
1956												
1958												
1965												
1967												
1969												
1974												
1975												
1978												
1980												
1982												
1983												
AVERAGE	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR

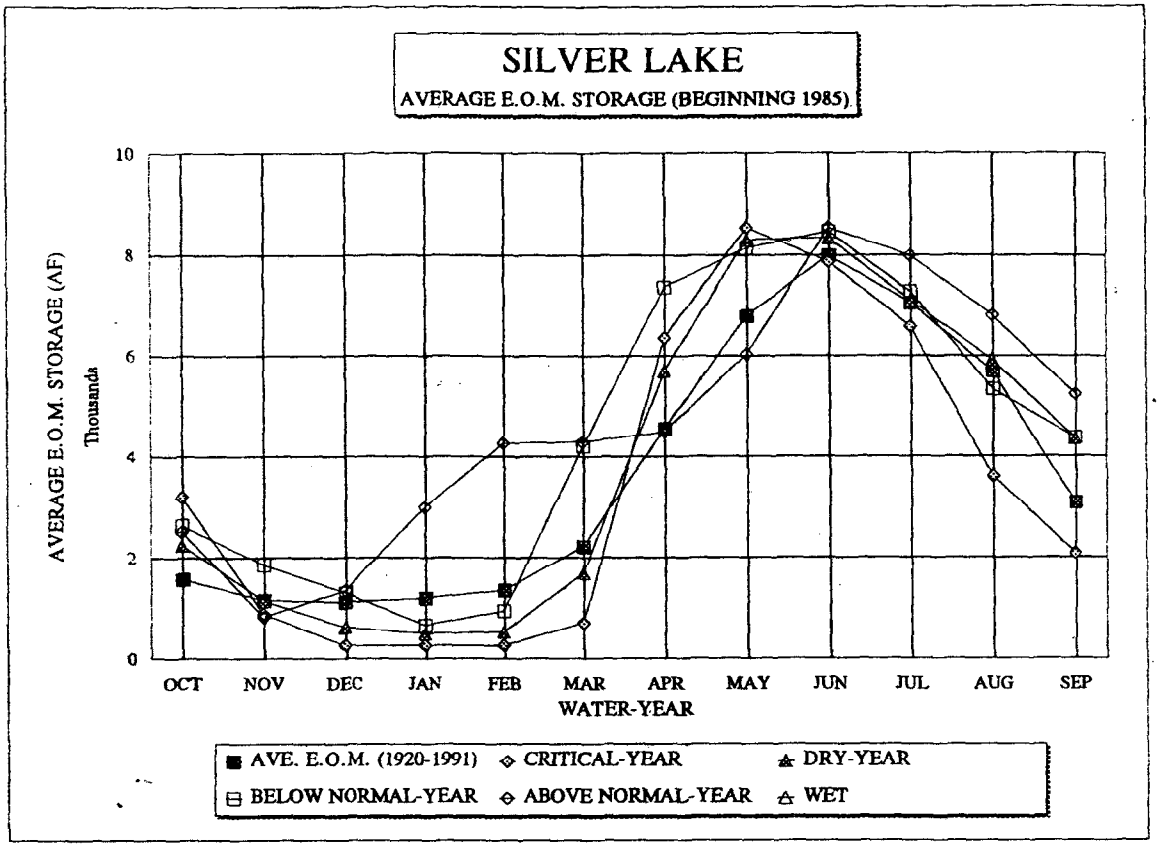
SOURCE: (1) SWRCB EXHIBIT 3 AND 5
(2) KIRKWOOD ASSOCIATES, KW6B, TABLE 1.
(3) EDCWA/EID EXHIBIT #101, SIERRA HYDROTECH DATA SUBMITTED 10/24/95.
(4) EDCWA EXHIBIT 47.

TABLE 7-8A
ALOHA LAKE
AVERAGE E.O.M. STORAGE (BEGINNING 1985)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
HISTORIC AVERAGE E.O.M. STORAGE (1920-1991) (AF)												
1934-1991							1225.3	3030.4	4407.7	3446.0	1108.4	341.8
CRITICAL-YEAR E.O.M. STORAGE												
1934												
1961												
1976												
1977												
1987							1195.9	2182.8	3889.1	1407.1	97.0	97.0
AVERAGE							1195.9	2182.8	3889.1	1407.1	97.0	97.0
DRY-YEAR E.O.M. STORAGE (AF)												
1939												
1947												
1959												
1960												
1964												
1966												
1968												
1981												
1985							837.7	2182.8	5105.0	2058.3	97.0	97.0
1990							837.7	2356.4	4816.1	3647.6	97.0	97.0
1991							1899.5	3889.1	3359.7	750.2	97.0	97.0
AVERAGE							1191.6	2809.5	4426.9	2152.0	97.0	97.0
BELOW NORMAL-YEAR E.O.M. STORAGE (AF)												
1937												
1944												
1949												
1951												
1954												
1955												
1957												
1962												
1970												
1972												
1979												
1989							1823.2	3767.1	4816.1	1572.0	97.0	97.0
AVERAGE							1823.2	3767.1	4816.1	1572.0	97.0	97.0
ABOVE NORMAL-YEAR E.O.M. STORAGE (AF)												
1935												
1940												
1941												
1943												
1945												
1946												
1948												
1953												
1963												
1971												
1973												
1984												
1986							1283.7	2058.3	3767.1	981.1	97.0	97.0
AVERAGE							1283.7	2058.3	3767.1	981.1	97.0	97.0
WET-YEAR E.O.M. STORAGE (AF)												
1936												
1938												
1942												
1950												
1952												
1956												
1958												
1965												
1967												
1969												
1974												
1975												
1978												
1980												
1982												
1983												
AVERAGE							ERR	ERR	ERR	ERR	ERR	ERR

SOURCE: (1) SWRCB EXHIBIT 3 AND 5
(2) KIRKWOOD ASSOCIATES, KW6B, TABLE 1.
(3) EDCWA/EID EXHIBIT #101, SIERRA HYDROTECH DATA SUBMITTED 10/24/95.
(4) EDCWA EXHIBIT 47.

FIGURE 7-1A


SILVER LAKE
AVERAGE E.O.M. STORAGE (BEGINNING 1985)
AVERAGE E.O.M. STORAGE (AF)
Thousands
10
8
6
4
2
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
WATER-YEAR
AVE. E.O.M. (1920-1991)
CRITICAL-YEAR
DRY-YEAR
BELOW NORMAL-YEAR
ABOVE NORMAL-YEAR
WET

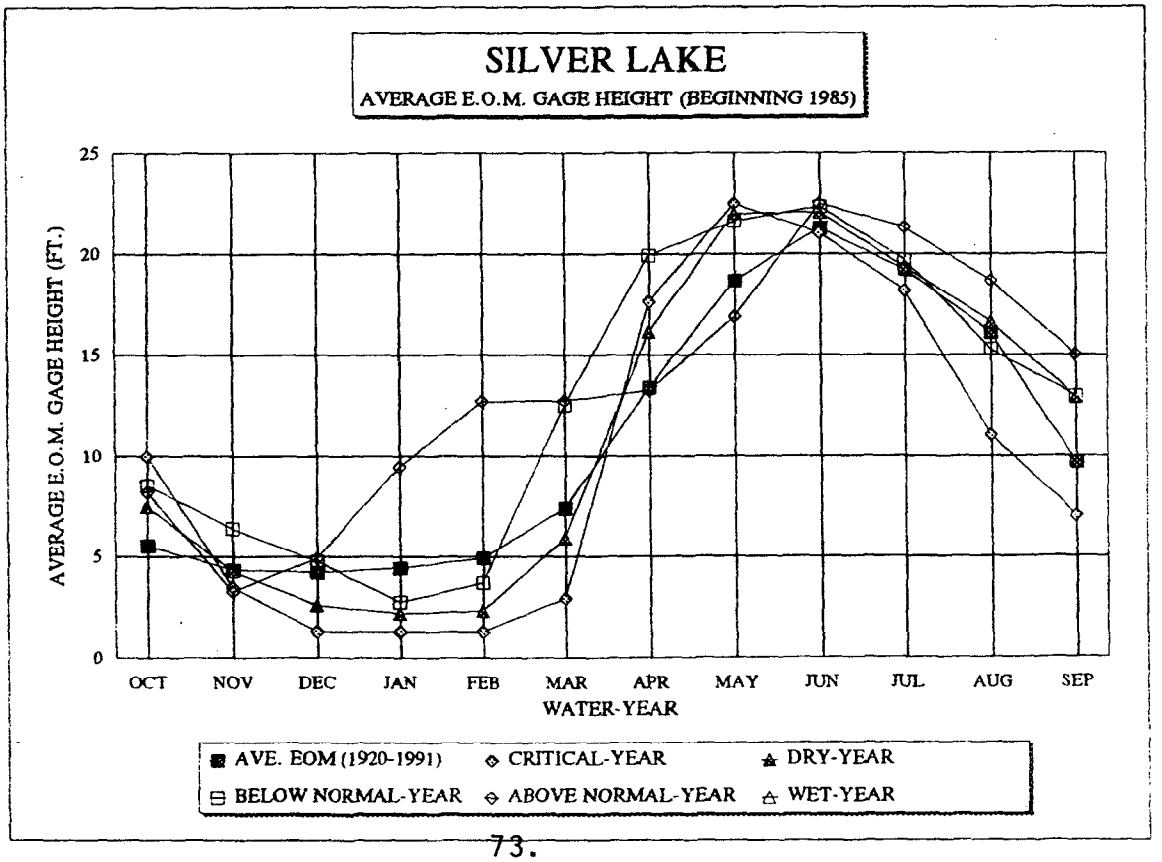
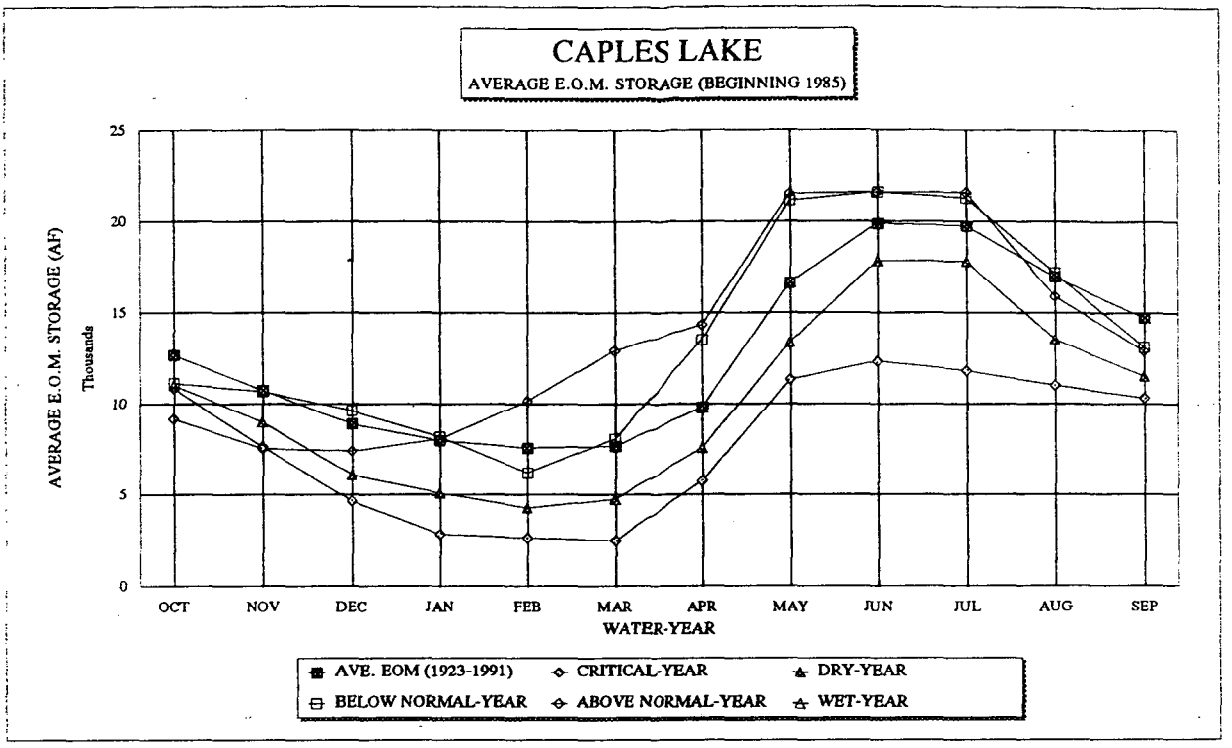

SILVER LAKE
AVERAGE E.O.M. GAGE HEIGHT (BEGINNING 1985)
AVERAGE E.O.M. GAGE HEIGHT (FT.)
25
20
15
10
5
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
WATER-YEAR
AVE. EOM (1920-1991)
CRITICAL-YEAR
DRY-YEAR
BELOW NORMAL-YEAR
ABOVE NORMAL-YEAR
WET-YEAR

FIGURE 7-2A


CAPLES LAKE
AVERAGE E.O.M. STORAGE (BEGINNING 1985)
AVERAGE E.O.M. STORAGE (AF)
Thousands
25
20
15
10
5
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
WATER-YEAR
AVE. EOM (1923-1991)
CRITICAL-YEAR
DRY-YEAR
BELOW NORMAL-YEAR
ABOVE NORMAL-YEAR
WET-YEAR

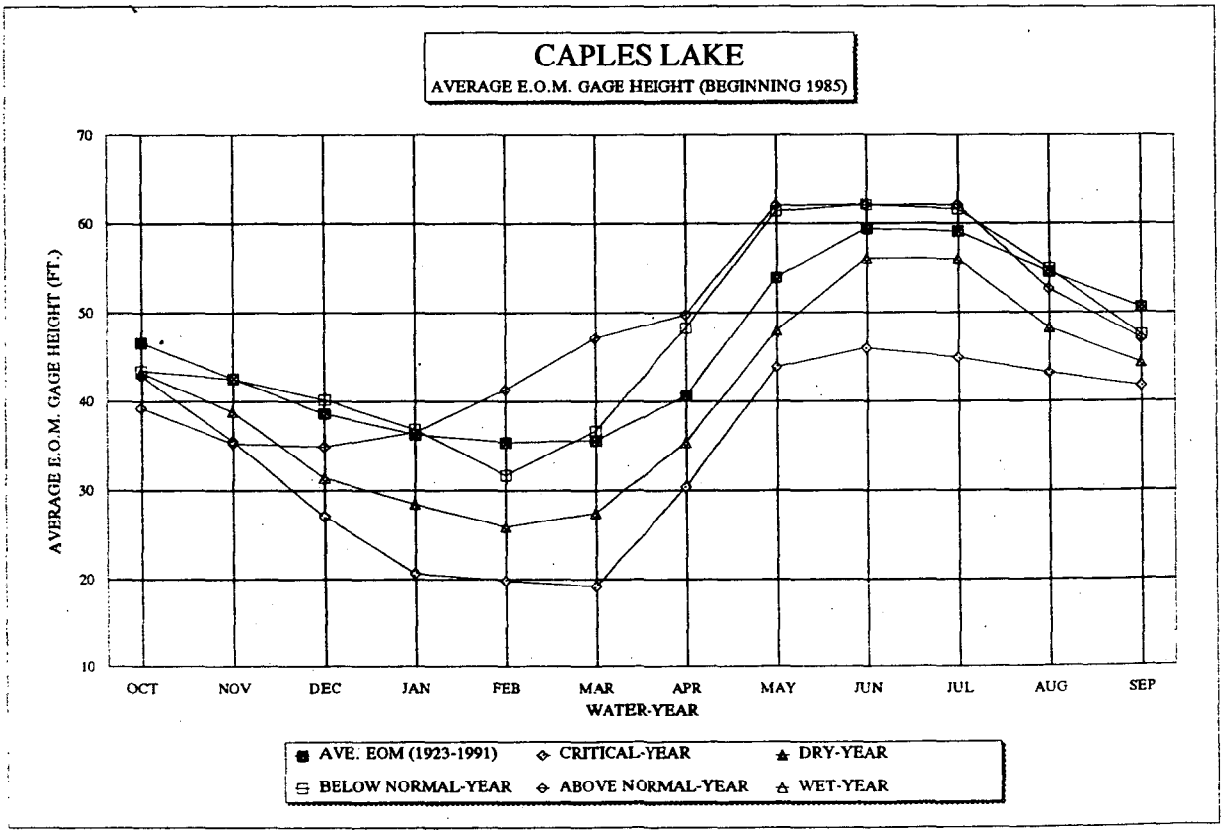
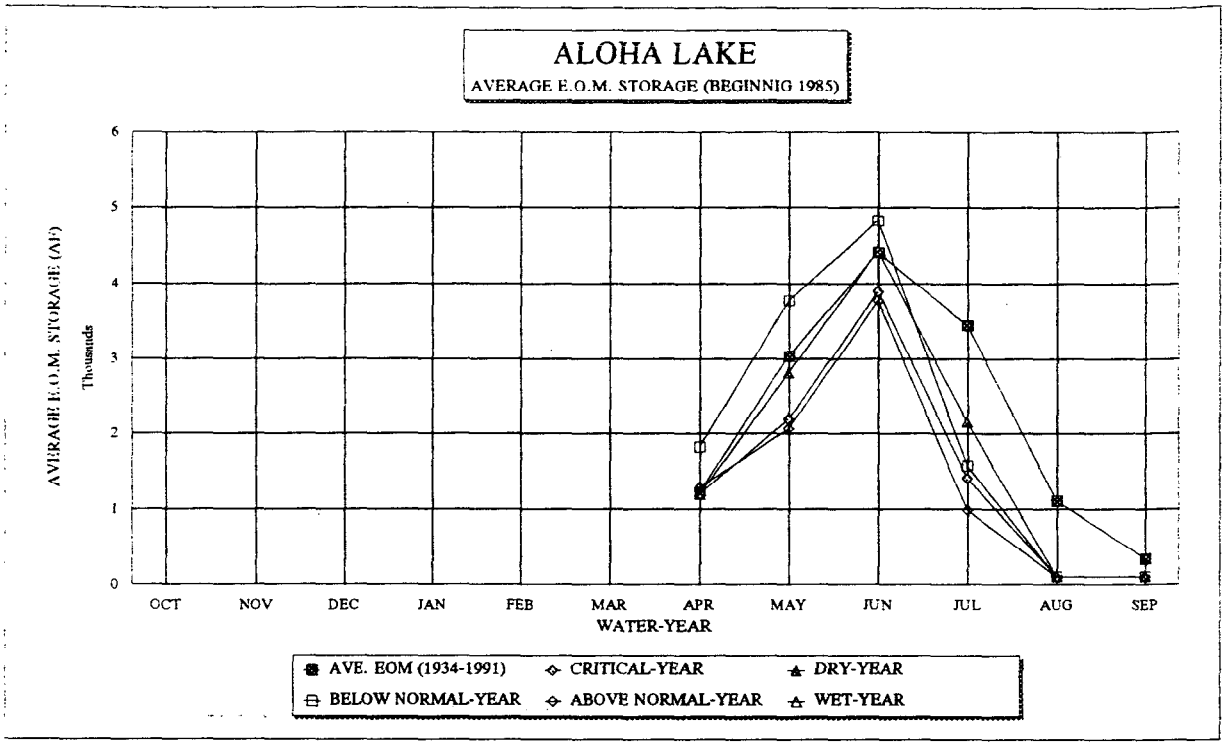
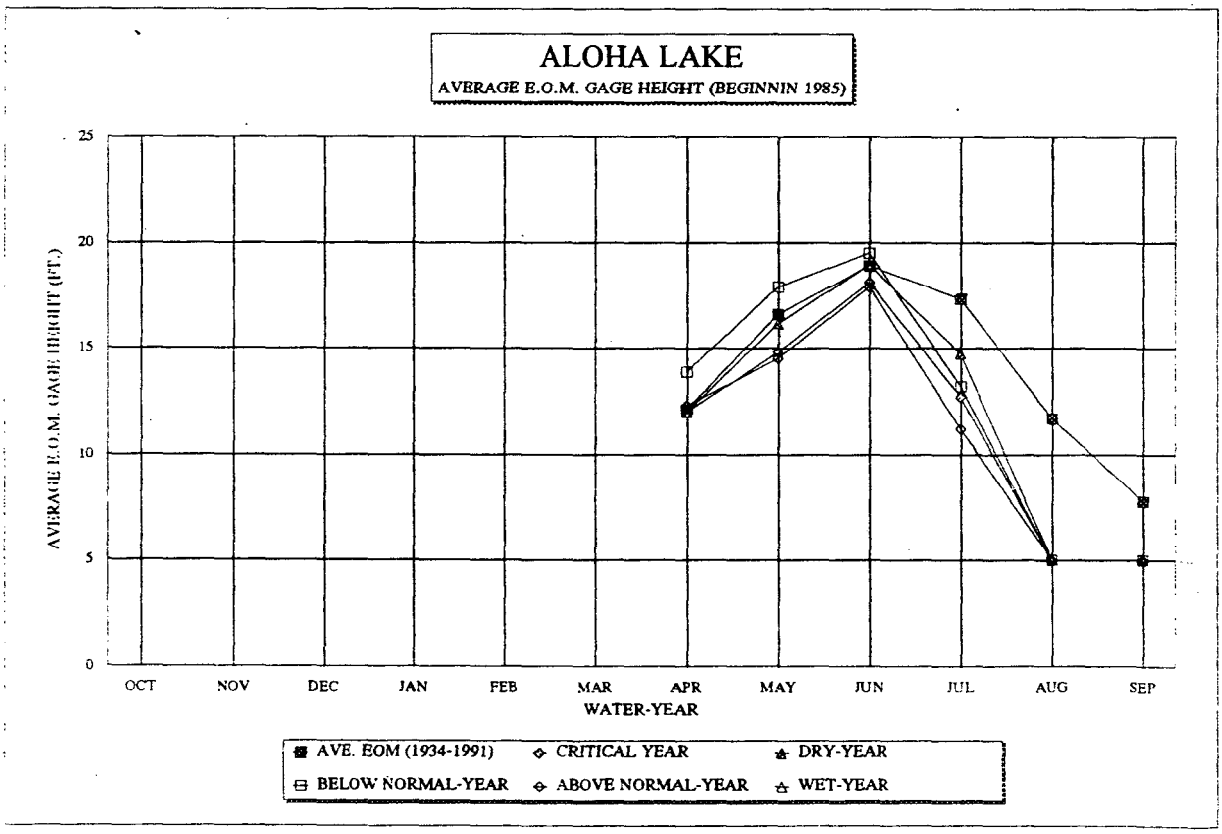

CAPLES LAKE
AVERAGE E.O.M. GAGE HEIGHT (BEGINNING 1985)
AVERAGE E.O.M. GAGE HEIGHT (FT.)
70
60
50
40
30
20
10
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
WATER-YEAR
AVE. EOM (1923-1991)
CRITICAL-YEAR
DRY-YEAR
BELOW NORMAL-YEAR
ABOVE NORMAL-YEAR
WET-YEAR

FIGURE 7-3A


ALOHA LAKE
AVERAGE E.O.M. STORAGE (BEGINNIG 1985)
AVERAGE E.O.M. STORAGE (AF)
Thousands
6
5
4
3
2
1
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
WATER-YEAR
AVE. EOM (1934-1991)
CRITICAL-YEAR
DRY-YEAR
BELOW NORMAL-YEAR
ABOVE NORMAL-YEAR
WET-YEAR


ALOHA LAKE
AVERAGE E.O.M. GAGE HEIGHT (BEGINNIN 1985)
AVERAGE E.O.M. GAGE HEIGHT (FT.)
25
20
15
10
5
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
WATER-YEAR
AVE. EOM (1934-1991)
CRITICAL YEAR
DRY-YEAR
BELOW NORMAL-YEAR
ABOVE NORMAL-YEAR
WET-YEAR

7.2.1 Silver Lake

Generally, the data indicate that: (1) during "critical" water-years, water was collected to storage during the period of February to June (post-1985--March to June) and released from storage during the period of June through January (post-1985--June through February); (2) during "dry" water-years, water was collected to storage during the period February to June (post-1985--February to July) and released from storage during the period of June through January (post-1985--July through January); (3) during "below normal" water-years, water was collected to storage during the period of February to July (post-1985--February to July) and released from storage during the period of July through January (post-1985--July through January); (4) during "above normal" water-years, water was collected to storage during the period December to July (post-1985--December through July) and released from storage during the period July through November (post-1985--July through November); and (5) during "wet" water-years, water was collected to storage during the period December to August, and released from storage during the period August through November. Table 7-9 and 7-9.1 summarize the average maximum, average minimum, and average EOM storage capacity and lake level for each type of water-year identified in Tables 7-6 and 7-6A.

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///
///

TABLE 7-9

Silver Lake--Historic Operations Summary
1923-1991

WATER-YEAR TYPE	MAXIMUM AVE. EOM STORAGE (GAGE HEIGHT)	MINIMUM AVE. EOM STORAGE (GAGE HEIGHT)	AVERAGE EOM STORAGE (GAGE HEIGHT)
CRITICAL	7,631.9 af (20.5 ft)	706.1 af (2.9 ft)	3,370.7 af (10.0 ft)
DRY	7,929.9 af (21.1 ft)	485.4 af (2.1 ft)	3,431.5 af (10.0 ft)
BELOW NORMAL	8,356.1 af (22.1 ft)	821.7 af (3.2 ft)	3,673.1 af (10.7 ft)
ABOVE NORMAL	8,203.8 af (21.7 ft)	1,362.6 af (4.9 ft)	3,873.8 af (11.4 ft)
WET	8,191.2 af (21.7 ft)	1,308.2 af (4.7 ft)	3,909.0 af (11.4 ft)

TABLE 7-9.1

Silver Lake--Historic Operations Summary
Post-1985

WATER-YEAR TYPE	MAXIMUM AVE. EOM STORAGE (GAGE HEIGHT)	MINIMUM AVE. EOM STORAGE (GAGE HEIGHT)	AVERAGE EOM STORAGE (GAGE HEIGHT)
CRITICAL	8,540.0 af (22.5 ft)	260.0 af (1.3 ft)	3,380.0 af (9.8 ft)
DRY	8,337.0 af (22.0 ft)	495.7 af (2.1 ft)	3,867.4 af (11.3 ft)
BELOW NORMAL	8,465.0 af (22.3 ft)	656.0 af (2.7 ft)	4,376.4 af (12.5 ft)
ABOVE NORMAL	8,540.0 af (22.5 ft)	1,350.0 af (4.9 ft)	4,607.1 af (13.2 ft)
WET			

7.2.2 Caples Lake

The data generally indicate that: (1) during "critical" water-years, water was collected to storage during the period of April

to July (post-1985--April to July) and released from storage during the period of July through March (post-1985--July through March); (2) during "dry" water-years, water was collected to storage during the period March to July (post-1985--March to July) and released from storage during the period of July through February (post-1985--July through February); (3) during "below normal" water-years, water was collected to storage during the period of March to July (post-1985--March to July), and released from storage during the period of July through February (post-1985--July through February); (4) during "above normal" water-years, water was collected to storage during the period March to July (post-1985--March to August) and released from storage during the period July through February (post-1985--August through February); and (5) during "wet" water-years, water was collected to storage during the period December to August and released from storage during the period August through November. Tables 7-10 and 7-10.1 summarize the average maximum, average minimum, and average EOM storage capacity and lake level for each type of water-year identified in Tables 7-7 and 7-7A.

TABLE 7-10

Caples Lake--Historic Operations Summary
1923-1991

WATER-YEAR TYPE	MAXIMUM AVE. EOM STORAGE (GAGE HEIGHT)	MINIMUM AVE. EOM STORAGE (GAGE HEIGHT)	AVERAGE EOM STORAGE (GAGE HEIGHT)
CRITICAL	14,308.4 af (49.7 ft)	5,804.4 af (30.6 ft)	10,137.8 af (40.9 ft)
DRY	18,689.2 af (57.4 ft)	5,407.3 af (29.5 ft)	11,368.7 af (43.1 ft)
BELOW NORMAL	21,175.6 af (61.4 ft)	6,649.1 af (32.9 ft)	12,851.9 af (46.0 ft)
ABOVE NORMAL	20,172.8 af (59.8 ft)	8,597.1 af (37.8 ft)	13,338.8 af (47.3 ft)
WET	21,507.1 af (61.9 ft)	9,403.6 af (39.7 ft)	14,065.4 af (48.5 ft)

TABLE 7-10.1

Caples Lake--Historic Operations Summary
Post-1985

WATER-YEAR TYPE	*MAXIMUM AVE. EOM STORAGE (GAGE HEIGHT)*	*MINIMUM AVE. EOM STORAGE (GAGE HEIGHT)*	*AVERAGE EOM STORAGE (GAGE HEIGHT)*
CRITICAL	12,326.0 af (45.9 ft)	2,427.0 af (19.19ft)	7,771.08 af (34.5 ft)
DRY	17,822.3 af (55.9 ft)	4,245.0 af (25.9 ft)	10,135.3 af (40.2 ft)
BELOW NORMAL	21,581.0 af (62.0 ft)	6,150.0 af (31.6 ft)	13,458.7 af (47.2 ft)
ABOVE NORMAL	21,581.0 af (62.0 ft)	7,367.0 af (34.8 ft)	13,568.9 af (47.4 ft)
WET			

7.2.3 Lake Aloha

The data generally indicate for the periods of 1934-1991 and post-1985, in critical" water-years, water was collected to storage during the period of April to June and released from storage during the period of July through September; (2) during "dry" water-years, water was collected to storage during the period April to July, and released from storage during the period of July through September; (3) during "below normal" water-years, water was collected to storage during the period of April to July and released from storage during the period of July through September; (4) during "above normal" water-years, water was collected to storage during the period April to July, and released from storage during the period July through September; and (5) during "wet" water-years, water was collected to storage during the period April to July and released from storage during the period July through September. Tables 7-11 and 7-11.1 summarize the average maximum, average minimum, and average EOM storage capacity and lake level for each type of water-year identified in Tables 7-8 and 7-8A.

TABLE 7-11

Lake Aloha--Historic Operations Summary
1934-1991

WATER-YEAR TYPE	MAXIMUM AVE. EOM STORAGE (GAGE HEIGHT)	MINIMUM AVE. EOM STORAGE (GAGE HEIGHT)	AVERAGE EOM STORAGE (GAGE HEIGHT)
CRITICAL	4,276.0 af (18.7 ft)	1,070.4 af (11.5 ft)	2,066.0 af (13.5 ft)
DRY	4,617.2 af (19.2 ft)	936.1 af (11.0 ft)	2,290.6 af (14.2 ft)
BELOW NORMAL	4,500.8 af (19.0 ft)	1,602.5 af (13.2 ft)	2,548.7 af (14.7 ft)
ABOVE NORMAL	4,372.9 af (18.8 ft)	1,112.2 af (11.7 ft)	2,132.8 af (13.5 ft)
WET	4,215.2 af (18.6 ft)	1,221.8 af (12.1 ft)	2,172.0 af (13.9 ft)

TABLE 7-11.1

Lake Aloha--Historic Operations Summary
Post 1985

WATER-YEAR TYPE	MAXIMUM AVG. EOM STORAGE (GAGE HEIGHT)	MINIMUM AVG. EOM STORAGE (GAGE HEIGHT)	AVERAGE EOM STORAGE (GAGE HEIGHT)
CRITICAL	3,889.1 af (18.1 ft)	1341.8 af (5.0 ft)	1,478.1 af (11.2 ft)
DRY	4,426.9 af (18.9 ft)	97.0 af (5.0 ft)	1,795.6 af (11.9 ft)
BELOW NORMAL	4,816.1 af (19.5 ft)	97.0 af (5.0 ft)	2,028.7 af (12.4 ft)
ABOVE NORMAL	3,767.1 af (17.9 ft)	97.0 af (5.0 ft)	1,380.6 af (10.9 ft)
WET			

The following tables, Tables 7-12, 7-12.1, 7-13, and 7-13.1, summarize the average EOM storage levels for Silver and Caples Lakes during the months of June through September for each water-year type.

TABLE 7-12
Silver Lake

Average End-of-Month Lake Levels
(based on period of record 1923-1991)

WATER-YEAR TYPE	JUNE EOM GAGE HEIGHT (FEET)	JULY EOM. GAGE HEIGHT (FEET)	AUGUST EOM GAGE HEIGHT (FEET)	SEPTEMBER EOM GAGE HEIGHT (FEET)
CRITICAL	19.5	16.2	12.6	6.5
DRY	20.8	17.3	14.6	9.2
BELOW NORMAL	22.1	18.8	15.3	8.4
ABOVE NORMAL	21.7	20.1	17.1	10.7
WET	21.7	21.70	18.8	11.5

TABLE 7-12.1

Silver Lake
Average End-of-Month Lake Levels
(based on period of record beginning 1985-1991)

WATER-YEAR TYPE	JUNE E.O.M. GAGE HEIGHT (FEET)	JULY E.O.M. GAGE HEIGHT (FEET)	AUGUST E.O.M. GAGE HEIGHT (FEET)	SEPTEMBER E.O.M. GAGE HEIGHT (FEET)
CRITICAL	21.0	18.1	11.0	7.0
DRY	22.0	19.3	16.1	12.9
BELOW NORMAL	22.3	19.7	15.2	12.9
ABOVE NORMAL	22.5	21.3	18.6	15.0
WET				

TABLE 7-13

Caples Lake
Average End-of-Month Lake Levels
(based on period of record 1923-1991)

WATER-YEAR TYPE	JUNE EOM GAGE HEIGHT (FEET)	JULY EOM GAGE HEIGHT (FEET)	AUGUST EOM GAGE HEIGHT (FEET)	SEPTEMBER EOM GAGE HEIGHT (FEET)
CRITICAL	49.7	48.5	42.7	40.3
DRY	57.4	56.4	49.1	44.1
BELOW NORMAL	61.4	60.8	54.3	48.4
ABOVE NORMAL	59.8	59.6	56.0	52.3
WET	61.1	61.9	60.3	57.8

TABLE 7-13.1

Caples Lake
Average End of Month Lake Levels
(based on period of record 1985-1991)

WATER-YEAR TYPE	JUNE EOM GAGE HEIGHT (FEET)	JULY EOM GAGE HEIGHT (FEET)	AUGUST EOM GAGE HEIGHT (FEET)	SEPTEMBER EOM GAGE HEIGHT (FEET)
CRITICAL	45.9	44.8	43.1	41.7
DRY	56.0	55.9	48.2	44.3
BELOW NORMAL	62.0	61.6	54.8	47.4
ABOVE NORMAL	62.0	62.0	52.6	47.0
WET				

Based on a comparison of Tables 7-12, 7-12.1, 7-13, and 7-13.1, we find that Silver Lake's water levels were generally higher subsequent to the effective date of FERC License's 184, 1985

release requirements; however water levels in Caples Lake were generally lower.

The operational comparison for the different periods are consistent with the operational descriptions provided under section 6.5.1 of this Decision: during the summer recreational season, project demands are first met with water released from Caples Lake, with no operational withdrawals from Silver Lake, except for release requirements imposed by FERC.

8.0 KIRKWOOD, INC.'S APPLICATIONS TO APPROPRIATE WATER HAVE ALREADY BEEN APPROVED

Order WR 95-36, section 3.2.10 delegates to the Chief, Division of Water Rights, the authority to issue permits when no protests are outstanding against a pending application. As earlier stated, all protests to Applications 30062 and 30453 were withdrawn or otherwise settled. (Section 3.9.1, *infra*.) On June 25, 1996, the Chief, Division of Water Rights, approved Applications 30062 and 30453 by Kirkwood, Inc. Accordingly, no further consideration will be given to the applications filed by Kirkwood, Inc., and its petition for partial assignment of Application 5648 will be denied.

9.0 DENIAL OF APPLICATIONS AND PETITIONS FOR PARTIAL ASSIGNMENT OF STATE FILED APPLICATION 5645 TO APPROPRIATE WATER BY KIRKWOOD PUD AND ALPINE AND AMADOR COUNTIES

Kirkwood PUD and Alpine and Amador Counties filed applications to appropriate water from Caples and Silver Lakes. Respectively, their applications are denominated as Applications 30204, 30219, and 30218. Alpine and Amador Counties also petitioned for the partial assignment of state filed Application 5645; petitions 5645(9) and 5646(10), respectively.

9.1 Denial of Application 30204 by Kirkwood PUD

Application 30204 by Kirkwood PUD will be denied because: (1) the applicant requested the Board to suspend processing of the application and (2) the applicant did not offer evidence in support of its application. (95,T,II,175:23-177:6; 224:14-225:21.)

9.2 Denial of the Direct Diversion Consumptive Use Portion of Application 30219 and Petition for Partial Assignment of State Filed Application 5645(9) by Alpine County

The direct diversion consumptive use portion of Application 30219 and petition for partial assignment of state filed Application 5645(9) by Alpine County will be denied because the applicant: (1) requested the Board to suspend processing of the consumptive use portion of the applications and (2) did not offer evidence in support of the consumptive use portion of its applications. (95,T,II,175:23-177:6; 224:14-225:21.)

In addition, Alpine County has not prepared and adopted environmental documents for a project that is consistent with the consumptive use portion of its applications. That is: (1) Application 30219 seeks up to 0.13 cfs by direct diversion from November 1 to July 31 of the following year, approximately 71 afa and (2) the petition for partial assignment of Application 5645(9) seeks 0.13 cfs year round, approximately 96.4 afa. Alpine County's February 25, 1993, Notice of Exemption describes a direct diversion project of only 6.0403 afa for consumptive use purposes. (95,T,II,231:23-234:13.) Thus, the quantity of water sought by the consumptive use portion of Application 30219 and the petition for assignment of state filed Application 5645(9) is not covered by the Notice of Exemption filed by the County. (SWRCB,1,A-30219,Notice of Exemption.) As a responsible agency the Board is prohibited from approving projects subject to the requirements of CEQA, unless appropriate environmental documents have been prepared and are considered by the Board when approving

a project. (14 CCR 15004(a) and 15021.) In the absence of appropriate environmental documents, the Board cannot approve the consumptive use portion of Application 30219 or the petition for partial assignment of state filed Application 5645(9).

9.3 Denial of Nonconsumptive Application 30218 and the Petition for State Filed Application 5645(10) by Amador County and Nonconsumptive Application 30219 and the Petition for State Filed Application 5645(9) by Alpine County

Application 30218 and the petition for SFA 5645(10) by Amador County each seek to appropriate 8,740 afa for storage in Silver Lake for recreation and fish and wildlife uses. Application 30219 and petition for partial assignment of state filed Application 5645(9) by Alpine County each seek to appropriate 21,581 afa to storage in Caples Lake for recreation and fish and wildlife uses. The amount applied for by each applicant is, essentially, the total storage capacity of each lake operated by PG&E.

Both applicants seek water for recreation purposes to preserve the status quo in the manner in which the lakes are operated by PG&E. (95,T,II,218:6-7,237:7-12; AMADOR,95-1,3.) Amador County recognizes that PG&E has the right to determine how the lakes are operated. (AMADOR,95-1,3.) Alpine County, however, thinks something might have to be worked out with PG&E to control releases from Caples Lake. (95,T,II,235:12-237:12.) Although Alpine seeks to maintain the status quo in the manner in which PG&E has operated the lakes, it is of the opinion that such an operation defies description. (95,T,II,218:12-219:14.) Neither applicant offered evidence as to how the lakes could or would be operated if permits were issued for the pending applications and petitions for partial assignment.

Representatives for the Sierra Club and Amador County produced ample testimony and exhibits demonstrating that: (a) the lakes are heavily used for recreation and for fish and wildlife

purposes; (b) recreation activities at the lakes result in a significant portion of the revenues needed for the operation of Alpine County;[16] (c) numerous small businesses in the vicinity of the lakes are dependent upon the recreation activities associated with the lakes; (d) high water levels in the lakes is important to support such recreation activities; (e) the lakes should be maintained as high as possible through Labor Day of each year; and (f) lake levels are dependent upon the manner in which PG&E operates the lakes. (95,AMADOR,1-3; 95,SCLDF,KR-1,NR,BP-5,LB,LT,TP-1.)

As previously discussed in section 4.4, an essential requisite for the appropriation of water is that an applicant must be able to exercise some measure of physical control over the water which it would appropriate. (*California Trout, Inc.* v. *State Water Resources Control Board* (1979) 90 Cal.App.3d 816; 153 Cal.Rptr.672.) In the case of both Caples and Silver Lakes, PG&E has constructed and/or acquired the works from predecessors in interest. PG&E owns or has the right to control the facilities which impound the lake water and controls the release of water from the lakes. In addition, PG&E owns the water rights, a type of real property, for the water impounded in the lakes.

In order to exercise control over any water which would be impounded in the lakes, the applicants must either: (a) acquire PG&E's water rights and the right to control the facilities which impound and control the release of water from the lakes or (b) enter into some type of agreement with PG&E which would give them some participation in the control of the water at the lakes.

Neither applicant introduced evidence during the hearing indicating they were pursuing either alternative with PG&E.

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[16] The evidence for this statement was produced by Kirkwood, Inc. (95,KW,8,8B,8D.)

(95,T,II,235:2-237:12; 95,T,III,180:24-25.) Indeed, such an agreement may be precluded by PG&E's agreement to sell its interests in the project encompassed by FERC License 184 to El Dorado. (95,EDCWA,94,9.) Both lakes are operated almost solely for hydropower purposes by PG&E and the Board does not have the authority to require PG&E to maintain lake levels for the protection of the beneficial uses made of water within such reservoirs. In addition, the Board does not have the authority to grant the applicants a right of access or control over PG&E facilities which regulate lake water levels nor can the Board grant the applicants the right to use or control PG&E's water rights for the water in the lakes. (4.3 and 4.4, *infra*.) Inasmuch as the applicants are unable to exercise control over the water which they would appropriate and do not have any apparent plans or means for acquiring such control, the Board will deny Application 30218 and the petition for state filed Application 5645(10) by Amador County and Application 30219 and the petition for state filed Application 5645(9) by Alpine County.

9.4 County of Origin Protection for Amador and Alpine Counties

The county of origin laws provide persons who file applications to appropriate water for use within Amador and Alpine Counties a priority claim against the water originating within the county vis-a-vis any release of priority or assignment of state held applications in favor of El Dorado. The Board will include a condition in any permit issued to El Dorado, based upon a release of priority or assignment of a state filed application, expressly providing that the water which El Dorado appropriates is subject to diminution by applicants seeking water for use within Alpine and Amador Counties.

10.0 PERSONS DIRECTLY DIVERTING WATER FROM THE LAKES TO SUPPLY CABINS, BUSINESSES, CAMPGROUNDS, AND OTHER RECREATION FACILITIES SHOULD SEEK APPROPRIATIVE WATER RIGHTS FROM THE BOARD

It appears that a small quantity of water is currently being directly diverted from the lakes and served to homes, businesses, and camps surrounding Caples and Silver Lakes. (SWRCB,1, Application 30219; 95,SCLDF,KR-1,3,NR,4BP-5,9,BP-1.) In written testimony for the Sierra Club, Mr. Bradley Pearson states that 34 afa is needed from Silver Lake for existing uses. An exhibit to his written testimony indicates that many of the existing uses obtain water from sources other than the lake and that no more than about 15 afa is supplied to existing uses around the lake. (95,SCLDF,BP-1.) By Application 30218 and petition for assignment of state filed Application 5645(10), Alpine County seeks water for nonconsumptive uses only.

By Application 30219 and petition for partial assignment of Application 5645(9) Alpine County seeks to appropriate water from Caples Lake for existing consumptive and nonconsumptive uses. It cannot be estimated from the application, with any certainty, how much water is needed for existing consumptive uses. Using information noted in the application, it appears that perhaps 25 afa may be needed for existing uses; however, it is not clear that such uses are currently being supplied water from the lake.[17] Application 30204 by Kirkwood PUD seeks to appropriate up to 310 afa by direct diversion from Caples Lake. The application does not indicate whether any of the water would be used for existing uses of water being supplied from the lake; however, the application does indicate that there are 1,205 people currently residing within the District's service area. It

[17] Item 5b of the application states that water is needed for 300 people at 75 gallons per day. The multiple of these numbers is 22,500 gpd. Multiplying daily demand by 360 days results in an annual demand of 8,100,000 gallons per year. Applying a denomination of 325,000 results in an annual demand of 25 afa.

is not clear whether the District currently serves water to some or all of these persons or from what sources the water is obtained.

No one identified any water right which would provide a legal basis for any existing diversion and use of the water for consumptive uses from the lakes or the streams flowing into the lakes. If such diverters do not have a legal basis of right for their diversions, they are advised to consider whether it would be appropriate to file an application with this Board to appropriate water.

It also appears that such persons can obtain access to directly divert water from the lakes from the national forest adjoining the lakes. Article 23 of License 184 provides that the holder of the license will not bar access to the lakes for the purpose of obtaining water. So long as an applicant does not seek to control lake levels, the quantity of water stored in the lakes, or the timing of PG&E's releases from the lakes, an application for direct diversion does not present the problems of physical control over the water to be appropriated that is discussed in section 7.2, *supra*.

From a water right point of view, the key issue for ~~such~~ direct diversion applications is whether unappropriated water is available to supply the applications. Our analysis of the availability of unappropriated water clearly indicates some unappropriated water is available. (Section 5.0, *supra*.) Of course, such diversions cannot, cumulatively, directly divert water from the lake at a rate exceeding the rate the inflow of the streams into the lake without diverting water to which PG&E has a paramount claim.

In 1993 El Dorado representatives testified that a potential solution to assure that Alpine and Amador Counties have water in

the future would be for the Board to adopt a permit condition reserving the right to require El Dorado to reduce the amount of water it could store in Caples and/or Silver Lakes to provide a supply of water for the needs of Alpine and Amador Counties. (93,T,II,128:17-129:20.) Following the 1995 hearing, El Dorado represented that it would have no objection to making 200 afa available to Amador County for development of consumptive uses. (EDCWA, Closing Statement, 51:1-3.) Therefore, the Board will reserve up to 200 afa of El Dorado's allocation to water in Caples and/or Silver Lakes for persons making existing diversions for consumptive use from the lakes and for future uses.

The Board recommends that the Forest Service, and/or Alpine and Amador Counties quantify the amount of water necessary to supply existing uses of water from the lakes and hold discussions with FERC and PG&E regarding the provisions of Article 23 of the License of Project 184. Parties seeking to use this reservation must file a water right application with the Board and may need to enter into a contractual agreement with PG&E or its successor to compensate for energy generation foregone as a result of the consumptive use of water stored in the lakes.

11.0 PG&E's CONTRACT TO SUPPLY WATER TO EL DORADO VIA THE EL DORADO CANAL AND FOREBAY

PG&E supplies 15,080 afa of water to EID for consumptive use purposes pursuant to contract. It appears this contract was not entered into until 1919, after 1914. During the hearing, the Sierra Club raised the issue of whether PG&E had a water right under which it could supply water to EID for consumptive use from Caples and Silver Lake. Whether PG&E has appropriative rights to supply water to EID for consumptive use was not an issue noticed for hearing and the evidence in the record for making findings of this point is not satisfactory.

PG&E does not have a post-1914 appropriative right to supply consumptive use water from the Lake Aloha and Caples and Silver Lakes. PG&E claims a pre-1914 appropriative right to divert up to 350 afa to storage from Pyramid Creek for consumptive use. (Tables 5-4 and 6-1.) PG&E also claims a pre-1914 appropriative right to directly divert up to 70 cfs year round at the headworks of the El Dorado Canal for power, irrigation, industrial, and municipal uses. (Statement of Diversion 9034.) On an average daily basis, 21 cfs is required to supply 15,080 afa of water. Table 7.5 shows that there is sufficient flow at the headworks of the El Dorado Canal to supply 21 cfs of water during all years, except during critically dry years like 1977.

In general, the holder of pre-1914 appropriative water rights may change the purpose of use so long as no legal user of water is injured. Such changes do not require the Board approval. (Water Code section 1706.) On the other hand, Water Code section 1055 provides that after 1914 no new appropriative right to the use of water can be initiated except in compliance with Water Code section 1200 et seq. That is, the filing of an application with the Board and the issuance of a permit for the appropriation of water. PG&E has not sought such a right from the Board for the water supplied under the El Dorado contract. In the Board's view, the conversion of a nonconsumptive right for the generation of hydroelectric power to a consumptive use is the initiation of a new right to appropriate water subject to the provisions of Water Code section 1200 et seq. Changing water from a nonconsumptive use to consumptive use has the effect of removing water from a stream system which is available for: (a) diversion and use by others and (b) fish and recreation in a stream. PG&E is advised that it should closely scrutinize the legal basis of the right or rights under which it supplies water for consumptive use to El Dorado and, if appropriate, file an application to

obtain a right to supply consumptive use water to El Dorado.[18] In the event that EID acquires PG&E's interests in the El Dorado Hydroelectric Project, El Dorado should be required to submit a report on the legal basis under which 15,080 afa of water is diverted and supplied to EID for consumptive use.

12.0 EL DORADO'S NEEDS FOR ADDITIONAL WATER SUPPLIES

EID was formed in 1925 and currently serves domestic, municipal, and agricultural water demands primarily in that portion of Western El Dorado County lying between the South Fork American River and North Fork Cosumnes River. EID's boundaries cover a service area of approximately 135,000 acres, which has been subdivided into three geographical areas: East Service Area, West Service Area, and El Dorado Hills Sub-Service Area. EID's present annual water demands for the three service areas are, respectively, 25,493 af, 7,918 af, and 3,745 af, for an annual total of 37,156 af. (EDCWA,78, Analysis of EID Supplemental Water Requirements From PG&E Sources, Table 3-1.)

EID's present water supply needs are being met from small sources such as the Crawford Ditch and three major sources. (EDCWA,78, 3-4.) The following describes EID's principal sources of supply:

- **Sly Park Reservoir:** This 41,000 af reservoir was originally built by the Bureau as part of the Central Valley Project during construction of the Folsom Dam. EID can exercise, at present, complete operational control over water stored at the reservoir, which provides EID with a safe yield of 18,000 afa. The reservoir provides EID with a high degree of flexibility in the operations of its water system.

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[18] Even if PG&E is delivering water to EID for consumptive use without a valid basis of right, it would not necessarily mean that more water would be retained in either Silver or Caples Lakes because PG&E has the right to release the water for power production.

- **PG&E Forebay:** PG&E's 1919 contract supplies EID with a safe yield of 15,080 afa.

- **Folsom Reservoir:** Per contract with the Bureau of Reclamation for Central Valley contract water, EID can pump 7,550 afa from Folsom Reservoir. EID serves the El Dorado Hills Sub-Service Area and West Service Area with water from Lake Folsom; however, contract water has been curtailed, historically, when adverse hydrologic conditions occur (i.e., dry years).

The total available supply from the major sources is 40,630 af. The most critical period of time to EID's operations is generally the period of August 1 to November 1, the months of least precipitation and lowest flow in California streams. (*Ibid.*, p. 11.) Thus, an additional supply during these months, generally requires the acquisition of additional storage capacity so that water can be captured in the winter and spring and released for use during late summer and fall.

Although EID's current supply exceeds its current water demands by 3,474 af, available supply may be less than 40,630 af during years of less than normal precipitation. Indeed, in 1982 the Board found that EID needed additional supplies of water. (Decision 1587, 29-37.) Further, in response to a series of dry years, the Board adopted an emergency order to enable EID to augment its supply of water to meet its demands. (Order WR 88-13.)[19]

EID now seeks to augment the supply available to meet current and future water demand, particularly in its far western service area, i.e., El Dorado Hills. (*Ibid.*) EID's projected water requirements are summarized in Table 12-1. (*Ibid.*, Table 3.1.)

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[19] The Board takes administrative notice of the findings in Decision 1587 and in the action ratified by Order 88-13.

For the years 2000 and 2005, EID is projecting a total demand of 40,951 af and 45,742 af, respectively. Accordingly, we find that El Dorado has a need for additional water supplies.

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TABLE 12-1
EL DORADO IRRIGATION DISTRICT
PROJECTED MONTHLY WATER DEMAND BY SERVICE AREA
(ACRE-FEET)

YEAR	SERVICE AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL DEMAND
1995	EAST	1045	867	918	1377	2575	3722	4181	4028	2728	1785	1173	1096	25493
	WEST	325	269	285	428	800	1156	1299	1251	847	554	364	340	7918
	EL DORADO HILLS	154	127	135	202	378	547	614	592	401	262	172	161	3745
	SUBTOTAL	1523	1263	1338	2006	3753	5425	6094	5871	3976	2601	1709	1598	37156
1999	EAST	1076	893	945	1418	2652	3833	4306	4148	2809	1838	1208	1129	26255
	WEST	355	295	312	468	875	1266	1422	1370	927	607	399	373	8668
	EL DORADO HILLS	216	179	190	285	532	769	864	833	564	369	242	227	5269
	SUBTOTAL	1648	1367	1447	2170	4059	5868	6591	6350	4301	2813	1849	1728	40192
2000	EAST	1084	899	952	1428	2671	3861	4337	4178	2830	1851	1217	1137	26446
	WEST	363	301	319	478	894	1293	1452	1399	948	620	407	381	8856
	EL DORADO HILLS	232	192	203	305	571	825	926	893	604	395	260	243	5649
	SUBTOTAL	1679	1392	1474	2211	4136	5979	6716	6470	4382	2867	1884	1761	40951
2005	EAST	1130	937	992	1488	2783	4023	4520	4354	2949	1929	1268	1185	27558
	WEST	399	331	351	526	984	1422	1598	1539	1042	682	448	419	9743
	EL DORADO HILLS	346	287	304	456	853	1232	1384	1334	903	591	388	363	8441
	SUBTOTAL	1875	1555	1647	2470	4620	6678	7502	7227	4894	3202	2104	1967	45742
2010	EAST	1178	977	1034	1551	2902	4195	4712	4539	3074	2011	1322	1235	28731
	WEST	441	365	387	580	1085	1569	1762	1698	1150	752	494	462	10744
	EL DORADO HILLS	514	426	451	677	1266	1831	2056	1981	1342	878	577	539	12539
	SUBTOTAL	2133	1768	1873	2809	5253	7594	8530	8218	5565	3641	2393	2237	52014
2013	EAST	1216	1008	1068	1601	2995	4330	4863	4685	3173	2076	1364	1275	29655
	WEST	460	382	404	606	1133	1638	1840	1773	1201	786	516	483	11222
	EL DORADO HILLS	554	459	486	729	1364	1971	2214	2133	1445	945	621	581	13500
	SUBTOTAL	2229	1849	1958	2936	5492	7939	8918	8592	5818	3806	2501	2338	54377
2021	EAST	1316	1092	1156	1734	3243	4688	5266	5073	3435	2247	1477	1381	32107
	WEST	513	426	451	676	1265	1828	2054	1978	1340	877	576	538	12522
	EL DORADO HILLS	662	549	581	872	1630	2357	2647	2550	1727	1130	742	694	16141
	SUBTOTAL	2492	2066	2188	3282	6138	8872	9966	9602	6502	4254	2795	2613	60770

SOURCE: EDCWA EXHIBIT 78, TABLE 3.1

13.0 ENVIRONMENTAL AND PUBLIC INTEREST ISSUES AFFECTING EL DORADO'S PROPOSED PROJECT

13.1 EID'S Proposed Project

Under pending filings, El Dorado intends to ". . . utilize water released and diverted or rediverted by PG&E from certain of its facilities to meet present and future demands to provide for a reliable supplemental water supply . . . ." Thus, El Dorado seeks to acquire consumptive use rights to the water that is currently being stored and released or diverted by PG&E under its nonconsumptive use rights, and to redivert that water for consumptive use. (*Ibid.*,1.)

Under pending filings, El Dorado seeks to obtain rights for the consumptive use of water stored in Lake Aloha and Caples and Silver Lakes by PG&E for hydrogeneration. Under its amended applications or petition, El Dorado could directly divert and redivert water for consumptive use only from Folsom Lake. Folsom Lake is an existing "point of take" to serve the El Dorado Hills subservice area, however, it can also serve the entire West Service area. The amended applications and petition seek a "safe yield" total of 17,000 afa by direct diversion and storage. (*Ibid.*,9.) Notwithstanding that El Dorado has stated that it will not modify or seek to modify the manner in which PG&E has operated Lake Aloha and Caples and Silver Lakes, numerous protestants have expressed concern that the manner in which the lakes are operated will change. This concern is based, in part, upon the perception that it is not possible to describe "historic operations" in measurable terms.

13.2 Potential Impact of Consumptive Use Rights on the Operation of the Lakes

Two operational scenarios are used to evaluate how El Dorado's proposed project could effect historic PG&E lake operations: (1) assume that PG&E maintains ownership of the project

(FERC 184) and (2) assume that El Dorado obtains some measure of direct or indirect control over the operation of the project.

Assuming that PG&E maintains ownership of the El Dorado Project, additional impacts to Lake Aloha and Silver and Caples Lakes historic levels are not foreseeable for the following reasons. Any water appropriated by El Dorado for consumptive purposes would be water released by PG&E pursuant to FERC License 184 operational constraints and its hydroelectric requirements. Thus, unless El Dorado pays PG&E a premium to release water at certain times of the year, the project proposed by El Dorado would have no new impact on the operation of Lake Aloha and Silver and Caples Lakes.

Tables 5-5, 5-6, and 5-7 provide a tabular summary of recorded average releases from each lake, as measured by USGS gages No. 11436000 (Silver), No. 11437000 (Caples), and No. 11435100 (Aloha-Pyramid Creek). Figure 13-1 illustrates the average monthly releases from each lake and the average total monthly release for the three lakes.

Assuming that El Dorado directly or indirectly obtains some measure of control over lake operations, historic lake releases and available direct diversion water were compared to El Dorado's projected consumptive use demands to evaluate potential impacts to the lakes. The purpose of this evaluation is to determine whether historic lake release patterns and direct diversion supplies could accommodate El Dorado's current and projected demands, without a change in lake operations. As previously noted, El Dorado's current demands are being met by EID's 1919 Agreement covering diversions from the El Dorado Forebay (15,080 afa), and future demands for water sought under El Dorado's applications and petition for partial assignment are based upon EID's projected year-2021, 16,141 acre-feet

requirement for the EID's El Dorado Hills service area (i.e., Table 12-1).

The relevant historic years (1923-1991) and critical water-year (1977) data relating to lake releases, monthly recorded runoff at USGS Gage No. 11439501 near Kyburz, EID's monthly 1919 Agreement Water, and projected year-2021 monthly requirements (El Dorado Hills Service Area) are summarized by Tables 13-1 and 13-2. Figure 13-2 illustrates a comparison of EID's year-2021 demand for the El Dorado Service Area with the available South Fork American River direct diversion water during average historic years (1923-1991) and critical water conditions (1977).

The following conclusions can be derived from Tables 13-1, 13-2, and Figure 13-2:

1. During historic average conditions, sufficient natural surface flow is available at Kyburz for direct diversion from the South Fork American River to meet EID's 1919 Agreement demands in all months;

2. During historic average conditions, sufficient natural surface flow is available at Folsom Reservoir for direct diversion from the South Fork American River to meet EID's year-2021 demand (El Dorado Hills) in all months, except August;

3. During a critical water-year like 1977, sufficient natural surface flow is available at Kyburz for direct diversion from the South Fork American River to meet EID's 1919 Agreement demands in all months, except July, August, and September;

4. During a critical water-year like 1977, sufficient natural surface flow is available at Folsom Reservoir for direct diversion from the South Fork American River to meet EID's

year-2021 demand (El Dorado Hills) in all months, except December, July, August, and September.

It appears, therefore, that during a critical water-year like 1977, El Dorado's demands for 1919 Agreement Water and projected demand for water within the El Dorado Service Area during those months identified above, must be met with water from EID's existing sources, such has Sly Park Reservoir or CVP Bureau contract water from Lake Folsom, or from storage from Lake Aloha, Silver and Caples Lakes. Since during a critical water-year Bureau contract water is unlikely to be available, it appears that EID would have to rely on the availability of water stored at Sly Park or Lake Aloha and Caples and Silver Lakes.

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TABLE 13-1
HYDROLOGIC DATA - HISTORIC AVERAGE CONDITIONS

	(ACRE-FEET)												
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL ANNUAL
SILVER (table 5-5) USGS # 11436000	1521.3	1098.3	979.0	788.8	719.4	897.5	2461.8	7736.3	5013.1	1041.7	530.6	2315.1	25102.9
CAPLES (table 5-6) USGS #1143700	2215.9	2434.8	2542.9	1592.5	1010.7	672.1	2065.2	2012.0	5054.0	2926.3	2945.9	2101.4	27573.8
ALOHA (table 5-7) USGS #11435100	705.2	1140.4	940.5	991.3	910.3	1417.5	2305.2	5902.8	5582.7	4066.0	2753.3	911.6	27626.7
TOTAL COMBINED RELEASES	4442.3	4673.6	4462.4	3372.6	2640.4	2987.1	6832.2	15651.1	15649.9	8034.1	6229.7	5328.1	80303.4
SOUTH FORK AMERICAN RIVER USGS GAGE # 11439501 1923-1991 RECORDED RUNOFF (table 7-5)	6913.0	10047.2	13965.9	13615.2	14545.0	22028.8	43528.1	81216.8	56992.7	17866.2	9205.7	8106.4	298031.0
EID'S MONTHLY DEMAND - YEAR 2021 EL DORADO HILLS SERVICE AREA (table 12-1)	1130.0	742.0	694.0	662.0	549.0	581.0	872.0	1630.0	2357.0	2647.0	2550.0	1727.0	16141.0
EID'S MONTHLY 1919 AGREEMENT WATER (SOURCE: Exh. 78, p. 13)	553.0	416.0	430.0	615.0	555.0	1230.0	2082.0	2152.0	2082.0	2152.0	2152.0	661.0	15080.0
	ACCOUNTING SUMMARY												
WATER AVAILABLE FOR DIRECT DIVERSION (RECORDED RUNOFF - TOTAL COMBINED RELEASES)	2470.7	5373.6	9503.5	10242.6	11904.6	19041.7	36695.9	65565.7	41342.8	9832.1	2976.0	2778.3	217727.6
WATER AVAILABLE FOR EL DORADO SERVICE AREA YEAR - 2021 DEMAND (DIRECT DIVERSION WATER - 1919 WATER)	1917.7	4957.6	9073.5	9627.6	11349.6	17811.7	34613.9	63413.7	39260.8	7680.1	824.0	2117.3	202647.6

TABLE 13-2
HYDROLOGIC DATA - CRITCAL WATER-YEAR 1977 AVERAGE CONDITIONS

	(ACRE-FEET)												
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL ANNUAL
SILVER (table 5-5) USGS # 11436000	2024.9	1443.2	63.5	46.7	27.3	89.8	38.5	84.2	85.1	82.1	103.9	2902.3	6991.5
CAPLES (table 5-6) USGS #1143700	346.3	1926.5	2840.9	937.9	140.8	75.5	201.9	78.7	262.0	579.3	5615.3	2101.4	15106.5
ALOHA (table 5-7) USGS #11435100	885.5	258.0	118.6	254.6	272.3	437.6	1686.6	1811.7	1549.2	3493.7	210.7	57.6	11036.1
TOTAL COMBINED RELEASES	3256.7	3627.7	3023.0	1239.2	440.4	602.9	1927.0	1974.6	1896.3	4155.1	5929.9	5061.3	33134.1
SOUTH FORK AMERICAN RIVER USGS GAGE # 11439501 1923-1991 RECORDED RUNOFF (table 7-5)	5581.9	4878.5	3904.4	2702.6	2128.3	3294.9	10555.4	12711.8	11571.1	6076.6	6524.7	5371.5	75301.7
EID'S MONTHLY DEMAND - YEAR 2021 EL DORADO HILLS SERVICE AREA (table 12-1)	1130.0	742.0	694.0	662.0	549.0	581.0	872.0	1630.0	2357.0	2647.0	2550.0	1727.0	16141.0
EID'S MONTHLY 1919 AGREEMENT WATER (SOURCE: Exh. 78, p. 13)	553.0	416.0	430.0	615.0	555.0	1230.0	2082.0	2152.0	2082.0	2152.0	2152.0	661.0	15080.0
	ACCOUNTING SUMMARY												
WATER AVAILABLE FOR DIRECT DIVERSION (RECORDED RUNOFF - TOTAL COMBINED RELEASES)	2325.2	1250.8	881.4	1463.4	1687.9	2692.0	8628.4	10737.2	9674.8	1921.5	594.8	310.2	42167.6
WATER AVAILABLE FOR EL DORADO SERVICE AREA YEAR - 2021 DEMAND (DIRECT DIVERSION WATER - 1919 WATER)	1772.2	834.8	451.4	848.4	1132.9	1462.0	6546.4	8585.2	7592.8	-230.5	-1557.2	-350.8	27087.6

FIGURE 13-1

AVERAGE MONTHLY RELEASE COMPARISON

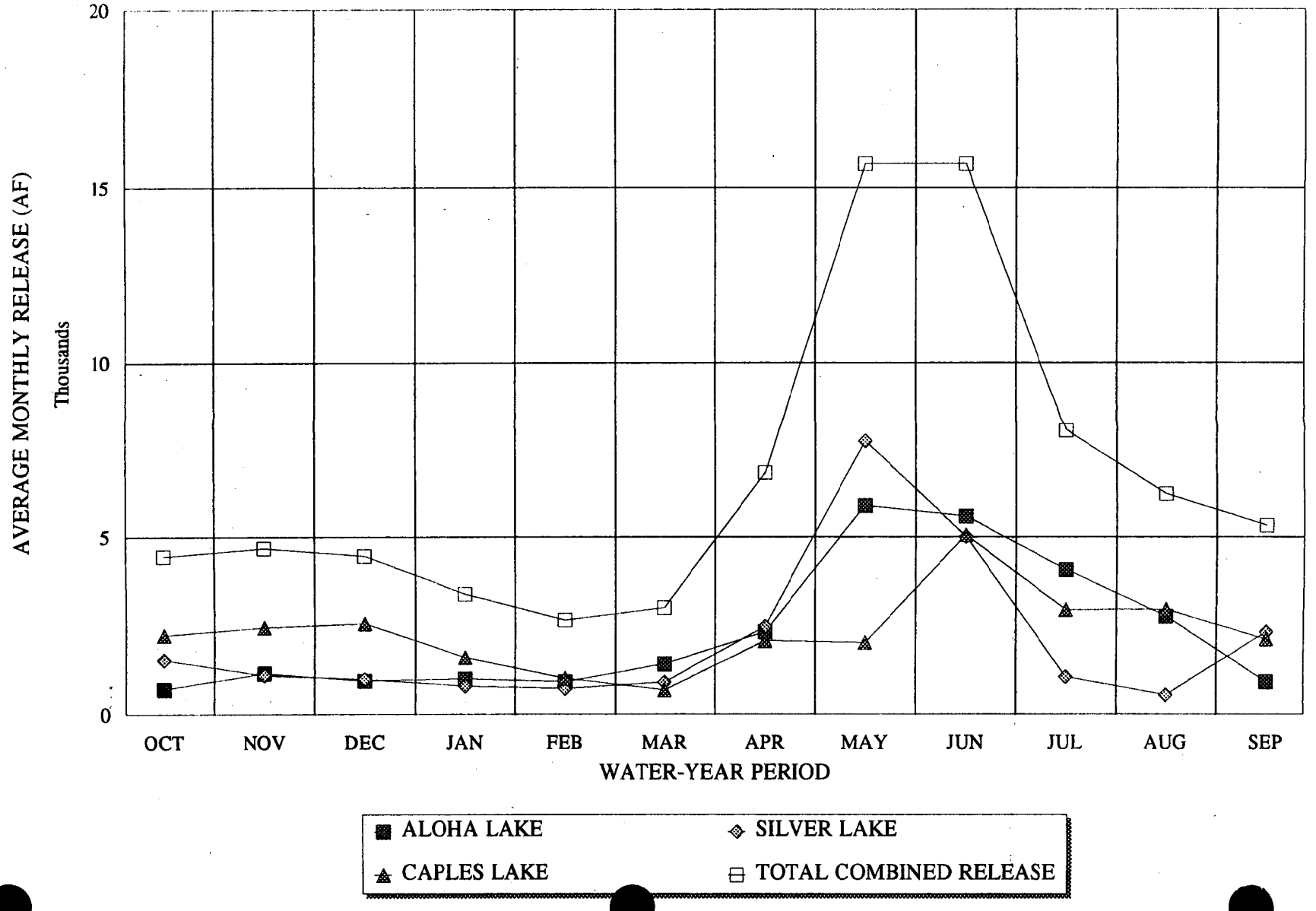
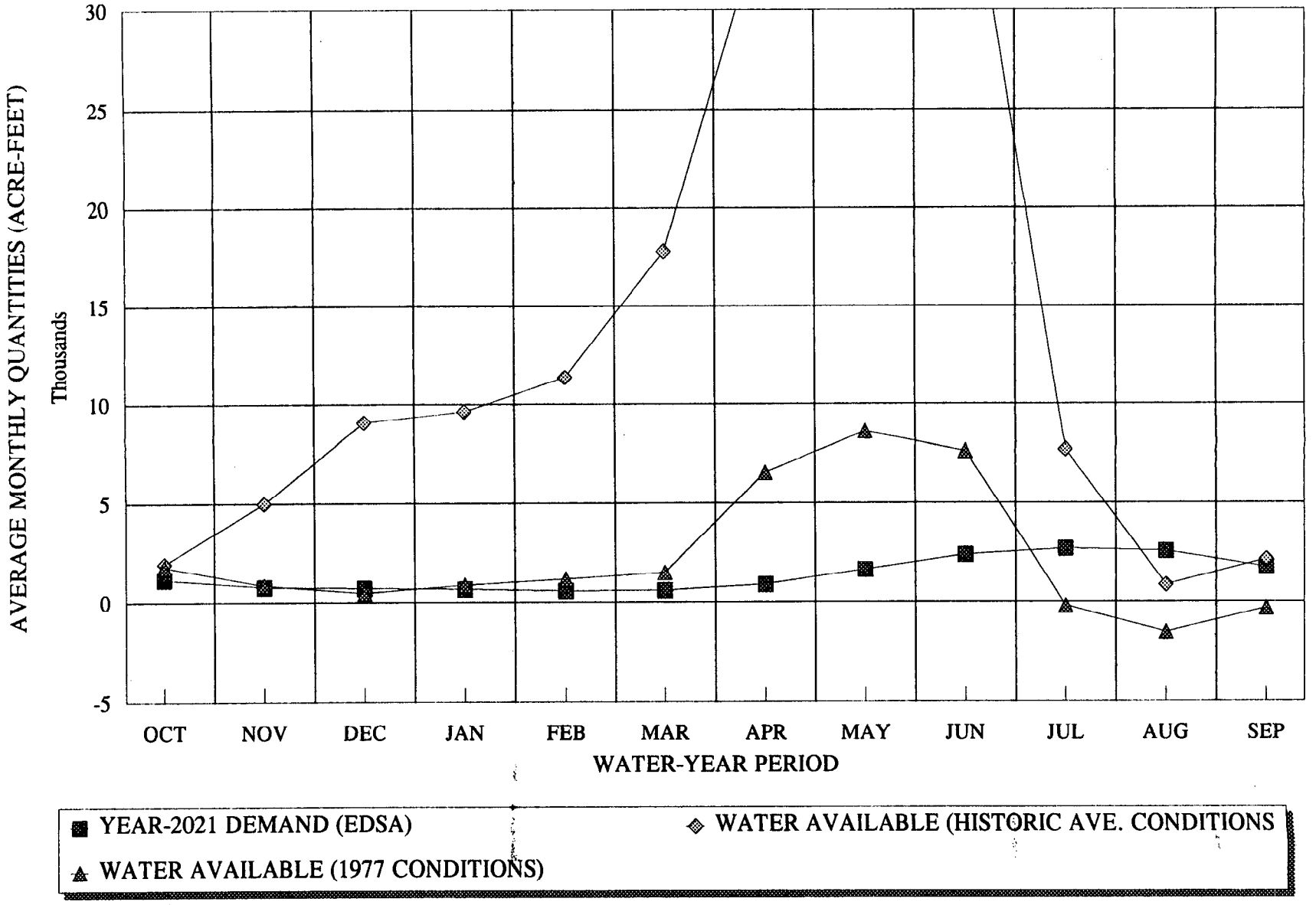


FIGURE 13-2

DEMAND - WATER AVAILABILITY EVALUATION



13.3 Potential Environmental Impact of El Dorado's Proposed Project on the Streams Below Lake Aloha, and Caples and Silver Lakes, and on the South Fork of the American River

The same type of analysis can be made of the potential environmental impacts of El Dorado's proposed project on the streams below the lakes. Assuming PG&E continues to divert water to storage and release water from storage per the requirements of FERC License 184, the release of water from the lakes will not alter the flow regimes in the streams below the reservoirs. Further, since El Dorado seeks to directly divert and redivert water released from storage only at Folsom Reservoir, El Dorado's Project would not change current stream flows below Lake Aloha, Caples and Silver Lakes, and the South Fork of the American River at least as far downstream as Folsom Reservoir.

Assuming that El Dorado acquires some form of direct or indirect control over the operation of the lakes, El Dorado could be tempted to release additional water stored in either Lake Aloha or Caples and Silver Lakes during the month of July through September to satisfy projected water demands. Obviously, this would alter historic release patterns and the flow regimes in the streams below the lakes. At least during some months, such an alteration would provide more water for fish and recreation in the streams below the lakes. Obviously, such modifications would have to be made within the general operational constraints of FERC License 184. As noted above, rather than draw on Lake Aloha and Caples and Silver Lakes to meet projected summer demands, El Dorado may be able to rely upon existing sources of water supply for water deliveries during critical summer months. However, without terms to prevent a reoperation of these lakes for water supply rather than hydropower, impacts to uses around the lakes could occur.

13.4 Evolution of the Proposed Project and the Environmental Documents Prepared for the El Dorado Project

EDCWA in preparing a water resource development and management plan, to meet long-term needs of local water districts within its jurisdiction, and prepared a draft EIR evaluating a proposed water program. The draft EIR was released for public review on September 30, 1992.

The draft EIR evaluated nine alternatives, each consisting of a combination of five individual projects. The draft EIR proposed to serve as a "Programmatic EIR" for ECDWA's Water Program and a project EIR for the project alternative called the "El Dorado Project". (93,EDCWA 29, 2-2 to 2-3.) In the final EIR, the preferred alternative was described as Alternative 1a. Alternative 1a consists of the following individual project elements: the El Dorado Project and the Folsom Reservoir Project with the White Rock Project. (93,EDCWA 29,3-19.)

The El Dorado Project relies primarily on obtaining consumptive use rights to water stored in PG&E reservoirs. The El Dorado Project proposed to make use of existing waterways, tunnels, canals, and storage facilities to provide water to EID customers. Under the preferred alternative, project water would be delivered to the EID service area in three ways:

1. Water could be diverted from the El Dorado Forebay to the EID canal and primary conveyance facilities through Hazel Creek as a point of diversion.

2. Water could be diverted through the Hazel Creek Tunnel to Sly Park Reservoir and EID's primary conveyance facilities.

3. Water could be taken at Folsom Reservoir and pumped to the El Dorado Hills water treatment plant to serve the El Dorado Hills area.

If the White Rock Penstock Project was constructed, water from the El Dorado Project could also be taken at the White Rock Penstock. (93,EDCWA 29,4-3.) It should be noted that the draft and FEIR for the EDCWA Water Program treated the review of the Folsom Reservoir and White Rock Penstock diversion projects only at the programmatic level. To build these projects, EID would have to prepare, circulate, and certify final individual project specific environmental documents pursuant to CEQA. In addition, the Board as a responsible agency could not approve the diversion of water at the White Rock Penstock without a final CEQA document.

The FEIR for the El Dorado County Water Agency Water Program and El Dorado Project FEIR (SCH 72012088) was prepared in March of 1993. (93,EDCWA, 29.) The FEIR was certified by EDCWA on May 10, 1993. (93,EDCWA, 96.)

Because of upstream points of diversion in the preferred alternative, reduced opportunities for white-water boating in the Lotus reach of the South Fork American River was identified as a significant environmental effect in the FEIR. (93,EDCWA 96,1-6.) The proposed mitigation in the FEIR required agreements with second parties to make the mitigation measure feasible. Those agreements were not provided to the Board during or after the 1993 hearing for the proposed project. (SWRCB,1, A-29919, October 28, 1993, letter from James Stubchaer to Stuart L. Somach.)

Thereafter, based on an additional review, El Dorado concluded that it was logistically and economically feasible to redivert all of the water for the proposed project from Folsom Reservoir. (SWRCB,1,A-29919; 95,EDCWA,Closing Statement,6:2-14.) On March 25, 1994, El Dorado submitted supplemental testimony and exhibits to the Board. (SWRCB,1,A-29919.) The supplemental

materials included a proposed permit term limiting the quantity of water sought under the applications and petition to 17,000 afa and removed the Hazel Creek Tunnel and El Dorado Forebay as points of diversion. El Dorado maintained the request for points of diversion and rediversion from Folsom Reservoir and at the White Rock Penstock. El Dorado requested that the Board approve the applications and petition for partial assignment. The White Rock point of diversion and rediversion, however, would be subject to the completion of necessary environmental work and on obtaining operations agreements that would avoid or mitigate the significant adverse impacts to white water boating within the Lotus reach of the South Fork American River. (93,EDCWA,2.)

On May 11, 1994, after review of the supplemental testimony, the Board informed El Dorado that it had not submitted information which had been requested for the White Rock Project. (SWRCB,1, A-29919.) The Board informed the parties that the White Rock point of diversion and rediversion would not be considered in the pending proceeding. (93,EDCWA,2.) On July 13, 1995, counsel for El Dorado indicated that it would seek approval of only the point of diversion and rediversion of water from Folsom Reservoir during the current 1995 hearing. (SWRCB,1 A-29919.)

The result of amending the applications and petition was to shift the focus of the environmental analysis from FEIR alternative 1a ("the preferred alternative") to FEIR Alternative 1b, identified as the "environmentally superior alternative". (93,EDCWA,29:1-7.) As described in the FEIR, Alternative 1b (El Dorado Project and Folsom Reservoir Project) assume that water would be taken at Hazel Creek Tunnel, the forebay at the end of the El Dorado Canal (forebay), or Folsom Reservoir and that Folsom Reservoir water would be taken at the forebay or Folsom Reservoir. (EDCWA, 29,3-16.)

In addition to reformulating the project and amending the applications and petition since the 1993 hearing, EID has entered into an agreement to acquire PG&E's El Dorado Hydroelectric Project, FERC License 184. Based on the reformulated El Dorado Project and the prospective acquisition of PG&E interests in the El Dorado Project, EDCWA released for public comment a draft Supplement to the FEIR (SEIR) for the El Dorado County Water Agency "Water Program"/El Dorado Project on August 8, 1995. The draft SEIR evaluated an El Dorado Project that would limit the consumptive diversion or rediversion of 17,000 afa of water exclusively from Folsom Reservoir.

On October 23, 1995, EDCWA certified the final SEIR for the El Dorado County and El Dorado Project. In doing so, EDCWA made findings of fact regarding the significant environmental impacts of the preferred Alternative (1b), and proposed mitigation for the significant impacts. In addition, EDCWA adopted a statement of overriding consideration for certain significant and unavoidable adverse environmental effects which will result from project approval. EDCWA also found that all mitigation measures identified for significant secondary growth-inducing impacts identified in the 1992 DEIR and 1993 FEIR are changes and alterations within the responsibility and jurisdiction of the County of El Dorado and that such mitigation measures have been or can and should be adopted by that public agency. (95,EDCWA,96,B.)

13.5 Environmental and Public Interest Issues

The environmental and public interest issues fall into several major categories. These are:

1. Recreation at the lakes, that are the points of diversion for the above applications.

2. What are the "Historical Operations" of PG&E to which El Dorado has promised to adhere?

3. Impacts of the proposed appropriations at Folsom Lake, the American River, and the Delta.

4. Impacts to state or federal listed species or species of special concern as result of the appropriations.

5. Project specific studies yet to be conducted.

13.5.1 Recreation at the Lakes and PG&E Historical Operations

At issue is the impact that El Dorado's proposed appropriations might have on the existing recreational uses at the PG&E reservoirs (Lake Aloha and Caples and Silver Lakes) that are proposed points of storage for consumptive uses.

Most of the existing recreation developments at PG&E Project 184 occupy U.S. Forest Service lands under special-use-permit, and include summer homes, group camps, public campgrounds, resorts, and boat docks. Silver Lake is the most extensively developed of the lakes. Lake Aloha does not have any developed recreational uses because it is in the Desolation Valley Primitive Area. (93, EDCWA,29,Appendix B.; FERC License 184.)

These lakes historically and currently provide significant recreational opportunity and are important resources to the people of the State of California. They are also important generators of revenue for businesses and to the Counties (Alpine and Amador) in which they occur. (93,FS-USDA,1,3,5; 95,FS-USDA,3; 93,SCLDF,1-7; 95,SCLDF,NR 1-12; 95,SCLDF,KR-1,DD-1,MS-2, NR-13,BP-5,JP-1,SB-1,SB-1,JB-1; 93,Amador,1-3; and 95,Amador,1-5,7,9,11.)

PG&E, the current operator of Project 184, recognizes its responsibility to conserve and make available for public recreation the natural resources which are part of its hydroelectric projects and watershed land holdings. PG&E has attempted to optimize, within economic limits, the contribution each development can make to its integrated system-wide recreation program. PG&E recognizes that Silver Lake provides the best potential for recreation development. Caples Lake and Echo Lake, while not as extensively developed, are also popular recreation areas. (93,Amador,1:27-31; 93,Amador,4:1-6.)

FERC has recognized the recreation values of these lakes by placing conditions in License 184 to protect, to the degree possible, summer recreation values. PG&E is required to maintain Silver Lake as high as possible during the summer months for recreation; however, at certain times seepage and fish releases may exceed inflow. Caples Lake is maintained as high as possible consistent with operational demands and fish releases. (93,Amador,2,Exhibit S, FERC License 184.) PG&E's hydrographer testified, that other than the general FERC requirement to maintain the lake levels as high as possible during the summer months, there were no written operational guidelines used by PG&E controlling the drawdown of the lakes. Generally, annual operating decisions are based on snow surveys during the winter months and on projected runoff. (93,T,III,61:14-62:7.) PG&E's operation of the lakes is more fully described in section 6.0, *supra*.

PG&E's witness further testified that the El Dorado Powerhouse has not operated since March 5, 1993, due to a nozzle-body failure. As a result, water has been held in the lakes a little longer than is historically the case since this benefits recreation and water cannot be used at the El Dorado Powerhouse. PG&E has chosen not to repair the powerhouse but to seek a buyer for Project 184. He further testified that an "Asset Sale

Agreement By and Between Pacific Gas and Electric Company and El Dorado Irrigation District" for the sale of the El Dorado Project to EID was executed on September 1, 1995. (95,PG&E,1:1-2.)

During the 1995 hearing, the major objection to the approval of El Dorado applications or petition focused on how such approval might affect future lake levels during the summer recreation at Lake Aloha and Silver, Caples, and Echo, Lakes. This concern is well documented in written comments to the 1992 draft EIR (93, EDCWA,29:6,Comments and Responses to Comments), draft SEIR (95, EDCWA,A: II & III Comments and Responses to Comments), and by several of the protests filed with the Board relative to the El Dorado applications and petition. (SWRCB,1,A-29919, A-29920, A-29921 and A-29922 and Petition 5645(8).) In its environmental documents, EDCWA steadfastly states its proposed project will not impact recreation because they will only take water that is released during the normal hydroelectric operations of Project 184 and that PG&E will not reoperate its upper watershed reservoirs or alter diversions. (93,EDCWA,29:4-2.) In the response to U.S. Forest Service comments in the 1993 final EIR, EDCWA states that it is willing to include a formal agreement in the terms of any water rights permit issued by the Board that would limit operations of Caples, Silver and Aloha Lakes' releases to the PG&E historical operations criteria and lake levels. (93,EDCWA,30.)

The public controversy changed slightly from the 1993 hearing to the 1995 hearing with the proposal by EID to purchase the El Dorado Project. On April 3, 1995, EID prepared a Notice of Exemption (NOE) for the acquisition and continued operation and repair of Project 184. (95,ECDWA,96:Appendix E.) The NOE is based on the statement that EID does not seek to change or expand operations beyond those currently permitted by FERC License 184. However, the NOE does not include an operation plan against which such assurances can be measured. (95,T,I,160:10-161:2.) During

the 1995 hearing, counsel for El Dorado, represented that it was relying upon PG&E's historical operations. (95,T,I,175:1-176:21; 95,T,I,178:2-22.)

Interested parties remain concerned, however. Mr. Passe, a private landowner and descendant of an 1853 family that homesteaded at Silver Lake, stated that he feels that the term "historic" means that there is some record of how things have been operated, and that if there is evidence to ascertain what "historical" means, the Board should use that evidence to develop permit terms. (95,T,III,90:12-20.) Kit Carson Lodge owner, Mr. Pearson, states that El Dorado has failed to show how it can actually operate the project and at the same time preserve the economic and recreation viability. (95,T,II,187:21-24.) Counsel for the Sierra Club states that because "historical operation" defies definition, it is tantamount to a blank check. (95,SCLDF, Closing Memorandum.)

The Board finds that the term "historical" operating conditions as presented by El Dorado is confusing and parameterless. Thus, the Board will include conditions in any permit issued to El Dorado which will prohibit the rediversion of water released from storage for consumptive use purposes if: (1) El Dorado obtains some measure of control over how the lakes are operated and (2) the water levels in Caples and Silver Lakes falls below established levels.[20]

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[20] Such a condition cannot have any effect on the manner in which PG&E or a successor in interest operates the hydropower project subject to License 184.

13.5.2 Cumulative Impacts to the American River and Sacramento River and Delta

The hearing record contains considerable testimony regarding the potential impacts of El Dorado's proposed project on: (1) the Bureau's operation of Folsom Reservoir and (2) natural resources of the San Joaquin-Sacramento River Delta and Bay Estuary.

The cumulative impact analysis in the 1993 draft EIR for the El Dorado Project assume the project will decrease the combined supply of water available to the Central Valley Project (CVP) and the State Water Project (SWP) by 22,600 afa. The El Dorado Project was found to contribute to an already existing significant cumulative impact on fisheries and water quality on the lower Sacramento River and Delta. In addition, the draft EIR found that the project would additionally contribute to the cumulative loss of wetland habitat on the American River below Folsom Reservoir.

The final EIR (EDCWA,29,Chapter 1:6) refers the reader to the draft EIR for the detailed descriptions of the impacts resulting from the proposed El Dorado Project, however, the final EIR ignores the cumulative impacts previously identified in the draft EIR and discussed above. The final EIR finds that the proposed project will reduce flows in the lower American River and Delta by 17,000 afa and have an insignificant impact on fishery resources and water quality. No explanation is provided as to the differences in the findings from the draft EIR. Responding to questions, a witness for El Dorado testified that, to his understanding, relative to the proposed mitigations for impacts in the draft EIR, that El Dorado only committed to mitigate the direct impacts of the El Dorado Project. (93,T,II,155:18-157:11.)

The draft SEIR made the same finding of no significant impact to water quality and fisheries in the lower American River, lower

Sacramento River and Delta resulting from the diversion of 17,000 afa at Folsom Reservoir. (EDCWA,96,III:A-8,IV:C-6.) In comments on the draft SEIR, Board's staff disagreed with the findings of no significance. (SWRCB,1,A-29919, September 21, 1995.) In responding to this comment, the final SEIR states "this disagreement among experts is acknowledged". (EDCWA,100,III-15.)

Testimony in the 1993 hearing by an El Dorado expert stated that, it is very difficult to accurately predict what would happen in the lower American River from such a small change in flow. However, he stated with confidence that the average annual discharge to the lower American River, lower Sacramento River and Delta would decrease by 17,000 afa. The testimony did not speak to the cumulative effect of the proposed project in conjunction with other reasonably foreseeable projects as was examined in the draft EIR. (93,T,I,152:17-22.) A later El Dorado expert witness stated that "the El Dorado Project would not significantly affect the lower American River, lower Sacramento River and Delta fisheries because the associated reduction in streamflow and daily outflow would be minor". However, the same expert witness later stated "the incremental effect of the El Dorado Project on Delta inflow would not be beneficial but would contribute to future and ongoing cumulative effects". The witness further stated that implementation of the El Dorado Project would have to be consistent with existing and future Board standards and criteria designed to protect, maintain, and enhance fishery resources. (93,T,I,156:20-157:7.) An expert witnesses for El Dorado who prepared the 1992 draft and 1993 final EIR testified that they had met with DFG but had not met formally or informally with the National Marine Fisheries or the U.S. Fish and Wildlife Service (USFWS) during the preparation of the EIR. (93,T,II,145:10-146:14.) An expert witnesses for the USFWS testified that the El Dorado Project did pose a potential adverse affect on Delta outflow and that the USFWS was concerned with the

cumulative effects of the project, particularly for the federally listed Delta Smelt. (93,T,III,21:2-23.) Another USFWS witness agreed that, individually, there is a difference in magnitude[21] and that a specific threshold for the El Dorado Project cannot be specifically identified; however, the opinion of USFWS was that there is a significant and measurable cumulative effect on Delta fish resources. (93,T,III,24:16-26:3.) Dr. Moyle testified that the potential impact on the Delta cannot be dismissed. Although the 1992 draft and 1993 final EIR state that the El Dorado is a small project compared to Delta outflow, Dr. Moyle states that the project is in fact one of many small water projects that affect Delta inflow. Dr. Moyle stated that based on what had been presented in the Bay/Delta hearing from 1987 to 1992, it was clear to him that the combined effects of big and small water projects are factors that have caused the major declines of the fisheries in the Delta. (93,T,IV,43:14-46:7; 93,T,IV,53:12-54:11.)

However, since the above testimony was presented, the Board has adopted and implemented new water quality and flow requirements for the Bay/Delta Estuary contained in the 1995 Bay/Delta Water Quality Control Plan and Water Right Order 95-6. The Board takes judicial notice of these documents for this proceeding. These new standards provide significantly better protection for fish and wildlife resources over the previous standards. They do so at the expense of water supply exported from Bay/Delta estuary. With these new Bay/Delta requirements in place, the concerns related to the cumulative impact expressed at the hearing of this project have been greatly reduced. The Board sees no need to adopt additional terms to address the concerns.

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[21] In this context a "difference in magnitude" refers to a large diversion such as a diversion by a unit of the CVP and the 17,000 afa which El Dorado seeks to divert.

The Bureau testified that it is convinced that the approval of the applications or petitions will have an adverse impact on the Bureau's existing rights and interfere with the operation of the CVP. (95,USBR,1.) An expert witness for Westlands Water District (WWD) testified that in most critically dry, dry, or below normal years, the entire amount proposed for diversion by El Dorado will result in a direct acre-foot for acre-foot impact on CVP supplies. The witness stated that although 17,000 af is a relatively small number compared to the total storage in Folsom Reservoir, the times when that water is not available is likely to affect CVP operations when it is most needed, in critical and dry years. (95,WWD,1:1-3.) El Dorado acknowledges that before it can use Folsom Reservoir for the direct diversion or rediversion of water, it will need a Warren Act contract with the Bureau. (95,EDCWA,93,7.)

The Board recognizes that granting water rights to El Dorado, an in-basin water user, will reduce the Bureau's ability to export water. However, this is what was intended by the Legislature when it passed the watershed protection statutes. (Water Code § 11460 et seq.) Any significant water supply impacts to the Bureau's export customers are overridden by the Board's legal requirements to reallocate water supplies to the watershed of origin for CVP projects pursuant to the watershed protection statutes.

13.5.3 Impacts of El Dorado's Proposed Project on State and Federally Listed Species or Species of Special Concern

El Dorado seeks to appropriate water for a specific place of use or service area. The construction of pipelines and related works for delivering water to the service area will have direct impacts on the environment. In addition, water supplied to the proposed place of use will have indirect effects on the environment.

State or federal listed species or species-of-special concern, or the habitats in which those species are found, will be affected by water delivered to the proposed place of use. In the 1992 draft EIR and 1993 FEIR for the EDCWA Water Program and EID El Dorado Project, it was found that the preferred Alternative (1a) would have significant secondary adverse and unavoidable growth inducing impacts such as: a substantial increase in population (human), conversion of land suitable for agricultural uses, conversion of vacant land and timberland to urban use, and the loss and degradation of existing vegetation and wildlife habitat. (93,EDCWA,30,1-3; 93,EDCWA,29,1-4.) The draft EIR discloses that the projected growth will result in the conversion of approximately 24,000 acres of vacant and agricultural land to various residential uses within the western service area of EID. An additional 40,000 acres of existing open space is projected for conversion to developed land. The draft EIR states that the potential exists for the substantial loss or degradation of the following biological resources:

1. Sensitive biological communities, particularly vernal pools riparian areas, other wetlands, Pine Hill chaparral, and oak woodlands;

2. Special-status plants, invertebrates, and amphibians in vernal pools or other seasonal wetlands; and

3. Special-status plants in the Pine Hill chaparral. Some species may be designated as threatened or endangered under the federal or state Endangered Species Acts as a result of development. (93,EDCWA,30,9-20.)

The final EIR declares that the water program is considered growth inducing because providing water to the EID service area would remove an obstacle to growth. A correction in the final EIR revises a section pertaining to population growth by stating

that "projected growth is expected to occur if the water program is implemented". (93,EDCWA,29,5-7.) The adverse secondary impacts associated with growth which are projected to occur in the EID service area include conversion of the vacant land and the habitat loss discussed above. The final EIR further states that these secondary impacts and mitigation measures are evaluated only at a general level in the present EIR and will be evaluated more thoroughly in an upcoming EIR for the proposed El Dorado County 2010 General Plan. (93,EDCWA,29,1-5.)

In the final SEIR for the El Dorado water program, the findings for the new preferred Alternative (1b) were the same as discussed in the previously certified 1993 EIR for Alternative (1a). The final SEIR states that the secondary impacts and mitigation measures were evaluated in detail in the draft EIR on the proposed El Dorado County 2010 General Plan. (95,EDCWA,96-A, ES:3-4.) The final SEIR does include general mitigation and monitoring recommendations specific to the El Dorado Project water delivery infrastructure segments and are listed in Table V-1, ES-31 through ES-42. (95,EDCWA,96-A.)

Considerable expert testimony was presented regarding the proposed project's impacts to state listed and federal candidate species and their habitats. SCLDF presented two expert witnesses Drs. Clark and Skinner. (95,SCLDF,GC-1,MS-1.) Dr. Skinner represented the California Native Plant Society (CNPS). CNPS played an active role on the El Dorado County Planning Department Rare Plant Advisory Committee. The Committee attempted to establish natural preserves for eight rare plant species that are found chiefly on "gabbro" soils in the central Sierra foothills.

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Those species are:

1.	Stebbins's morning-glory	Calystegia stebbinsii
2.	Pine Hill ceanothus	Ceanothus roderickii
3.	Red Hills soaproot	Chlorogalum grandiflorum
4.	Pine Hill flannelbush	Fremontodendron decumbens
5.	El Dorado Bedstraw	Galium californicum ssp. sierra
6.	Bisbee Peak rush-rose	Helianthemum suffrutescens
7.	Layne's ragwort	Senicio layneae
8.	El Dorado Co. mule ear	Wyethia reticulata

These species are primarily found within the unusual "gabbro" formation which covers nearly 40,000 acres in western El Dorado County, within the proposed place of use. (95,SCLDF,MS-1,1-2.) The state lists the Stebbins's morning-glory as endangered, while Pine Hill ceanothus, Pine Hill flannelbush, Layne's ragwort, and El Dorado bedstraw are listed by the state as rare (threatened) pursuant to the California Endangered Species Act. (93,EDCWA,30,D:14-17.) On April 20, 1994, Stebbins's morning-glory, Pine Hill ceanothus, Pine Hill flannelbush, and El Dorado bedstraw were proposed as endangered species and the Layne's ragwort (aka butterweed) was proposed as a threatened species by the USFWS pursuant to the Federal Endangered Species Act. (95,SCLDF,MS-1,3; SCLDF,MS-2,59, Federal Register 18774, April 20, 1994.) The USFWS proposal noted that urbanization and ensuing habitat fragmentation was the primary threat to the survival of the species. The present status of the USFWS proposed listing is unknown.

Within recent years, attempts have been made to establish a preserve or preserves to protect the gabbro-chaparral habitat. The Rare Plant Advisory Committee was established to identify feasible preserve sites, funding mechanisms, and management strategies for the preserves. An initial report was completed in November 1991. The report identified 12 potential preserve

sites. In 1992 El Dorado County held public workshops concerning the report. The County Board of Supervisors approved in principal four sites but did not consider funding to establish or maintain the preserves. (95,SCLDF,MS-2:18870.)

The final SEIR also discusses how direct project impacts to the listed species may be handled in the future analysis for the proposed water delivery infrastructure contemplated for the El Dorado Project. The mitigation proposed is at the programmatic level. The measures that were adopted by EDCWA and EID are to be incorporated in subsequent project-specific designs and related environmental assessments. Such measures included surveys for threatened and endangered plants. (95,EDCWA,96-C; 95,EDCWA,96-B; 96, EDCWA,96-B:3.) No consideration was given, however, to the unavoidable adverse impacts to rare plants resulting from the secondary growth-inducing impacts of the water program. The final SEIR states that these impacts were to be addressed by El Dorado County when approving its 2010 General Plan. In certifying the final SEIR and adopting its statement of overriding consideration, EDCWA stated that the mitigation measures identified for the significant secondary growth-inducing impacts identified in the 1992 draft EIR and 1993 final EIR have been or can and should be adopted by the County. (EDCWA,96-B.)

In 1995 the Bureau and USFWS held a series of hearings and workshops to determine if groups of species might have "critical needs" with respect to interim reauthorizations for 67 water contracts by the CVP. "Critical needs" were considered to exist if authorization of water contracts for a period of three to five years would lead to extinction or might preclude the recovery of the species in question. On August 3, 1995, of the eight sets of species considered, only the El Dorado assemblage of gabbro endemic plants met the "critical needs" criteria. This meant that supplying water for development in western El Dorado County

could lead to the extinction or preclude the recovery of one or more of the rare plants occurring on the gabbro soils complex during the next three to five years. (95,SCLDF,GC-2:2-3.)

On January 23, 1996, the El Dorado County 2010 General Plan was adopted by the El Dorado County Board of Supervisors. (95,SWRCB,21.) The General Plan includes Objective 7.4.1: Rare, Threatened, and Endangered Species. The objective states: "the County shall protect State and Federally recognized rare, threatened, or endangered species and their habitats consistent with Federal and State laws". According to the glossary to the General Plan "an Objective is a specific end, condition or state that is an intermediate step toward attaining a goal. It should be achievable and, when possible, measurable and time-specific". In addition to Objective 7.4.1., a series of policies were adopted to guide future decision making. The policies indicate a clear intent to protect rare, threatened, or endangered species and their habitats within El Dorado County. Selected examples of these policies follow:

Policy 7.4.1.1

The eight sensitive plant species known as the Pine Hill endemics and their habitats (specifically identified gabbro and serpentine soils) shall be protected in perpetuity through the establishment of four preserve sites. These preserve sites are integrated into the County's overall open space plan. Components of this program include but are not limited to:

A. Coordination with the DFG and USFWS, and other appropriate agencies.

B. Development of mechanisms for the establishment of preserve site(s) such as clustered development, transfers of development rights, mitigation banking, and conservation easements.

C. Development of programs with the DFG to fund the purchase of fee title acquisition, conservation easements, and operations and maintenance of preserve sites.

D. Establishment of guidelines for development of site-specific management, maintenance, and monitoring plans for preserve sites that will be held in private ownership.

Policy 7.4.1.2

Private land for preserve sites will only be purchased from willing sellers.
Policy 7.4.1.5

Species, habitat, and natural community preservation/conservation strategies shall be prepared to protect special status plant and animal species and natural communities and habitats when discretionary development is proposed on lands with such resources unless it is determined that those resources exist, and either are or can be protected, on public lands or private Natural Resource Lands. (95,SWRCB,21,Chapter 7:130-131.)

Of concern was the fact that a water right granted to El Dorado by the Board will spur discretionary development threatening these listed species and their habitats. (95,SCLDF,GS-2:6; 95,SCLDF,MS-1:8-9; 93,T,II,210:10-25; 93,T,IV,49:11-25; 95,T,I,33:4-34:14; and 95,DFG,Closing Argument of Protestant,III,11:1-12:19.)

The County is the primary agency responsible for land use planning and for approving development consistent with the plan. Consistent with its responsibilities, the County adopted General Plan Objective 7.4.1 to address state and federal listed species of concern and establishes a process to protect species endangered by development within the County and the proposed place of use. The Board shares the concerns expressed regarding the need to protect endangered species and without the policies adopted by the County, it is doubtful the Board could approve the water rights being sought by El Dorado. Because (1) the County is the agency primarily responsible for development within the County; and (2) the County has established a process to protect the endangered species from secondary growth impacts, it would be

inappropriate for the Board to adopt additional conditions as a part of any water right permit to protect the endangered species.

However, with regard to the direct environmental impacts which may result from the construction of pipelines and related works for delivering water to the service area, any water right permit issued to El Dorado should contain conditions to protect, conserve, avoid, or mitigate potential adverse impacts to the environment.

14.0 STATE FILED APPLICATION 5645(8) CAN BE ASSIGNED TO EL DORADO

14.1 State Filed Application 5645

State filed Application 5645 was filed in 1927 to appropriate water for irrigation and domestic uses. The place of use is for 210,000 acres within Township 8 North to Township 11 North, inclusive; and Range 8 East to Range 13 East, inclusive; a place of use mostly within El Dorado County and EID's existing service area. The application includes a point of direct diversion and diversion to storage at a point above the existing Folsom Reservoir not far below the City of Coloma. The maximum rate of direct diversion is 700 cfs and the maximum amount that could be diverted to storage in any one year is 70,000 af.

14.2 The California Water Plan

Although the Department of Water Resources has published numerous updates, the 1957 California Water Plan is the basic State Water Plan. The plan states in part:

> "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 future 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 now conceived."

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 South Fork American River water for beneficial use. (Pp. 112-116, and sheets 8A of 26.) State filed applications retain their force and effect even though subsequent State Water Plans may envision the development of water and related facilities in a manner that differs from the state filing. (Water Code § 10007.)

14.3 Approval of Changes in Points of Diversion Required By Petition for Assignment of SFA 5645(8)

El Dorado's petition proposes to divert water to storage at Lake Aloha and Caples and Silver Lakes, points far upstream in the American River System from those specified in SFA 5645 or in the State Water Plan. However, a point of diversion can be changed so long as: the change does not initiate a new right nor injure other lawful users of water. (23 CCR 791; *Johnson Rancho Water District* v. *State Water Resources Control Board* (1965) 235 Cal.App.2d 863.) The combination of the early priority of SFA 5646 and a limitation on the season of diversion to the times when unappropriated water is available will assure that the petitioned changes will not injure other legal users of water. Thus, the Board finds that the changes from the points of diversion to those in the petition for assignment will not initiate a new right or injure other lawful users of water.

14.4 The Petition for Assignment is Not in Conflict With the California Water Plan or With Water Quality Objectives

As discussed in the preceding sections, the authors of the California Water Plan intended that the plan be no more than a general planning document and that more feasible plans would have to be developed at a later date. Thus, El Dorado's petition cannot be in conflict with the State Water Plan. Although, there is no conflict with the plan, it is important that the petition seeks to appropriate water for purposes of use and a place of use that is consistent with the purpose for which Application 5645 was initially filed. Fundamentally, Application 5645 was filed to assure a priority claim on the right to divert and use water from the South Fork American River to supply the future needs of El Dorado County and some adjoining areas. In general, the Board should look favorably upon petitions for release of assignment of state filed applications so long as the petitioner seeks to appropriate water for purposes of use and places of use consistent to the state filed application.

By virtue of the operation of El Dorado's proposed project, there can be no effect on water quality upstream of Folsom Reservoir. That is, PG&E's lakes will be operated as they have been historically and El Dorado will only divert water from the river at Folsom Reservoir. Below Folsom Reservoir, the Bureau and the Department are required to operate the units of the CVP and the SWP in a manner which assures that water quality objectives in the Sacramento River and the Sacramento-San Joaquin Delta are protected. (SWRCB, Decision 1485; Order 95-6.) Thus, approval of El Dorado's petition for assignment of SFA 5645(8) is not in conflict with established water quality objectives.

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14.5 Amador and Alpine Counties Will Not be Deprived of Water Necessary For Their Development

Water Code section provides that:

> "No priority . . . shall be released or assignment made of any application that will, in the judgement of the board, deprive the county in which the water covered by the application originates of any such water necessary for the development of the county."

The water which El Dorado seeks to appropriate to storage in Caples and Silver Lakes originates in Amador and Alpine Counties. Previously referenced testimony by protestants to El Dorado's proposed project have indicated that both Amador and Alpine Counties have a need for water to support domestic, recreation, and commercial uses associated with the lakes. Clearly, the Board cannot approve El Dorado's petition for partial assignment of Application 5645(8) unless a condition is adopted expressly reserving to these counties the right to appropriate water necessary for their development. The Board will adopt such a condition. El Dorado must understand that all of the water which it may develop and use under a partial assignment of SFA 5645(8) from Caples and Silver Lakes is subject to reduction by water projects that may be developed in these counties. Accordingly, subject to the limitations discussed in this section, SFA 5645(8) can be assigned to El Dorado.

15.0 EL DORADO'S PETITION FOR PARTIAL ASSIGNMENT OF APPLICATION 5645(8) FOR THE DIRECT DIVERSION OF WATER AT FOLSOM LAKE SHOULD BE CONDITIONALLY APPROVED

El Dorado has a need for water. (Section 12.0, *supra*.) Unappropriated water is available for El Dorado's petition for partial assignment of SFA 5445(8). Unappropriated water is available for diversion to storage at Lake Aloha and Caples and Silver Lakes from November 1 through July 31, and for direct diversion at Folsom Reservoir from November 1 through July 31 of the succeeding year. (Section 5.0, *supra*.) The Board finds that subject to appropriate conditions to protect the counties of

origin, public interest, and the environment the petition for partial assignment of SFA 5645(8) to directly divert water from Folsom Reservoir should be approved. (Sections 4.0, 9.0, 10.0, 13.0, and 14.0, *supra*.)

16.0 EL DORADO'S PETITION FOR PARTIAL ASSIGNMENT OF APPLICATION 5645(8) TO APPROPRIATE WATER TO STORAGE AT LAKE ALOHA AND CAPLES AND SILVER LAKES, AND TO REDIVERT SUCH WATER AT FOLSOM RESERVOIR SHOULD BE CONDITIONALLY APPROVED

El Dorado has no more control over the lakes than do Alpine and Amador Counties. The counties' petitions for assignment of SFA 5645 were denied because they could not demonstrate an essential requisite for the appropriation of water, i.e., any means or prospect of exercising control over the water sought for appropriation. (Section 9.2.) El Dorado, however, has an agreement to purchase PG&E's El Dorado Project under License 184. Although the contract is subject to the approval of the PUD and FERC, it provides some basis for an expectation that El Dorado may acquire the right to exercise control over the water sought for appropriation. Accordingly, the Board will conditionally approve El Dorado's petition for partial assignment of Application 5645(8) to divert water to storage at Lake Aloha and Silver and Caples Lakes and to redivert water released from storage at the lakes to Folsom Reservoir. The permit issued to El Dorado shall include a condition prohibiting El Dorado from diverting any water to storage at Lake Aloha and Silver and Caples Lakes and from rediverting any water released from storage at the lakes until they have demonstrated to the satisfaction of the Board that they have some real measure of control over the manner in which Lake Aloha and Caples and Silver Lakes are operated. Further, by this decision the Board will delegate this determination to the Chief, Division of Water Rights. The approval should also be subject to conditions to protect the counties of origin, public interest, and the environment. (Sections 4.0, 9.0, 10.0, 13.0, and 14.0, *supra*.)

17.0 TERM 91 SHOULD NOT BE MADE APPLICABLE TO EL DORADO'S PETITION FOR PARTIAL ASSIGNMENT OF STATE FILED APPLICATION 5645(8)

Term 91 is a permit condition included in permits for more than 1 cfs or for more than 100 afa of storage for diversions from the Sacramento, Cosumnes, Mokelumne, Calaveras, or San Joaquin River Basins or the Sacramento-San Joaquin Delta (Delta) when hydraulic continuity with the Delta exists or is likely to exist. The American River is a part of the Sacramento River system. The purpose of the term is to protect persons claiming paramount rights to divert water from the Delta and the water quality upon which such rights depend and to protect fish and wildlife. (SWRCB,Decision 1629,p. 23.) In general, the term prohibits the diversion and use of water when the Bureau or the Department is making releases of stored or imported water from units of the CVP or the SWP to maintain water quality in the Delta. The effect of Term 91 is to reduce the months of each year during which a permit holder can divert water.

The Board previously imposed Term 91 on the assignment of a state filing when the Board approved the assignment of state filed Application 5645, among others, to El Dorado when the SOFAR project was approved. (SWRCB,Decision 1587.) The decision does not include any analysis or explanation for why the term was imposed. In its fairly recent approval of the Los Vaqueros Project the Board states, in part, that:

> "Under Term 91, water is not available for diversion when satisfaction of inbasin entitlements requires that the CVP and the State Water Project release supplemental Project water. Inbasin entitlements include senior water rights and water required by the SWRCB to maintain water quality and fish and wildlife. Supplemental Project water includes water imported to the basin and water released from the CVP and State Water Project storage which exceeds export diversions, carriage water in the Delta, and deliveries of project water within the basin." (SWRCB,Decision 1629.)

This language indicates that Term 91 should apply to condition all new junior diversions of water when the satisfaction of inbasin entitlements requires that the CVP and SWP release supplemental project water. Nevertheless, the circumstances surrounding approval of the applications for the Los Vaqueros Project can be readily distinguished from state filed applications under consideration in this decision.

The state filed application for the Los Vaqueros Project (A-25516) is junior to the permitted applications under which the Bureau and the Department are operating the CVP and the SWP. Under this circumstance, protecting the holders of more senior or earlier rights required the application of Term 91. By contrast, state filed Application 5645 is senior to many if not most of the permitted applications under which the Bureau and the Department operate the CVP and the SWP. Further, Water Code section 11128 provides that the watershed of origin protection shall apply to Bureau and Departmental operations of units of the CVP, as defined by the Water Code, irrespective of the priority of the permitted applications under which the projects are operated. Finally, at this time, it would be inequitable to apply Term 91 to Application 5645, because the Board has not imposed Term 91 on many permitted applications which are junior to Application 5645. Notwithstanding the foregoing; however, the Board will reserve jurisdiction, via the language of standard condition 80, to change the season of diversion to conform to later findings of the Board concerning the availability of water and the protection of beneficial uses of water in the Sacramento-San Joaquin Delta and the San Francisco Bay.

18.0 MANDATORY CEQA FINDINGS

For the purpose of considering whether to approve the proposed El Dorado project, the Board is a responsible agency under CEQA. (Public Resources Code section 21069.) When approving a project, a responsible agency must: (1) adopt conditions to avoid or

mitigate significant adverse environmental project effects within the scope of its responsibility; (2) find that another agency has the responsibility and jurisdiction and that such agency can or should avoid or mitigate the adverse effect; or (3) adopt a statement of overriding consideration. (Public Resources Code sections 21002.1, 21081; 14 CCR sections 15091 and 15093.)

EDCWA, as the lead agency, in cooperation with EID prepared an EIR and supplemental EIR (SEIR) analyzing the project. On October 23, 1995, EDCWA certified the final SEIR and approved the proposed project. (93,EDCWA,29; 95,EDCWA,96a.) The Board has reviewed and considered the final EIR and SEIR prepared by EDCWA.

18.1 Significant Effects Identified in the Supplemental FEIR

The final SEIR identifies the following significant unavoidable impacts from the project:

1. Short-term construction related emissions: Ozone Precursor, Sox, and PM10;

2. Substantial increase in population;

3. Conversion of land identified for its potential to support agriculture uses;

4. Conversion of vacant land and timberland to urban use;

5. Loss and degradation of existing vegetation and wildlife habitat; and

6. Increase in Ozone Precursor Emissions.

18.2 Significant Effects Within the Jurisdiction of the Board

Acting as a responsible agency when approving applications or petitions for assignment of state filed applications to appropriate water, the Board does not have responsibility to regulate significant effects 1, 2, 3, 4, and 6. Depending upon particular circumstances, the Board may have responsibility over the fifth effect, i.e, the loss and degradation of existing vegetation and wildlife habitat.

18.3 Measures Adopted to Avoid or Mitigate for the Loss and Degradation of Existing Vegetation and Wildlife Habitat

As lead agency, EDWCA relied upon El Dorado County to adopt a program to mitigate the project's growth-inducing effects of the proposed project, including secondary effects on vegetation and wildlife habitat. The Board finds that El Dorado County is the primary agency responsible for: (1) land use planning, (2) approving development consistent with the county's general plan, and (3) mitigating the effects of development resulting from approved development within the county. Thus, the Board will not adopt conditions to address these secondary environmental effects.

The Board's approval of the proposed project may have some direct effect on existing vegetation and wildlife habitat. These effects may result from the pipeline which will be constructed to deliver water diverted at Folsom Reservoir to the proposed place of use. Conditions 22 and 23 of this decision will avoid or mitigate the effects to vegetation and wildlife habitat which may result from the construction of the pipeline.

19.0 CONCLUSIONS

Application 30204 by Kirkwood PUD to appropriate water from Caples Lake for consumptive use should be denied. (Section 9.1, *supra*.) Application 30219 and the petition for partial assignment of SFA 5645(9) by Alpine County for the direct

diversion and use of water from Caples Lake should be denied. (Section 9.2, *supra*.) Application 30218 and the petition for partial assignment of Application 5645(10) by Amador County for the nonconsumptive use of water for recreation in Silver Lake should be denied. (Section 9.3, *supra*.) The petition for partial assignment of Application 5645(11) by Kirkwood, Inc., should be denied. (Section 8.0, *supra*.) The petition for partial assignment of Application 5645(8) by El Dorado to appropriate water by direct diversion at Folsom Reservoir and to divert water to storage at Lake Aloha and Caples and Silver Lakes and to redivert water released from storage at Folsom Lake should be approved subject to conditions to protect the counties of origin, the public interest, and the environment. No special operating condition will be imposed upon El Dorado's rediversion of water from Lake Aloha because this lake is drawn upon first in order to maintain Caples and Silver Lakes at higher levels as long as possible; however, jurisdiction will be reserved to consider whether such a condition should be imposed at a later date. Applications 29919, 29920, 29921, and 29922 by El Dorado should be denied. These applications duplicate the water sought by El Dorado in its petition for partial assignment of Application 5645(8).

20.0 ORDER

NOW THEREFORE IT IS HEREBY ORDERED that the following applications and petitions for assignment are denied:

1. Petition for partial assignment of state filed Application 5645(11) by Kirkwood, Inc.;

2. Application 30204 by Kirkwood PUD;

3. Application 30219 and petition for partial assignment of state filed Application 5645(9) by Alpine County;

4. Application 30218 and petition for partial assignment of state filed Application 5645(10) by Amador County; and

5. Applications 29919, 29920, 29921, and 29922 by El Dorado.

IT IS FURTHER ORDERED that El Dorado's petition for partial assignment of state filed Application 5645(8) is approved subject to standard permit terms 1, 2, 6, 10, 11, 12, 13, 80, and 119 and special conditions. Any portion of El Dorado's petition for partial assignment of SFA 5645(8) not expressly approved by this order is denied. The assignment of SFA 5645(8) shall be subject to the following special conditions:

1. All water appropriated under this approval is subject to the county of origin preferences as required by Water Code section 10505. Any water appropriated under this approval is subject to the right of Amador and Alpine Counties to obtain appropriative rights to water necessary for their development from the water originating in their respective counties.[22]

   Permittee shall make up to 200 afa of storage available in Silver and Caples Lakes for existing and future uses in the immediate vicinity of the lakes in the counties of origin. This condition does not require the Permittee to obtain the approval of PG&E or pay PG&E for the right to store water in the lakes on behalf of applicants in the counties of origin. In the event that Permittee obtains ownership of PG&E's El Dorado Hydroelectric Project, Permittee shall make up to 200 afa of storage available in Silver and Caples Lakes without cost to applicants in the counties of origin.

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[22] This reservation does not and cannot grant water right applicants in the counties of origin the right to divert and use water directly diverted or diverted to storage under PG&E's rights at Caples and Silver Lakes.

2. The purposes and places of use for the water appropriated under this approval shall be limited to domestic, municipal, and irrigation within the authorized place of use.

3. The Place of Use is located within the Townships 8 through 11 North, inclusive, and Ranges 8 through 13 East, inclusive, as defined in Application 5645; and within the service area of El Dorado Irrigation District (excluding service zones 9, 14,and 15) and lands being within Township 12 North and Ranges 9 and 10 East, as delineated on the maps entitled "El Dorado County Water Agency and El Dorado Irrigation District Place of Consumptive Use", and "Lands within El Dorado Irrigation District" on file with the Board.

4. No water shall be diverted under this approval until El Dorado has installed devices, satisfactory to the Board, which are capable of measuring instantaneous flow diverted daily from Folsom Reservoir, to be reported annually in operation reports to the Board. The report will include daily and monthly quantities reported in acre-feet diverted from Folsom Reservoir, and the quantity in acre-feet released from and remaining in each of Caples Lake, Silver Lake and Lake Aloha at the end of each month. The report shall also, on a monthly basis, account for any water diverted from Folsom Reservoir under any other rights, including contracts with the U.S. Bureau of Reclamation or others. Streamflows above and below the El Dorado Canal diversion at Kyburz and quantities diverted into the El Dorado distribution headworks will also be included in these annual reports. The following gages are approved to be used for measuring water released from Caples lake,

Silver Lake, and Lake Aloha, and for computing water available for direct diversion from Folsom Reservoir:

GAGE NAME	USGS IDENTIFICATION NUMBER	TYPE OF RECORD
CAPLES LAKE	USGS 11436900 PG&E A5	RESERVOIR STAGE RECORDER ON CAPLES LAKE
CAPLES LAKE OUTLET NEAR KIRKWOOD	USGS 11437000 PG&E A6	RATED STREAMFLOW RECORDER BELOW CAPLES LAKE OUTLET
SILVER LAKE	USGS 11435900 PG&E A8	RESERVOIR STAGE RECORDER ON SILVER LAKE
SILVER LAKE OUTLET NEAR KIRKWOOD	USGS 11436000 PG&E A9	RATED STREAMFLOW RECORDER BELOW SILVER LAKE OUTLET
LAKE ALOHA	PG&E A1	RESERVOIR STAFF GAGE ON ALOHA LAKE
PYRAMID CREEK AT TWIN BRIDGES	USGS 11435100 PG&EA40	RATED STREAMFLOW GAGE RECORDER REPRESENTING OUTFLOW FROM ALOHA LAKE
SOUTH FORK AMERICAN RIVER NEAR KYBURZ (RIVER ONLY)	USGS 11439500 PG&E A12	RATED STREAMFLOW GAGE BELOW EL DORADO DIVERSION DAM
SOUTH FORK AMERICAN RIVER NEAR KYBURZ (TOTAL FLOW)	USGS 11439501 PG&E A11	RATED STREAMFLOW GAGE IN EL DORADO CANAL BELOW EL DORADO DIVERSION DAM
EL DORADO IRRIGATION DISTRICT DELIVERY	PG&E A18	RATED STREAM GAGE IN EID CANAL MEASURING PG&E DELIVERIES TO EID
FOLSOM LAKE	EID'S EL DORADO HILLS WATER TREATMENT PLANT	PUMPED WATER CALCULATED FROM FLOW METER MEASUREMENT

5. No water shall be used under this approval until all necessary federal, state, and local approvals have been obtained.

6. The total quantity of water to be diverted to storage at Lake Aloha, Caples and Silver Lakes shall not exceed 32,931 acre-feet per annum. The Permittee is limited to a maximum

rediversion of 17,000 acre-feet of water stored in the lakes in any one year. The maximum quantity of water represents the total quantity of supplemental water from PG&E sources which may be rediverted under this permit.

7. No water shall be diverted to storage for consumptive use until El Dorado: (1) has an executed agreement with PG&E which gives El Dorado a measure of control over the operation of Lake Aloha and Caples and Silver Lakes; (2) a copy of such agreement has been provided to the Chief, Division of Water Rights; and (3) the Chief, Division of Water Rights has advised El Dorado in writing that he finds that the agreement provides El Dorado with sufficient control over water which would be diverted to storage to accomplish an appropriation of water within the meaning of the California Water Code.

8. The water appropriated by direct diversion shall be limited to the quantity which can be beneficially used and shall not exceed 156 cubic feet per second to be diverted from Folsom Reservoir in any one year from November 1 through July 31.

9. The total quantity of water to be diverted by direct diversion at Folsom Reservoir during any one year shall not exceed 15,000 acre-feet, and will be limited to water originating in the South Fork American River upstream of the El Dorado Canal diversion near Kyburz.

10. The total quantity of water to be diverted in any one year by direct diversion and rediversion of stored water shall be limited to 17,000 acre-feet.

11. The water appropriated at Lake Aloha shall be limited to the quantity which can be beneficially used and shall not exceed 5,350 acre-feet per annum to be collected from November 1 through July 31.

12. The water appropriated at Caples Lake shall be limited to the quantity which can be beneficially used and shall not exceed 21,581 acre-feet per annum to be collected from November 1 through July 31.

13. The permittee shall maintain the release, bypass, and lake capacity requirements imposed by FERC License 184, Exhibit S. Jurisdiction is reserved to adopt conditions to protect inlake and instream beneficial uses of water if permittee obtains ownership of PG&E's El Dorado Hydroelectric Project and abandons the operation of the licensed hydroelectric project. Permittee is required to put the Board on notice at such time as it commences any proceeding to abandon the project. Upon abandonment, Permittee shall continue to operate the components of the hydroelectric project as if the FERC license requirements for protecting inlake and instream beneficial uses were still in effect. Permittee shall continue such operations until such time as the Board exercises its reserved jurisdiction and adopts conditions to protect in lake and instream beneficial uses of water. In exercising its reserved jurisdiction, no condition will be adopted without notice to El Dorado and other interested persons and the opportunity for a hearing.

14. To protect Caples Lake's summer recreational uses, El Dorado shall not redivert water released from the lake for consumptive use, excluding nondiscretionary releases required by FERC License 184 or the State Division of Safety of Dams, unless end-of-month (EOM) lake levels are at or

above the levels in the following schedule, which reflects historic average EOM lake levels attributed to PG&E's post-1985 operations under FERC License 184 during defined water-year types:

Caples Lake

Minimum End of Month Lake Level Requirements

WATER-YEAR TYPE	JUNE EOM GAGE HEIGHT (FEET)	JULY EOM GAGE HEIGHT (FEET)	AUGUST EOM GAGE HEIGHT (FEET)	LABOR DAY (SEPTEMBER) EOM GAGE HEIGHT (FEET)
CRITICAL	45.9	44.8	43.1	43.1
DRY	56.0	55.9	48.2	48.2
BELOW NORMAL	62.0	61.6	54.8	54.8
ABOVE NORMAL	62.0	62.0	52.6	47.0
WET	62.0	62.0	52.6	47.0

15. The water appropriated at Silver Lake shall be limited to the quantity which can be beneficially used and shall not exceed 6000 acre-feet per annum to be collected from November 1 through July 31.

16. To protect Silver Lake's summer recreational uses, El Dorado shall not redivert water released from the lake for consumptive use prior to Labor Day of each year, excluding nondiscretionary releases required by FERC License 184 or the State Division of Safety of Dams.

17. Conditions 14 and 16 seek to assure that the use of water from Caples and Silver Lakes for consumptive use purposes will not have the effect of increasing the releases from the lakes prior to Labor Day of each year, consistent with the

nondiscretionary obligations imposed upon the operations of these lakes by FERC License 184. Under Water Code section 1394, the Board reserves jurisdiction over this permit, for a period of ten years after El Dorado obtains some measure of control over the water impounded in the lakes, to revise these conditions or to promulgate other conditions which may more effectively assure the maintenance of the levels of these lakes as high as possible through Labor Day consistent with historical lake operation. Either El Dorado or other interested persons having an interest in how the lakes are operated may petition the Board to revise the tables or propose other conditions for the maintenance of lake levels; however, the proponent of such changes shall have the burden of producing evidence to support the requested changes. No changes will be made to these conditions without notice to El Dorado and other interested persons and the opportunity for a hearing.

18. Construction work shall begin within five years of the date of this permit and thereafter be prosecuted with reasonable diligence.

19. Construction work shall be completed by December 31, 2006.

20. Complete application of the water to the authorized use shall be made by December 31, 2015.

21. The Board shall have continuing authority to revoke all or any portion of the partial assignment of Application 5645(8), if El Dorado fails to diligently construct and place water to beneficial use in accordance with conditions 18, 19, and 20. All or any portion of the revoked assignment shall return to the Board and be available for the release or assignment to El Dorado or others consistent with the requirements of Water Code sections 10500 et seq.

22. Prior to the finalization of the route for the pipeline/water delivery system identified in the final SEIR, EID shall conduct, in consultation with the DFG and USFWS, reconnaissance surveys for state and federally listed species-of-special concern. The surveys shall, in part, guide the determination of alternatives for the final routes for the pipeline/water delivery system. The survey protocols shall be reviewed and approved by DFG. The final report shall be prepared from the results of the plant/animal surveys. The final report shall identify necessary mitigation and monitoring measures to conserve and protect the species identified to occur within the final routes of the pipeline/water delivery system. The final report shall be submitted to the Board, DFG, and USFWS for review. The final reports shall constitute the analysis and mitigation/monitoring program for the subsequent environmental assessments pursuant to the El Dorado Project.

23. The Board adopts and incorporates by reference into any permit issued to EID the mitigation and monitoring measures adopted by EDCWA and EID pursuant to the final SEIR for the El Dorado Project and listed in Tables ES-1, revised (page ES-5 through ES-27 and Table V-1, revised (page ES-31 through ES-43) specifically mitigation measures B-3, D-1 through D-19, F-9, F-10, F-16, and H-1 through H-12. (95 EDCWA/EID 96-A.)

24. El Dorado shall enter into a Warren Act Contract with the Bureau for the use of Folsom Reservoir as proposed in its El Dorado Project. No water shall be diverted under this approval until the contract is executed and a copy delivered to the Chief, Division of Water Rights.

25. Ninety days after obtaining approval to acquire PG&E's interests in the El Dorado Project from the California Public Utilities Commission and the Federal Energy Regulatory Commission, permittee shall submit a written report to the Board setting forth the legal basis under which 15,080 afa of water is diverted into the El Dorado Canal and supplied to EID for consumptive use from the South Fork American River, Lake Aloha, and/or Caples and Silver Lakes. The report shall be accompanied by proofs necessary to support any and all claims of right including the nature of each right, when each right was initiated and perfected and for what amounts and purposes, the chain of title for each right, and proof that the amount claimed under each right has been maintained by continuous diversion and use. The Board shall retain continuing jurisdiction to revise the conditions in any permit issued pursuant to this order based upon the information contained in the report.

26. Jurisdiction is reserved for a period of ten years to consider whether special conditions should be imposed upon the rediversion of water released from Lake Aloha to protect the beneficial uses made of the water in the lake. Other persons having an interest in how the lake is operated may petition the Board to adopt conditions to regulate the lake's level; however, the proponent of such conditions shall have the burden of producing evidence to support the

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requested condition. No condition will be approved without notice to El Dorado and other interested persons and the opportunity for a hearing.

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a decision duly and regularly adopted at meeting of the State Water Resources Control Board held on OCTOBER 02 1996

AYE: John P. Caffrey
John W.Brown
Marc Del Piero
James M. Stubchaer
Mary Jane Forster

NO: None

ABSENT: None

ABSTAIN: None

Maureen Marché
Administrative Assistant to the Board