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5.2.1 Report on Water Use

5.2.1.1 Introduction

This section describes water use and hydrology resources in the vicinity of the four Big Creek ALP Projects, including Project reservoirs, forebays, and associated bypass stream reaches. Groundwater in the area is confined to aquifers that are associated with river alluvium or joints and fractures in bedrock. Groundwater systems are annually recharged by run-off from snowmelt or rainfall. The four Projects do not use or affect groundwater in the area.

5.2.1.2 Water Use

SCE owns and operates the four Big Creek ALP Projects in accordance with FERC license conditions (e.g., minimum instream flow requirements, reservoir elevation requirements); physical constraints; downstream water rights agreements; water availability, and power production needs. Water use associated with the four Big Creek ALP Projects is primarily for hydroelectric power production.

A thorough discussion of operations of SCE's seven FERC-licensed Projects comprising the BCS is provided in Section 3.1.4, Project Operations. A discussion of SCE water rights and contractual obligations is provided in Section 3.1.4.1 and water management in the BCS is discussed in Section 3.1.4.3. Water management specific to each of the four Big Creek ALP Projects is described in Section 3.1.4.2, Big Creek ALP Projects Water Management.

5.2.1.3 Water Rights

Each of SCE's Big Creek Hydroelectric Projects either has a separate water right or shares one or more water rights with the other hydroelectric projects for the diversion, use, and storage of water. The vast majority of the water rights are for non-consumptive uses associated with the generation of power. A few locations, such as SCE's administrative offices and company housing near Big Creek No.1 Powerhouse, have minor consumptive water rights. SCE does not hold water rights for the consumptive use of water by any party other than SCE, nor does SCE sell any water rights associated with the Projects to others.

SCE's water rights were obtained pursuant to state law. Table 3.1.4-2 in Section 3.1, Proposed Action, summarizes the water rights licenses and the permits for the four Big Creek ALP Projects. The majority of the water rights are pursuant to licenses and permits issued to SCE, or its predecessors, by the State Water Resources Control Board (State Water Board). Certain water rights were acquired under state law, prior to the formation of the State Water Board's predecessor in 1914, that are not documented by licenses or permits. Additional water rights were obtained through appropriation of water prior to the implementation of the Water Commission Act of 1914, and by prescriptive use against other parties. SCE also holds other water rights as a riparian land owner, which authorizes SCE to divert and use water on land owned by SCE.

In addition, SCE has entered into a number of contracts and agreements with downstream water rights holders addressing the diversion, storage, and use of water for the SCE Big Creek Hydroelectric Projects. To protect water rights of downstream water rights holders, SCE has entered into agreements that restrict the use of water to non-consumptive uses, like hydroelectric generation. For additional descriptions refer to Section 3.1.4.1, Water Rights and Contractual Obligations.

5.2.1.4 Hydrology

This section describes the hydrology for the surface waters in the vicinity of the four Big Creek ALP Projects. The first part of this section is a description of the water flow and volume monitoring station infrastructure in the vicinity of the four Projects. This is followed by a summary of the methods and data analyses completed for the station locations on rivers, streams, diversions, and lakes/reservoirs. Lastly, the HydroBasin flow routing model for the four Big Creek ALP Projects is described.

Water Flow and Volume Monitoring Station Infrastructure

SCE maintains water stations to measure flow and volume in the vicinity of the four Big Creek ALP Projects on the lakes/reservoirs, forebays, diversions, and bypass stream reaches. These stations are described briefly by Project below.

SCE currently maintains three operating water flow and volume monitoring stations in the vicinity of the Mammoth Pool Project (Table 5.2.1-1). Data from these three stations is provided to the U.S. Geological Survey (USGS) for review and publication. Two additional stations are no longer operational and only historical hard copy hydrology data is available for these stations. The locations of the stations, the types of gages, and the available hydrologic period of record for each are summarized in Table 5.2.1-1 and Table CAWG 6-1, in CAWG 6, Hydrology, 2003 Technical Study Report (TSR) (SCE 2004a; Volume 4, SD-D (Books 13 and 23)).

SCE currently maintains six operating water stations to measure flow and volume in the vicinity of the Big Creek Nos. 1 and 2 Project (Table 5.2.1-1). Data from five of these stations is provided to the USGS for review and publication. The last station provides data only to SCE. There were three additional historical stations, for which hard copy and/or electronic data is available. These stations are no longer operational. Two of the three historical stations were previously operated in cooperation with the USGS.

SCE currently maintains 29 operating water stations to measure flow and volume in the vicinity of the Big Creek Nos. 2A, 8 and Eastwood Project (Table 5.2.1-1). Data from 24 of these stations is provided to the USGS for review and publication. The five remaining stations provide data only to SCE. There were seven additional historical stations, for which hard copy and/or electronic data is available. These stations are no longer operational.

SCE currently maintains one operating water station to measure flow and volume in the vicinity of the Big Creek No. 3 Project (Table 5.2.1-1). Data from this station is provided to the USGS for review and publication. There were two additional historical stations,

for which hard copy and/or electronic data is available. These two stations are no longer operational.

A summary of water flow and volume monitoring stations in the vicinity of the four Big Creek ALP Projects and data available for these stations is presented in Table CAWG 6-1 *in* CAWG 6, Hydrology, 2003 TSR (SCE 2004a; Volume 4, SD-D (Books 13 and 23)). This table also covers stream, river, diversion, conduit, and lake/reservoir locations. Table 6-2 in CAWG 6, Hydrology, 2003 TSR (SCE 2004a; Volume 4, SD-D (Book 13)) shows the timing of major construction and/or operational changes that affected both the selections of periods of record and time periods used for the quantitative hydrologic analysis. Map CAWG 6-1 *in* CAWG 6, Hydrology, 2003 TSR (SCE 2004a; Volume 4, SD-D (Book 23)) shows the locations of the diversions, dams, reservoirs, flow lines, and powerhouses.

Methods

This summary of the hydrology for the surface waters in the vicinity of the four Big Creek ALP Projects was based on a review of relevant information and extensive agency and other stakeholder consultation. A summary of agency and stakeholder consultation is provided in Section 4.0, Consultation. Detailed descriptions of the study methods are provided in the 2001 Final Technical Study Plan Package for the Big Creek Alternative Licensing Process (SCE 2001; Volume 4, SD-B (Books 6 and 21)). Study results are provided in CAWG 6, Hydrology, 2003 TSR and in CAWG 2, Geomorphology, 2002 TSR (SCE 2004a; SCE 2003; Volume 4, SD-D (Books 13 and 23), and SD-C (Books 7 and 21))).

Hydrology studies included:

- Available electronic hydrology data were obtained and evaluated as described in CAWG 6, Hydrology, 2003 TSR (SCE 2004a; Volume 4, SD-D (Books 13 and 23)). Only available electronic data were evaluated quantitatively as part of the CAWG 6, Hydrology studies. An analysis period of 1983-2002 was selected for the focus of the study.

- Hydrology data were classified in accordance with the California Department of Water Resources (DWR) five water year types, which are based on predicted run-off, to better resolve differences between years with differing amounts of run-off. For additional discussion of water year types, refer to CAWG 6, Hydrology, 2003 TSR (SCE 2004a; Volume 4, SD-D (Books 13 and 23)).

- Unimpaired mean daily flows were calculated for streams in the vicinity of the four Big Creek ALP Projects using either a water balance approach or an area-based approach, or both, for the study period, as described in CAWG 6, Hydrology, 2003 TSR (SCE 2004a; Volume 4, SD-D (Books 13 and 23)).

- Various analyses and graphs, described in more detail in CAWG 6, Hydrology, 2003 TSR (SCE 2004a; Volume 4, SD-D (Books 13 and 23)), were completed for each

station (existing and unimpaired) for the study period and the entire period of record (for stations with long-term electronic data records), including:

1. Hydrographs of daily flows;

2. Minimum, mean, and maximum flows by water year type and for all water year types;

3. Percentiles/exceedances at 5% intervals, including the median, presented in tabular and graphical formats by water year type and for all water year types;

4. Annual and extreme flows, mean annual peak flows, 10-year flow, and seven-day low flow by water year types and for all water year types;

5. Indicators of Hydrologic Alteration (IHA) analyses, using the study period where possible, comparing unimpaired and existing flows;

6. Existing and unimpaired flood-frequencies were calculated and a regional flood frequency analysis was developed for unimpaired streams, as described in Section 4.2.1, Flood Frequency Analysis Methods, CAWG 2, Geomorphology, 2003 TSR (SCE 2004b; Volume 4, SD-D (Books 11 and 23)); and

7. Reservoir storage and elevations.

Surface Water Data

This section summarizes the surface water data and analysis that was completed for gaged locations on rivers, streams, diversions, and lakes/reservoirs in the vicinity of the four Big Creek ALP Projects. Additional descriptions and discussions for each are provided in CAWG 6, Hydrology, 2003 TSR (SCE 2004a; Volume 4, SD-D (Books 13 and 23)), and numerous Appendices that are part of that report. The appropriate Table, Section, or Appendix from the CAWG 6 report is referenced in each summary below.

A reasonable period of record is available for most of the rivers, streams, and lakes/reservoirs (greater than 15 years). Several smaller streams and diversions, however, frequently had records of less than ten years. Some of these gaging locations do not have data during the winter and summer months due to seasonal operation of the diversions associated with them. The small stream diversion turn-in and turn-out dates for the period 1992 to 2003 are presented in Table CAWG 6-10, CAWG 6, Hydrology, 2003 TSR (SCE 2004a; Volume 4, SD-D (Book 13)). The turn-in period is the only time for which hydrology data is available for these gaging stations.

The water year type for each year in the period of record is shown in Table CAWG 6-3, CAWG 6, Hydrology, 2003 TSR (SCE 2004a; Volume 4, SD-D (Book 13)). Over the analysis period (water years 1983 to 2002), 35% of the years were classified as wet and 35% were classified as critically dry.

All methods used to estimate unimpaired flows for gaged locations are discussed in CAWG 6, Hydrology, and presented in Tables CAWG 6-4 and 6-5. The potential accuracy or uncertainty of the methods was evaluated, as described in Section 4.3.4, General Application and Confirmation, CAWG 6, Hydrology (SCE 2004a; Volume 4, SD-D (Books 13 and 23)).

The following analyses and graphs were completed and are available in the referenced Appendix in CAWG 6, Hydrology, 2003 TSR (SCE 2004a; Volume 4, SD-D (Books 13 and 23)), unless noted.

- Hydrographs for all gaged river and stream locations used for existing hydrology are presented in Appendix C, River and Stream Gaging Station Existing Hydrology-Hydrographs. Hydrographs for all diversions (including annual hydrographs for the small diversions), as well as other locations, are presented in Appendix D, Diversion, Lake, and Other Locations Existing Hydrology-Hydrographs.

- Existing hydrology exceedance tables and graphs, and minimum, mean, and maximum flows for river and stream gaging station locations by water year type and for all water years are presented in Appendix E, River and Stream Gaging Station Existing Hydrology-Exceedance Tables and Appendix F, River and Stream Gaging Station Existing Hydrology-Exceedance Graphs. Exceedance tables and graphs for existing hydrology of all diversion and conduit gaged locations by water year type and for all water years are presented in Appendix G, Diversion Lake, and Other Locations Existing Hydrology-Exceedance Tables and Appendix H, Diversion Lake, and Other Locations Existing Hydrology-Exceedance Graphs.

- Estimated unimpaired hydrology exceedance tables, and minimum, mean, and maximum flows for river and stream gaging station locations by water year type and for all water years are presented in Appendix I, River and Stream Gaging Station Unimpaired Hydrology-Exceedance Tables and graphs are presented in Appendix J, River and Stream Gaging Station Unimpaired Hydrology-Exceedance Graphs.

- Comparisons of monthly exceedance values (median, 25%, and 75%) of unimpaired and historical flows for the period of record and by water year type are presented in Appendix O, Monthly Exceedance Unimpaired Versus Historical-Comparison Plots.

- Annual and extreme flows for river and stream gaged locations are presented in Table CAWG 6-9, CAWG 6, Hydrology.

- IHA results in tabular format for stream gaging stations are presented in Appendix L, IHA Tables and Appendix M, IHA Graphs, and as IHA output files with minimal annotation. For each of the stations, these results include the following four types of output tables:

    1. ann – monthly median results for each of the 33 IHA parameters

    2. pct – monthly results for nonparametric percentile statistics

3. rva – results from RVA (Range of Variability Analysis) analysis

4. sco – results for the IHA and hydrologic alteration scorecard

- The results contained in these tables are explained in detail in Appendix K, Information from Indicators of Hydrologic Alteration User's Manual. In addition, the IHA output is explained and interpreted for Bear Creek, as an example, in Section 4.5, Indicators of Hydrologic Alteration.

- The IHA graphs that aid in visualization and interpretation of some of the important results of the IHA tables are presented in Appendix M, IHA Graphs. For each gaging station where IHA analyses were performed, the graphs include:

  - Average monthly flows for May, June, and July (representing typical high-flow months) and for September and October (representing typical low-flow months);

  - Annual 3 and 7-day minimum flows; and

  - Annual number of reversals in flow (the number of times that the hydrograph switched from a rising to a falling condition or vice versa).

- Flood frequency curves, including the regional flood frequency curve, are presented in Section 5.2.1, Flood Frequency Results, CAWG 2, Geomorphology, 2003 TSR (SCE 2004b; Volume 4, SD-D (Books 7 and 21)).

- Hydrographs for the lakes/reservoirs are presented in Appendix D, Diversion, Lake, and Other Locations Existing Hydrology-Hydrographs. Exceedance tables for existing hydrology of lake/reservoir gaged locations are presented in Appendix G, Diversion, Lake, and Other Locations Existing Hydrology-Exceedance Tables.

<u>HydroBasin Flow Routing Model</u>

HydroBasin is the SCE-developed computer program that models flow routing in the BCS, including rivers and streams, reservoirs, diversions, and water conveyances. The model has been accessible to stakeholders since April 2005 and interested stakeholders were trained in its use. Access to the model can be requested from Wayne Allen at Southern California Edison Company.

The HydroBasin model was designed to build, analyze, and compare different user-generated flow scenarios for the BCS. A scenario is a combination of a water year, the existing constraints for the water year type, and a created constraint set that defines the release flows or storage levels for specific locations at specific times. The constraints, including the Mammoth Pool Operating Agreement, Minimum Instream Flows, and Minimum Storage Volumes, are summarized in the HydroBasin Technical Manual, which is provided in Attachment B (Volume 4 (Book 5)). A mass-balancing approach was used to determine the effects of the user-generated flow scenarios on the system. The results of the model were used to determine which constraints are met under a

given user-generated flow scenario, what the approximate overall effects of the scenario are on generation, and whether a more rigorous constraint in one part of the network would cause the failure of any other constraints in the BCS. The HydroBasin Technical Manual also discusses several artifacts of the assumptions and constraints that have been built into the model. Results of the model were used by SCE and the stakeholders to evaluate flows recommended in the Proposed Action and the CDFG Alternative.

5.2.1.5 Impacts of Project Operations

The four Big Creek ALP Projects have only minimal consumptive water use and therefore, continued operations of the Projects will not have an impact on the availability of water for consumptive purposes. SCE has and will continue to operate the Projects consistent with conditions set forth in FERC licenses and downstream water agreements.

The development and operations of the seven BCS Projects have resulted in modification of the timing and magnitude of flows in the bypass and flow augmented streams, particularly in years during which water does not spill over Project diversion dams. The four Big Creek ALP Projects contribute to these changes in hydrology in the Upper San Joaquin River Basin. Detailed information on the hydrologic effects of operation of the Projects is provided in CAWG 6, Hydrology, 2003 TSR (SCE 2004a; Volume 4, SD-D (Books 13 and 23)). Under existing Project operations, minimum instream flows are required at many locations as conditions of the FERC licenses to maintain and protect aquatic resources.

Under the Proposed Action, Channel Riparian Maintenance Flows (CRMF) are proposed for selected reaches (see Sections 5.2.3, Geomorphology and 5.2.6, Riparian Resources), including scheduled releases and establishing time periods when diversions may not be operated to provide releases primarily during wet years in the period of spring runoff. SCE's sediment management prescriptions in Appendix J of the Settlement Agreement (SCE 2007a; Volume 4, SD-H (Book 20)) are designed to minimize effects of operations of the four Big Creek ALP Projects on sediment flow through the watershed. Implementation of these environmental measures will protect and benefit geomorphic, aquatic, riparian and water quality resources by increasing flow magnitudes, specifying timing of flow releases, and managing sediment accumulations.

In addition, under the Proposed Action, increases in Minimum Instream Flow (MIF) releases are proposed for numerous streams (see Section 3.1.7, New Environmental Measures). These higher flow releases during all water year types for the majority of the bypass streams will enhance aquatic, riparian, and water quality resources. Implementation of higher instream flows for the four ALP Projects, combined with recently established or anticipated higher instream flows required for the three other Big Creek Projects, individually and cumulatively will protect and benefit aquatic, riparian and water quality resources, while still providing for hydroelectric generation.

The Proposed Action includes a Flow Monitoring and Reservoir Water Level Measurement Plan (SCE 2007b; Volume 4, SD-G (Book 19)) that identifies measures to

document minimum instream flow conditions in specified bypass reaches and water surface elevations in reservoirs of the four Big Creek ALP Projects. In order to provide and monitor the MIF and CRMF releases in the Proposed Action, SCE will complete infrastructure modifications at 12 Project diversions (see Section 3.1.7.1, Water and Aquatic Resources).

Under the Proposed Action, SCE would decommission four back-country diversions (North and South Slide Creek diversions, Tombstone Diversion, and Crater Creek Diversion) and two domestic water diversions (Snowslide Creek Domestic Diversion and Pitman Creek Domestic Diversion) as identified in the Small Diversions Decommissioning Plan (SCE 2007c; Volume 4, SD-G, (Book 19)). Only the Crater Creek Diversion is currently operational and the five other small diversions have not been operational for at least 20 years. As a result of the small diversion decommissioning, SCE will request cancellation of the water rights associated with the small diversions from the State Water Board. Since five of the small diversions have not been operational for some time and due to the small volume of water diverted at the Crater Creek Diversion, little effect is expected in terms of water used and stored by the Project.

The timing and magnitude of flows leaving the BCS (downstream of Big Creek No. 4) are similar under the Proposed Action and the No Action Alternative. The higher instream flow releases recommended in the Proposed Action would result in only a small change relative to the total volume of water routed through the BCS for generation. The vast majority of water released downstream of the Big Creek No. 4 Project, in non-spill years as well as in non-spill periods of spill years, passes through SCE's Project generation facilities.

Under the Proposed Action, MIF and CRMF releases will increase compared to the No Action Alternative, particularly during wet water years when most CRMF releases will occur. As the amount of water released as CRMF is small, relative to the total amount of water in storage, and the releases are timed to occur during the period of spring run-off when natural inflows into the reservoirs are occurring, minimal changes are expected in total storage in the reservoirs or the timing for reservoir filling.

5.2.1.6 Unavoidable Adverse Impacts

No unavoidable adverse impacts to water use and hydrology are likely to occur under the Proposed Action.

TABLES

Table 5.2.1-1. Flow Monitoring Stations in the Vicinity of the Four Big Creek ALP Projects[1]

Station Name	SCE Station Number	USGS Station Number	Period of Record (mean daily flow)		Comments	Location Type	Type of Gage
			From	To			
Mammoth Pool Project (FERC No. 2085)							
In Service Stations							
Mammoth Pool Powerhouse	166	11235100	10/1/80	09/30/02	-	Powerhouse	AVM
Mammoth Pool Reservoir near Big Creek, CA	156	11234700	10/17/59	09/30/02	-	Lake/Reservoir	Float
San Joaquin River above Shakeflat Creek near Big Creek, CA	157	11234760	10/01/59	09/30/02	53-59 HC[2]	River/Stream	Bubbler
Out Service Stations							
Rock Creek	144	-	10/1/1991	05/05/96	OOS[3]	River/Stream	-
Ross Creek	143	-	10/1/1991	07/25/96	OOS[3]	River/Stream	-
Big Creek Nos. 1 and 2 Project (FERC No. 2175)							
In Service Stations							
Big Creek below Huntington Lake, CA	104	11237000	06/09/25	09/30/02	1901-24 HC[2], 71-85 missing	River/Stream	Float
Huntington Lake near Big Creek, CA	149	11236000	10/01/26	09/30/00	-	Lake/Reservoir	Float
Ward Tunnel Discharge at Huntington Lake, CA	136/170[4]	11235500	10/01/27	09/30/02	28-80 HC[2]	Conduit	Float
Powerhouse 1	159	11238100	10/1/80	09/30/02	-	Powerhouse	AVM
Powerhouse 2	160	11238380	10/1/80	09/30/02	-	Powerhouse	AVM
Balsam Creek Diversion	101	-	-	-	58,61,66 88-90 HC[2], No electronic data available	Diversion	Float
Out of Service Station							
Ely Creek at Diversion	112	-	1992	2002	58,61,66, 88-90, HC[2]	Diversion	Float
Huntington-Shaver Conduit (Tunnel 7) Intake at Huntington Lake, CA	115	11236080	10/01/74	09/30/83	68-74 HC[2]	Conduit	AVM
Huntington-Shaver Conduit (Tunnel 7) Outlet near Shaver Lake, CA	116	11239000	10/19/28	07/24/85	-	Conduit	AVM

Table 5.2-1-1. Flow Monitoring Stations in the Vicinity of the Four Big Creek ALP Projects (continued)[1].

Station Name	SCE Station Number	USGS Station Number	Period of Record (mean daily flow)		Comments	Location Type	Type of Gage
			From	To			
Big Creek Nos. 2A, 8 and Eastwood Project (FERC No. 67)							
In Service Stations							
Bear Creek below Diversion – Spill and Release	175S	11230530	10/01/70	09/30/02	71-73, 78-79 HC[2]	River/Stream	175S, Bubbler
	175R						175R, AVM
Bear Creek Conduit near Lake Thomas Edison, CA	102	11230520	10/01/70	09/30/02	-	Diversion	Float
Bear Creek near Lake Thomas A. Edison, CA	103	11230500	10/01/21	09/30/02	10-21 HC[2]	River/Stream	Float
Big Creek near Mouth near Big Creek, CA	105	11238500	05/10/23	09/30/02	-	River/Stream	Float
Bolsillo Creek below Diversion Dam near Big Creek, CA	117	11230670	10/01/85	06/29/02	99, 01-02 E[5], 99-02 missing	River/Stream	Float
Camp 62 Creek below Diversion Dam	180	11230600	10/01/83	07/15/02	79-80 HC[2], 97-00 missing	River/Stream	Float
Chinquapin Creek below Diversion Dam (Release)	181	11230560	05/12/86	06/26/02	79-80 HC[2], 97-00 missing	River/Stream	Float
Eastwood Powerhouse	187	11238250	10/1/87	09/30/02		Powerhouse	AVM
Florence Lake near Big Creek, CA	148/182	11229600	11/02/25	09/30/02	148 is greater than 1000 af, 182 is less than 1000 af	Lake/Reservoir	Float/jBubbler
Hooper Creek at Diversion Dam (Spill And Release)	114	11230200	10/01/86	09/30/02	67, 79-82, 84 HC[2]	River/Stream	Bubbler
MF Balsam Creek below Balsam M Fb near Big Creek, CA	100	11238270	01/24/89	09/30/02	OOS[3]	River/Stream	Bubbler
Mono Creek below Diversion, Mono Creek below Diversion (Release)	176S	11231600	10/01/70	09/30/02	72-77, 79, 81-82 missing	River/Stream	176S, Float
	176A						176A, AVM
Mono Creek Conduit at Diversion	118	11231550	10/01/70	09/30/02	28-41, 49-69, 71-72, 86-88 HC[2]	Diversion	Float
NF Stevenson Creek at Perimeter Rd near Big Creek, CA	99	11239300	01/25/89	09/30/02	-	River/Stream	Bubbler

Table 5.2-1-1. Flow Monitoring Stations in the Vicinity of the Four Big Creek ALP Projects (continued)[1].

Station Name	SCE Station Number	USGS Station Number	Period of Record (mean daily flow)		Comments	Location Type	Type of Gage
			From	To			
Big Creek Nos. 2A, 8 and Eastwood Project (FERC No. 67) (continued)							
In Service Stations (continued)							
Pitman Creek near Tamarack Mountain, CA (minimum release prior to 10/01/02), Pitman Creek (minimum release after 10/01/02)	121	11237700	10/01/74	09/30/02	28-41 HC[2]	River/Stream	121, Float
	121A				E[5] records begin after 10/01/02		121A, AVM
Pitman Creek below Tamarack Creek, CA	120	11237500	12/01/27	09/30/02	-	River/Stream	Float
SF San Joaquin River near Florence Lake, CA	128	11230000	10/01/21	09/30/84	92-93, 96-02 E[5], 82-83, 94-95 missing	River/Stream	Float
SF San Joaquin River below Hooper Creek	129	11230215	10/01/75	09/30/02	53-74 HC[2]	River/Stream	Float
Stevenson Creek at Shaver Lake, CA	131	11241500	10/01/16	09/30/02	17-28 E[5], 68-78 HC[2]	River/Stream	Float
Ward Tunnel at Intake at Florence Lake, CA	133A/133C	11229500	05/01/25	09/30/02	-	Conduit	Float
Powerhouse 2A	161	11238400	10/1/80	09/30/02	-	Powerhouse	AVM
Powerhouse 8	165	11238550	10/1/80	09/30/02	-	Powerhouse	AVM
Shaver Lake near Big Creek, CA	150	11239500	01/11/27	09/30/02	-	Lake/Reservoir	Float
Pitman Creek Shaft Below Tamarack Creek near Big Creek, CA	179	11237600	10/01/70	09/30/02	72-73, 84-85 missing, 68-70, 72-73 HC[2]	Diversion	Combined Station
Camp 62 Creek at Diversion Dam (Diverted Water)	109	-	1992	2002	52-81, 84, 87-90 HC[2]	Diversion	Float
Hooper Creek Conduit at Diversion Dam	113	-	1992	2002	46-84, 87-90, HC[2]	Diversion	Float
Bolsillo Creek at Intake (Diverted Water)	117D/117	-	1992	2002	56-85 HC[2]	Diversion	Float

Table 5.2-1-1. Flow Monitoring Stations in the Vicinity of the Four Big Creek ALP Projects (continued)[1].

Station Name	SCE Station Number	USGS Station Number	Period of Record (mean daily flow)		Comments	Location Type	Type of Gage
			From	To			
Big Creek Nos. 2A, 8 and Eastwood Project (FERC No. 67) (continued)							
In Service Stations (continued)							
Chinquapin Creek at Intake (Diverted Water)	110	-	1992	2002	52-78, 80 HC[2]	Diversion	Float
Crater Creek Diversion	111	-	1992	2002	57-78, 80-83, 87-90 HC[2]	Diversion	Float
Out of Service Stations							
Bolsillo Creek above Diversion Dam near Big Creek, CA	106	11230650	10/01/85	09/30/95	49-85 HC[2], 87-92, 94, 02 missing	River/Stream	Float
North Slide Creek at Diversion	126	-	-	-	53-59, 65-77, 80 HC[2] No electronic data available OOS[3]	Diversion	-
South Slide Creek at Diversion	127	-	-	-	53-59, 65-73, 80 HC[2] No electronic data available OOS[3]	Diversion	-
SF San Joaquin River below Mono Creek	130	-	-	-	53-59 HC[2] No electronic data available OOS[3]	River/Stream	-
Tombstone Creek at Diversion	132	-	-	-	49-59, 65-78 HC[2] No electronic data available OOS[3]	Diversion	-

Table 5.2-1-1. Flow Monitoring Stations in the Vicinity of the Four Big Creek ALP Projects (continued)[1].

Station Name	SCE Station Number	USGS Station Number	Period of Record (mean daily flow)		Comments	Location Type	Type of Gage
			From	To			
Big Creek Nos. 2A, 8 and Eastwood Project (FERC No. 67) (continued)							
In Service Stations (continued)							
North Slide Release	182	-	-	-	79-80 HC[2] No electronic data available OOS[3]	River/Stream	-
South Slide Release	183	-	-	-	79-80 HC[2] No electronic data available OOS[3]	River/Stream	-
Big Creek No. 3 Project (FERC Project No. 120)							
In Service Stations							
San Joaquin River below Dam 6 (above Stevenson Creek, spill and release), San Joaquin River below Dam 6 (above Stevenson Creek, spill and release)	124S	11238600	10/01/73	09/30/02	51-54 HC[2], 87-92 missing	River/Stream	124S, Float
	124R	-	10/01/94	-			124R, AVM
Out of Service Stations							
Dam 6 Spill (old station)	146	-	-	-	24-81 HC[2] No electronic data available OOS[3]	River/Stream	-
San Joaquin River above Big Creek, CA	122	11235000	10/01/12	09/30/62	16-21 missing OOS[3]	River/Stream	-

[1]USGS: U.S. Geological Survey station identification number. From and To: starting and ending dates for electronic data when the analyses for the CAWG 6, Hydrology report were completed.

[2]HC: hard copy data only

[3]OOS: Out Of Service

[4]Two SCE gages at the same location and the cumulative flow are recorded under one USGS Station Number.

[5]E: electronic data