

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of Water Quality Certification for the

PLACER COUNTY WATER AGENCY

MIDDLE FORK AMERICAN RIVER HYDROELECTRIC PROJECT

FEDERAL ENERGY REGULATORY COMMISSION PROJECT NO. 2079

Sources: Middle Fork American River, Rubicon River, Duncan Creek, North
Fork Long Canyon Creek, South Fork Long Canyon Creek

Counties: Placer and El Dorado

WATER QUALITY CERTIFICATION FOR FEDERAL PERMIT OR LICENSE

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1.0 Project Description

The Middle Fork American River Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC) Project No. 2079, is located in the Middle Fork American River watershed, most of which is located in Placer County, California. A small component (a portion of Ralston Afterbay Dam) is located in El Dorado County, California. The FERC Project boundary encompasses 4,554 acres of land including: 1,883 acres in Tahoe National Forest and 1,385 acres in El Dorado National Forest, both of which are administered by the United States Department of Agriculture-Forest Service (USFS). The remainder of the Project is located on Placer County Water Agency (PCWA)-owned land or private land. An overview of the Project is presented in Figure 1, and an elevation profile is provided in Figure 2.

The five powerhouses associated with the Project are: (1) French Meadows Powerhouse; (2) Hell Hole Powerhouse; (3) Middle Fork Powerhouse; (4) Ralston Powerhouse; and (5) Oxbow Powerhouse. The Project's two storage reservoirs, French Meadows Reservoir and Hell Hole Reservoir, have a combined storage capacity of 342,583 acre-feet (ac-ft). Electricity generated by the Project is distributed by the Pacific Gas & Electric Company (PG&E) through its transmission system; however, the PG&E transmission interconnections and transmission system are not part of the Project. General information about the Project reservoirs, diversion pools, and powerhouses is provided in Table A.

Table A. General Information on Project Reservoirs, Diversion Pools, and Powerhouses

Reservoir/Powerhouse Name	Maximum Pool Elevation (feet msl)*	Gross Storage Capacity (ac-ft)	Maximum Pool Surface Area (acres)	Powerhouse Installed Capacity (MW)
Duncan Creek Diversion Pool	5,265	20	2	--
French Meadows Reservoir and Powerhouse	5,244.5	134,993	1,408	15.3
Hell Hole Reservoir and Powerhouse	4,630	207,590	1,253	0.73
North Fork Long Canyon Creek Diversion Pool	4,716	< 1	< 2	--
South Fork Long Canyon Creek Diversion Pool	4,640	< 1	< 2	--
Middle Fork Interbay and Powerhouse	2,529	175	7	122.4
Ralston Afterbay and Powerhouse	1,179	2,782	83	79.2
Oxbow Powerhouse	--	--	--	6.1

*Feet above mean sea level

Generally, water moves through the Project from Duncan Creek Diversion, through the Duncan Creek—Middle Fork Tunnel into French Meadows Reservoir. Water in French Meadows Reservoir can be diverted via the French Meadows—Hell Hole Tunnel into the French Meadows Powerhouse, which releases water into Hell Hole Reservoir. Water in Hell Hole Reservoir can either be diverted into the Hell Hole Dam Powerhouse and then released into the Rubicon River (a tributary to the Middle Fork American River), or water can be diverted into the Hell Hole—Middle Fork Tunnel. Water captured at the North and South Fork Long Canyon Creek Diversion dams can be diverted into the Hell Hole—Middle Fork Tunnel via the North and South Fork Long Canyon Creek Diversion pipes. Water diverted into the Hell Hole—Middle Fork Tunnel is transported to the Middle Fork Powerhouse on the Middle Fork American River. Water released

from the Middle Fork Powerhouse is captured in Middle Fork Interbay. Water captured at Middle Fork Interbay Dam can be diverted into the Middle Fork—Ralston Tunnel and transported to Ralston Powerhouse. Water released from Ralston Powerhouse is captured in Ralston Afterbay. Water captured by Ralston Afterbay Dam can be diverted to Oxbow Powerhouse via the Ralston—Oxbow Tunnel. Water is released from Oxbow Powerhouse, the most downstream Project powerhouse, into the Middle Fork American River, which flows for approximately 28 miles until it is captured in Folsom Reservoir (owned and operated by the U.S. Bureau of Reclamation, and is not part of the Project). Below is a summary of the Project powerhouses and associated facilities, as well as a description of PCWA proposed modifications to Project facilities.

1.1 French Meadows Powerhouse and Associated Facilities

The main facilities associated with the French Meadow Powerhouse are described below, generally in order of how water routes through the Project. These facilities include:

- *Duncan Creek Diversion Dam* is a 32-foot-high, 165-foot-long dam that impounds the waters of Duncan Creek to create the approximately 20 ac-ft Duncan Creek Diversion Pool.
- *Duncan Creek-Middle Fork Tunnel* is a 1.5-mile-long tunnel that diverts water from Duncan Creek Diversion Pool to French Meadows Reservoir. The existing Duncan Creek Diversion intake is located at the entrance to the tunnel, which is 150 feet upstream of the diversion dam.
- *French Meadows Dam (also known as the L.L. Anderson Dam)* is a 231-foot-high, 2,700-foot-long dam that impounds water from the Middle Fork American River and water diverted from Duncan Creek to create the approximately 134,993 ac-ft French Meadows Reservoir.
- *French Meadows-Hell Hole Tunnel* is a 2.6-mile-long tunnel that delivers water from French Meadows Reservoir to the 691-foot-long penstock for the French Meadows Powerhouse.
- *French Meadows Powerhouse and Switchyard* are located on the northern shore of Hell Hole Reservoir. French Meadows Powerhouse contains a single Francis-type turbine and electrical generator with an installed generating capacity of 15.3 MW.
- *Hell Hole Substation* is located near the French Meadows Powerhouse and allows PCWA to receive power from PG&E's 60-kV Transmission System to run ancillary equipment and support facilities when the French Meadows and Hell Hole powerhouses are not in operation.

1.1.1 Proposed Modifications at Duncan Creek Diversion

PCWA proposes to modify the Duncan Creek Diversion facility in order to: (a) improve system reliability; (b) increase natural sediment delivery and transport of bedload and fine material downstream of the diversion; (c) enhance aquatic and riparian habitat downstream of the diversion by re-establishing sediment connectivity; and (d) reduce operation and maintenance costs by reducing the need for manual debris removal and periodic sediment removal for the diversion.

Proposed modifications include:

- (i) Installation of a new self-cleaning, wedge-wire screen intake upstream of the existing ogee spillway¹ section of the diversion weir that will allow water to be diverted into the Duncan Creek Diversion intake while allowing mobilized sediments to continue downstream;
- (ii) Construction of a new concrete collection channel upstream of the existing diversion dam ogee spillway, and a new concrete overflow weir on the upstream side of the concrete collection channel;
- (iii) Construction of a new buried concrete conduit between the intake and the existing tunnel portal;
- (iv) Raising the dam abutments and existing intake structure above flood levels (3.5 feet);
- (v) Covering the existing trash rack on the existing tunnel intake with stop logs to block direct flow into the tunnel;
- (vi) Installation of a remote-controllable slide gate to control tunnel inflow;
- (vii) Modification of the existing low-level dam outlet so it can continue to be used for dewatering the impoundment and the intake collection channel;
- (viii) Modification of the existing minimum instream flow outlet so that it can maintain a bypass flow for water flowing into the intake;
- (ix) Installation of diversion flow measuring equipment;
- (x) Implementation of security improvements;
- (xi) Installation of new communication uplinks;
- (xii) Installation of a self-contained solar/thermal electric power supply system; and
- (xiii) Improvement of access to the east abutment of the dam by extending the existing Duncan Creek Diversion Dam Intake Road to the south abutment of Duncan Creek Dam.

Final design specifications for the Duncan Creek Diversion facility modifications will be completed after issuance of the new Project license.

1.2 Hell Hole Powerhouse and Associated Facilities

The main facilities associated with the Hell Hole Powerhouse are described below, generally in order of how water routes through the Project. These facilities include:

- *Hell Hole Dam* is a 410-foot-high, 1,570-foot-long dam that impounds the waters of the Rubicon River, and waters diverted by the 2.6-mile-long French Meadows-Hell Hole Tunnel, to create the 207,590 ac-ft Hell Hole Reservoir.
- *Hell Hole Dam Penstock* is a 20-inch diameter pipe that delivers water to Hell Hole Powerhouse.
- *Hell Hole Powerhouse* is located at the outlet works of Hell Hole Dam and contains a single Francis-type turbine with an installed generating capacity of 0.73 MW.

¹ Refers to an overflow type of spillway that contains a controlled weir and is ogee-shaped (S-shaped) in profile.

Electricity generated at the Hell Hole Powerhouse is transmitted on a Project 12.47 kilovolt (kV) powerline to the French Meadows Powerhouse via the Hell Hole Substation. The electricity is also used to power nearby Project facilities.

1.2.1 Proposed Modifications at Hell Hole Reservoir

As part of the Project, PCWA proposes a Hell Hole Reservoir Seasonal Storage Increase Improvement Project (HHR Storage Project). The purpose of the HHR Storage Project is to seasonally increase the storage capacity of Hell Hole Reservoir by approximately 7,600 ac-ft and use a portion of the existing flood pool above the present normal maximum operating water level to store additional water during the spring and summer. The increase in storage would be achieved by modifying the existing Hell Hole Dam spillway to allow for installation of 6-foot-high pneumatically-operated steel spillway crest gates (Hell Hole Dam Spillway Crest Gates). Operation of the Hell Hole Dam Spillway Crest Gates would seasonally increase the reservoir's inundation surface area, within the existing flood pool, by approximately 36 acres.

The HHR Storage Project would allow for the capture and storage of additional water in Hell Hole Reservoir, which could be used to provide enhanced environmental and recreational benefit from May through July, by allowing PCWA to use the additional storage to ramp down spill flows. In all but the driest years, the HHR Storage Project would also allow PCWA to shift the timing of some power generation from the spring runoff period to the summer, when energy demand peaks.

The HHR Storage Project would require construction of the following three new Project facilities (in addition to construction of the Hell Hole Dam Spillway Crest Gates):

- (i) Control building for the Hell Hole Dam Spillway Crest Gates: A 20-foot by 20-foot concrete control building on the east abutment of Hell Hole Dam, between the dam and spillway, to provide power (propane powered emergency electric generator with an outdoor propane tank) to operate the Hell Hole Dam Spillway Crest Gates.
- (ii) Powerline for the control building for the Hell Hole Dam Spillway Crest Gates: A short spur line would be constructed from the control building to an existing 12-kV distribution line² that currently serves Hell Hole Powerhouse, to provide power for operation of the Hell Hole Dam Spillway Crest Gate. The powerline will run in a conduit attached to the existing bridge over the Hell Hole Dam Spillway and then underground for approximately 60 feet to the new control building.
- (iii) Access road for the Hell Hole Dam Spillway Crest Gates: A road will be constructed to access the facilities associated with the new Hell Hole Dam Spillway Crest Gates.

1.3 Middle Fork Powerhouse and Associated Facilities

The main facilities associated with the Middle Fork Powerhouse are described below, generally in order of how water routes through the Project. These facilities include:

- *North Fork Long Canyon Creek Diversion Dam* is a 10-foot-high, 120-foot-long dam that impounds the waters of North Fork Long Canyon Creek to create the less than one ac-ft North Fork Long Canyon Creek Diversion Pool. Waters from the diversion

² The distribution line goes from French Meadows Powerhouse and Switchyard to the Hell Hole Powerhouse and is used to provide power to various facilities including the Middle Fork Tunnel Gatehouse, dormitory facility, operator cottages, and Hell Hole Powerhouse communication line/powerline.

pool are then diverted into either Hell Hole Reservoir or the Hell Hole – Middle Fork Tunnel.

- *South Fork Long Canyon Creek Diversion Dam* is a 27-foot-high, 145-foot-long dam that impounds the waters of South Fork Long Canyon Creek to create the less than one ac-ft South Fork Long Canyon Creek Diversion Pool. Waters from the diversion pool are then diverted into either Hell Hole Reservoir or the Hell Hole – Middle Fork Tunnel.
- *Hell Hole – Middle Fork Tunnel and Penstock* combined form an 11.1-mile-long tunnel that delivers water to the Middle Fork Powerhouse. The Hell Hole – Middle Fork Tunnel also has intersecting drop inlets (vertical shafts) that connect to the North Fork and South Fork Long Canyon Creek diversions.
- *Middle Fork Powerhouse (also known as the L.J. Stephenson Powerhouse)* contains two Pelton-type waterwheels, each connected to a 61.2-MW electrical generator with an installed generating capacity of 122.4 MW.
- *Middle Fork Interbay Dam* is a 70.5-foot-high, 233-foot-long dam that impounds the waters of the Middle Fork American River and water diverted from the Hell Hole – Middle Fork Tunnel through the Middle Fork Powerhouse outlet works. The Middle Fork Interbay Dam creates the 175 ac-ft Middle Fork Interbay.
- *Hell Hole – Middle Fork Tunnel Surge Shaft and Tank* are located approximately 1,800 feet from the Middle Fork Butterfly Valve House.
- *Upper and Lower Middle Fork Switchyards* are adjacent to the Middle Fork Powerhouse and provide interconnection to PG&E's 60-kV and 230-kV transmission system.

1.3.1 Proposed Modifications at North Fork and South Fork Long Canyon Creek Diversion Facilities

Similar to the modifications proposed for the Duncan Creek Diversion facilities, PCWA proposes to modify the North Fork Long Canyon Creek and South Fork Long Canyon Creek diversion facilities to: (a) improve system reliability; (b) increase natural sediment delivery and transport of bedload and fine material downstream of the diversions; (c) enhance aquatic and riparian habitat downstream of the diversion by re-establishing sediment transfer from above to below the North Fork and South Fork Long Canyon Creek Diversion dams; and (d) reduce operation and maintenance costs by reducing the need for manual debris and sediment removal for each diversion.

Proposed modifications include:

- (i) Installation of new self-cleaning, wedge-wire screen intakes upstream of the existing ogee spillway section of the diversion weirs at North Fork and South Fork Long Canyon Creek diversions that will allow water to be diverted into the diversions intakes while allowing mobilized sediments to continue downstream;
- (ii) Construction of a new concrete chamber to connect the intake channels with the existing intakes, and the existing buried discharge pipelines at the North Fork Long Canyon Creek and South Fork Long Canyon Creek diversions;
- (iii) Raising the height of the weir abutments to provide adequate freeboard during floods (2.7 feet at North Fork Long Canyon Creek Diversion and 3.5 feet at South Fork Long Canyon Creek Diversion);
- (iv) Installation of a remote-controlled slide gate to control inflow to the tunnel;

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- (v) Modification of the existing low-level outlets so they can be used for dewatering the impoundments and for maintaining minimum instream flows downstream of the weirs;
- (vi) Decommission the existing instream flow release outlet at the center of the existing weir at North Fork Long Canyon Creek Diversion;
- (vii) Installation of flow measuring equipment (new gages) downstream of the diversions;
- (viii) Implementation of security improvements;
- (ix) Installation of new communication uplinks; and
- (x) Installation of a self-contained solar/thermal electric power supply system.

Final design specifications for the North Fork and South Fork Long Canyon Creek diversion facilities modifications will be completed after issuance of the new Project license.

1.4 Ralston Powerhouse and Associated Facilities

The main facilities associated with the Ralston Powerhouse are described below, generally in order of how water routes through the Project. These facilities include:

- *Middle Fork – Ralston Tunnel Intake and Gatehouse* delivers water from Middle Fork Interbay to the Middle Fork – Ralston Tunnel;
- *Middle Fork – Ralston Tunnel* is a 6.7-mile-long tunnel that delivers water to the Ralston Powerhouse Butterfly Valve House and Penstock;
- *Ralston Powerhouse Penstock* is a 1,670-foot-long pipe that delivers water to the Middle Fork – Ralston Tunnel Surge Shaft and Tank, which then delivers water to the Ralston Powerhouse;
- *Ralston Powerhouse* contains a single Pelton-type waterwheel and generator with an installed generating capacity of 79.2 MW;
- *Ralston Afterbay Dam* is an 89-foot-high, 560-foot-long dam that impounds the waters of the Middle Fork American River, the Rubicon River, and water diverted from the Middle Fork – Ralston Tunnel through the Ralston Powerhouse Outlet Works. Ralston Afterbay Dam creates the 2,782 ac-ft Ralston Afterbay;
- *The switchyard adjacent to the Ralston Powerhouse* provides interconnection to PG&E's 60-kV and 230-kV transmission system; and
- *Brushy Canyon Adit* is a construction adit located at the mid-point of the Middle Fork – Ralston Tunnel. The entrance to the adit is currently covered by a landslide and is not accessible.

1.5 Oxbow Powerhouse and Associated Facilities

The main facilities associated with the Oxbow Powerhouse are described below, generally in order of how water routes through the Project. These facilities include:

- *Ralston – Oxbow Tunnel Intake* delivers water from Ralston Afterbay to the Ralston – Oxbow Tunnel;
- *Ralston – Oxbow Tunnel* is a 0.08-mile-long tunnel that delivers water to the Oxbow Powerhouse penstock;

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- *Oxbow Powerhouse Penstock* is a 5-foot-long pipeline that delivers water to the Oxbow Powerhouse;
- *Oxbow Powerhouse* contains a single Francis-type turbine and electrical generator with an installed generating capacity of 6.1 MW; and
- *The switchyard adjacent to the Oxbow Powerhouse* provides interconnection to PG&E's 60-kV transmission system.

1.6 State-issued Water Rights

PCWA's water rights and water supply agreements currently allow for the consumptive use of up to 120,000 ac-ft of water per year. PCWA currently has six appropriative water rights permits and one license issued by the State Water Resources Control Board (State Water Board). The water rights permits allow for the diversion and storage of water for consumptive use and non-consumptive power production. Key provisions for each water right are summarized in Table B. In addition to state-issued water rights, PCWA must comply with minimum reservoir pool requirements (Table C) and minimum instream flow requirements (Table D) outlined in the current FERC Project license, which was issued in 1963.

PCWA's water right permit nos. 13856 and 13858 are currently under review by the State Water Board. PCWA filed petitions for extension of time to fully develop use under the consumptive water rights for these permits with the State Water Board on November 15, 2007. PCWA is currently undertaking an environmental analysis for the petition for extension of time. Per State Water Board direction, this environmental analysis will be completed following issuance of the new FERC license and State Water Board's water quality certification (certification) associated with the Project relicensing.

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Table B. Summary of PCWA Project-related Water Rights (table continued next page)

Application No./ Permit No./ License No.	Priority Date & Face Amount (ac-ft)	Sources	Purpose of Use	Diversion & Storage in cubic feet per second (cfs) and ac-ft	Points of Re-diversion	Places of Use (Power-houses)
A18084/ 013855/ No License	4/7/1958 3,101,471.4 ac-ft/yr	<ul style="list-style-type: none"> • Duncan Creek • Middle Fork American River • Rubicon River • North Fork Long Canyon Creek • South Fork Long Canyon Creek 	<ul style="list-style-type: none"> • Power • Recreation 	<p>(a) Duncan Creek: 150 cfs direct diversion¹ at Duncan Creek Diversion Dam; 400 cfs diversion rate and 25,000 ac-ft storage² to French Meadows Reservoir</p> <p>(b) Middle Fork American River: 290 cfs direct diversion¹ and 95,000 ac-ft storage² at French Meadows Reservoir</p> <p>(c) Rubicon River: 675 cfs direct diversion¹ and 129,000 ac-ft storage² at Hell Hole Reservoir</p> <p>(d) South Fork Long Canyon Creek: 400 cfs direct diversion¹ to either Hell Hole Reservoir or Middle Fork powerhouses</p> <p>(e) North Fork Long Canyon Creek: 100 cfs direct diversion¹ to either Hell Hole Reservoir or Middle Fork powerhouse</p> <p>(f) Middle Fork American River: 1,000 cfs direct diversion¹ at Ralston Interbay and 1,225 cfs direct diversion¹ at Ralston Afterbay</p>	<ul style="list-style-type: none"> • French Meadows • Hell Hole Reservoir • Ralston Interbay • Ralston Afterbay 	<ul style="list-style-type: none"> • French Meadows • Middle Fork • Ralston • Oxbow
A018085/ 013856/ No License	4/7/1958 839,438.4 ac-ft/yr	<ul style="list-style-type: none"> • Duncan Creek • Middle Fork American River • North Fork American River • Rubicon River 	<ul style="list-style-type: none"> • Irrigation and Domestic • Recreation • Municipal and Industrial 	<p>(a) North Fork American River: 1,225 cfs direct diversion²</p> <p>(b) Duncan Creek: 25,000 ac-ft storage at maximum 400 cfs diversion rate² to French Meadows Reservoir</p> <p>(c) Middle Fork American River: 95,000 ac-ft storage² at French Meadows Reservoir</p> <p>(d) Rubicon River: 129,000 ac-ft storage² at Hell Hole Reservoir</p>	<ul style="list-style-type: none"> • French Meadows • Hell Hole Reservoir • Ralston Interbay • Ralston Afterbay • Auburn Diversion • Folsom Reservoir 	<ul style="list-style-type: none"> • Power • Not an Authorized Use of Permit
A018086/ 013857/ No License	4/8/1958 804,457.1 ac-ft/yr	<ul style="list-style-type: none"> • Duncan Creek • Middle Fork American River • Rubicon River • North Fork Long Canyon Creek • South Fork Long Canyon Creek • Creek 	<ul style="list-style-type: none"> • Power • Recreation 	<p>(a) Duncan Creek: 50 cfs direct diversion¹</p> <p>(b) Middle Fork American River: 110 cfs direct diversion¹ and 10,000 ac-ft storage² at French Meadows Reservoir</p> <p>(c) Rubicon River: 155 cfs direct diversion¹ and 36,000 ac-ft storage² at Hell Hole Reservoir</p> <p>(d) South Fork Long Canyon Creek: 13,000 ac-ft storage at maximum 830 cfs diversion rate² to Hell Hole Reservoir</p> <p>(e) North Fork Long Canyon Creek: 7,000 ac-ft storage at maximum 830 cfs diversion rate² to Hell Hole Reservoir</p> <p>(f) Middle Fork American River: 705 cfs direct diversion¹ at Ralston Afterbay</p>	<ul style="list-style-type: none"> • French Meadow • Hell Hole Reservoir • Ralston Interbay • Ralston Afterbay 	<ul style="list-style-type: none"> • French Meadows • Middle Fork • Ralston • Oxbow

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Application No./ Permit No./ License No.	Priority Date & Face Amount (ac-ft)	Sources	Purpose of Use	Diversion & Storage in cubic feet per second (cfs) and ac-ft	Points of Re- diversion	Places of Use (Power-houses)
A18087/ 013858/ No License	4/8/1958 451,592.4 ac-ft/yr	<ul style="list-style-type: none"> Middle Fork American River North Fork American River Rubicon River North Fork Long Canyon Creek South Fork Long Canyon Creek 	<ul style="list-style-type: none"> Irrigation and Domestic Recreation Municipal and Industrial 	<p>(a) North Fork American River: 800 cfs direct diversion²</p> <p>(b) Middle Fork American River: 10,000 ac-ft storage² at French Meadows Reservoir</p> <p>(c) Rubicon River: 36,000 ac-ft storage² at Hell Hole Reservoir</p> <p>(d) South Fork Long Canyon Creek: 13,000 ac-ft storage at maximum 830 cfs diversion rate² to Hell Hole Reservoir</p> <p>(e) North Fork Long Canyon Creek: 7,000 ac-ft storage at maximum 830 cfs diversion rate² to Hell Hole Reservoir</p>	<ul style="list-style-type: none"> French Meadows Hell Hole Reservoir Ralston Interbay Ralston Afterbay Auburn Diversion Folsom Reservoir 	<ul style="list-style-type: none"> Power Not an Authorized Use of Permit
A26637/ 018380/ 12644	5/17/1990 11,464.6 ac-ft/yr	<ul style="list-style-type: none"> Rubicon River 	<ul style="list-style-type: none"> Power 	<p>(a) Hell Hole Dam: 20 cfs direct diversion May 16 – Dec 14</p> <p>(b) Hell Hole Dam: 10 cfs direct diversion Dec 15 – May 15</p> <p>(c) Maximum amount diverted under this license shall not exceed 11,500 ac-ft per year</p>	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Hell Hole
A29721/ 20754/ No License	8/10/1994 17,494.5 ac-ft/yr	<ul style="list-style-type: none"> Rubicon River 	<ul style="list-style-type: none"> Power 	<p>(a) Rubicon River: 20 cfs direct diversion from May 16 – Dec 14</p> <p>(b) Rubicon River: 30 cfs direct diversion from Dec 15 – May 15</p> <p>(c) Maximum amount diverted under this permit for all uses shall not exceed 17,640 ac-ft per year</p>	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Hell Hole

¹ Diversion permitted year-round.

² Diversion for off-stream storage permitted from about November 1 through July 1.

Table C. Minimum Pool under 1963 FERC License

Facility	1963 License Requirement	
	Forecast / Folsom Reservoir ¹	Minimum Pool (ac-ft) June-Sept Oct-May
French Meadows Reservoir	> 2,000,000 ac-ft	60,000 50,000
	1,200,000 – 2,000,000 ac-ft	60,000 25,000
	< 1,200,000 ac-ft	28,000 8,700
	The spillway gates must remain open from November 15 to April 1	
Hell Hole Reservoir	Forecast / Folsom Reservoir ¹	Minimum Pool (ac-ft) June-Sept Oct-May
	> 2,000,000 ac-ft	70,000 50,000
	1,200,000 – 2,000,000 ac-ft	70,000 25,000
	< 1,200,000 ac-ft	26,000 5,500
Duncan Creek Diversion Pool	Requirement must be met at all times	Maintain water surface elevation at 5,259-ft. elevation.

¹ Forecast/Folsom Reservoir = California Department of Water Resources current year forecast of unimpeded runoff of the American River to Folsom Reservoir.

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Table D. Minimum Instream Flow Requirements under 1963 FERC License

Facility	1963 License Requirements	
Duncan Creek Diversion Dam	<u>Forecast / Folsom Reservoir¹</u> > 1,000,000 ac-ft < 1,000,000 ac-ft	<u>Release (cfs)</u> Lesser of 8 or natural flow Lesser of 4 or natural flow
French Meadows Dam	Beginning of Operations to March 17, 1981:	
	<u>Forecast / Folsom Reservoir¹</u> > 1,000,000 ac-ft < 1,000,000 ac-ft	<u>Release (cfs)</u> 8 at all times (except that total releases shall not exceed 5,800 ac-ft) 4 at all times (except that total releases shall not exceed 2,900 ac-ft)
	March 18, 1981 and thereafter: No limitation of total release.	
Hell Hole Dam	Beginning of operations to March 17, 1981:	
	<u>Forecast / Folsom Reservoir¹</u> > 1,000,000 ac-ft < 1,000,000 ac-ft	<u>Release (cfs)</u> June 1 – July 25: 20 July 26 – Aug 5: 15 Aug 6 – Oct 31: 10 Nov 1 – Jan 31: 14 Feb 1 – May 31: 20 Except that total releases shall not exceed 11,000 ac-ft June 1 – Dec 1: 8 Jan 1 – March 25: 6 March 26 – May 31: 8 Except that total releases shall not exceed 5,500 ac-ft
	March 18, 1981 and thereafter:	
	<u>Forecast / Folsom Reservoir¹</u> > 1,000,000 ac-ft < 1,000,000 ac-ft	<u>Release (cfs)</u> May 15 – Dec 14: 20 Dec 15 – May 14: 10 No limitation of total release June 1 – Oct 14: 10 Oct 15 – May 31: 6 No limitation of total release
South Fork Long Canyon Creek Diversion Dam	<u>Forecast / Folsom Reservoir¹</u> > 1,000,000 ac-ft < 1,000,000 ac-ft	<u>Release (cfs)</u> Lesser of 5 or natural flow Lesser of 2.5 or natural flow
North Fork Long Canyon Creek Diversion Dam	Releases to maintain streamflow of 2 cfs or the natural flow, whichever is less, shall be made at all times.	
Middle Fork Interbay	<u>Forecast / Folsom Reservoir¹</u> > 1,000,000 ac-ft < 1,000,000 ac-ft	<u>Release (cfs)</u> Lesser of 23 or natural flow Lesser of 12 or natural flow
Oxbow Powerhouse	Releases at Oxbow Powerhouse shall be 75 cfs at all times as measured downstream of the confluence with the North Fork of the Middle Fork. Such releases shall not cause vertical fluctuations (measured in representative section) greater than 3 feet per hour.	

¹ Forecast/Folsom Reservoir = California Department of Water Resources current year forecast of unimpeded run-off of the American River to Folsom Reservoir.

2.0 Federal Energy Regulatory Commission Proceedings

PCWA submitted its Notice of Intent and Pre-Application Document to relicense the Project under FERC's Integrated Licensing Process on December 13, 2007. This was followed by issuance of FERC's Scoping Document that included a 60-day comment and study request period that ended on April 11, 2008. PCWA filed the draft and final license applications with FERC on September 27, 2010 and February 23, 2011, respectively.

On December 3, 2012, the USFS filed its Final Conditions and Recommendations (Final 4(e) Conditions) with FERC. The USFS submitted revisions and clarifications of its Final 4(e) Conditions to FERC on March 6, 2013 and March 15, 2019. On August 4, 2011, the California Department of Fish and Wildlife (CDFW) filed its Federal Power Act Section 10(j) and 10(a) recommendations with FERC. On August 15, 2018, the United States Fish and Wildlife Service (USFWS) filed a letter of concurrence for Endangered Species Act informal consultation for the Sierra Nevada yellow-legged frog with FERC.

3.0 Regulatory Authority

3.1 Water Quality Certification and Related Authorities

The federal Clean Water Act (33 U.S.C. §§ 1251-1387) was enacted "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." (33 U.S.C. § 1251(a).) Section 101 of the Clean Water Act (33 U.S.C. § 1251(g)) requires federal agencies to "co-operate with the State and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in concert with programs for managing water resources."

Section 401 of the Clean Water Act (33 U.S.C. § 1341) requires every applicant for a federal license or permit which may result in a discharge into navigable waters to provide the licensing or permitting federal agency with certification that the project will be in compliance with specified provisions of the Clean Water Act, including water quality standards and implementation plans promulgated pursuant to section 303 of the Clean Water Act. (33 U.S.C. § 1313.) Clean Water Act section 401 directs the agency responsible for certification to prescribe effluent limitations and other limitations necessary to ensure compliance with the Clean Water Act and with any other appropriate requirements of state law. Section 401 further provides that certification conditions shall become conditions of any federal license or permit for the project. The State Water Board is the state agency responsible for such certification in California. (Wat. Code § 13160.) The State Water Board has delegated authority to act on applications for certification to the Executive Director. (Cal. Code Regs., tit. 23, § 3838, subd. (a).)

Water Code section 13383 provides the State Water Board with the authority to "establish monitoring, inspection, entry, reporting, and recordkeeping requirements... and [require] other information as may be reasonably required" for activities subject to certification under section 401 of the Clean Water Act that involve the diversion of water for beneficial use. The State Water Board delegated this authority to the Deputy Director of the Division of Water Rights (Deputy Director), as provided for in State Water Board Resolution No. 2012-0029. In the *Redelegation of Authorities Pursuant to Resolution No. 2012-0029* memo issued by the Deputy Director on October 19, 2017, this authority is redelegated to the Assistant Deputy Directors of the Division of Water Rights.

On October 11, 2012, the State Water Board provided notice of receipt of a complete application for the Project to the applicable parties pursuant to California Code of Regulations, title 23, section 3835, subdivision (c). The State Water Board provided public notice of the application on October 11, 2012 pursuant to California Code of Regulations, title 23, section 3858 by posting information describing the Project on the State Water Board's website. The most recent Project application was filed with the Executive Director on May 14, 2018.

On April 11, 2019, State Water Board staff forwarded a draft certification to the Central Valley Regional Water Quality Control Board (Central Valley Regional Water Board) for comment. Central Valley Regional Water Board staff responded with comments on April 15, 2019. State Water Board staff addressed comments from the Central Valley Regional Water Board in the final certification.

3.2 Water Quality Control Plans

The California Regional Water Quality Control Boards (Regional Water Boards) have primary responsibility for the formulation and adoption of water quality control plans for their respective regions, subject to State Water Board and United States Environmental Protection Agency (USEPA) approval, as appropriate. (Wat. Code, § 13240 et seq.) The State Water Board may also adopt water quality control plans, which will supersede regional water quality control plans for the same waters to the extent of any conflict. (*Id.*, § 13170.) For a specified area, the water quality control plans designate the beneficial uses of water to be protected, water quality objectives established for the reasonable protection of those beneficial uses or the prevention of nuisance, and a program of implementation to achieve the water quality objectives. (*Id.*, § 13241, § 13050, subds. (h), (j).) The beneficial uses together with the water quality objectives that are contained in the water quality control plans, and state and federal anti-degradation requirements constitute California's water quality standards.

The Central Valley Regional Water Board adopted, and the State Water Board and USEPA approved, the *Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basins* (Basin Plan).³ The Basin Plan designates the beneficial uses of water to be protected along with the water quality objectives necessary to protect those uses. The Basin Plan identifies existing beneficial uses for surface waters in the Middle Fork American River as: municipal and domestic supply; irrigation; stock watering; power; contact recreation; canoeing and rafting; other noncontact recreation; cold freshwater habitat; cold spawning habitat; and wildlife habitat. In addition, the Basin Plan identifies warm freshwater habitat as a potential beneficial use for surface waters in the Middle Fork American River. The Central Valley Regional Water Quality Control Board has included Hell Hole Reservoir and Ralston Afterbay (also known as Oxbow Reservoir) on the Clean Water Act section 303(d) list of impaired waters for mercury.

³ *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region for the Sacramento River Basin and the San Joaquin River Basin*. Fifth Edition. Revised May 2018 (with Approved Amendments).

3.3 Construction General Permit

PCWA may need to obtain coverage under the State Water Board's Construction General Permit.⁴ Coverage under the Construction General Permit may be required for activities that disturb one or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres. Construction activity subject to the Construction General Permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

4.0 California Environmental Quality Act

PCWA is the lead agency for the purposes of California Environmental Quality Act (CEQA) compliance, while the State Water Board is a responsible agency. On July 23, 2012, FERC issued its draft Environmental Impact Statement (EIS), which analyzed Project impacts under the National Environmental Policy Act (NEPA). PCWA released a draft CEQA Supplement to the draft EIS on December 6, 2012. The CEQA Supplement augmented the sections of the draft EIS that are insufficient to satisfy CEQA.

On February 22, 2013, FERC released the final EIS for the Project, and on April 26, 2013, PCWA issued the final CEQA Supplement to the final EIS. PCWA did not condition Project approval on implementation of mitigation measures and a mitigation monitoring or reporting plan was not adopted. In addition, findings were not made by PCWA pursuant to the provisions of CEQA. PCWA approved the final CEQA Supplement for the Project and filed a Notice of Determination (NOD) with the State Clearinghouse and the Placer County and El Dorado County Clerk's offices on May 17, 2013. The NOD states that the Project will not have a significant impact on the environment.

All documents and other material that constitute the public record are maintained by the State Water Board, Division of Water Rights and available for public review at the following address: 1001 I Street, Sacramento, CA 95814. The State Water Board will file a NOD with the State Clearinghouse within five days of issuance of this certification.

5.0 Rationale for Water Quality Certification Conditions

State Water Board staff reviewed and considered several key documents when drafting the water quality certification for the Project. These documents include:

- (i) PCWA's final FERC license application;
- (ii) PCWA's application for certification;
- (iii) PCWA's "Supplemental Filing for the Middle Fork American River (FERC Project No. 2079-069)";
- (iv) USFS Final 4(e) Conditions (16 U.S.C. § 797(e));
- (v) USFS "Middle Fork American River Project FERC No. 2079 Rationale Report for Proposed License Conditions and Recommendations" (Rationale Report);

⁴ State Water Board Order 2009-0009-DWQ and National Pollutant Discharge Elimination System No. CAS000002, as amended by State Water Board Orders 2010-0014-DWQ and 2012-0006-DWQ, and any amendments thereto.

- (vi) FERC's draft and final EIS for Hydropower License; and
- (vii) PCWA's draft CEQA Supplement to the FERC draft EIS, and PCWA's final CEQA Supplement to the FERC final EIS.

State Water Board staff also considered the Basin Plan, existing water quality conditions, Project-related controllable factors, and other information in the record.

5.1 Rationale for Condition 1: Minimum Instream Flows

The minimum instream flow (MIF) requirements are designed to protect aquatic resources and beneficial uses of water. The approach for developing MIFs for Project-affected stream reaches focused on the requirements of aquatic-dependent biota (e.g., fish, amphibians, macroinvertebrates, and riparian vegetation) and included the following steps:

(a) establishment of resource objectives for each stream reach; (b) evaluation of ecological conditions under unimpaired and regulated flows; (c) examination of the natural hydrograph, with consideration of changes in the magnitude and timing of precipitation and snow melt; (d) identification of important ecosystem attributes and when/where there may be limiting factors; (e) review of resource specific study and modeling results to help characterize existing ecological conditions; and (f) articulation of desired future conditions.

To address factors that limit the success of aquatic species, such as low summer flows, operational flow fluctuations, and temperature ranges outside of Basin Plan objectives, the following elements were incorporated into the development of MIFs: (a) habitat requirements for critical life stages of native aquatic species (such as rainbow trout, foothill yellow-legged frogs, western pond turtles, and hardhead); (b) a hydrograph that is protective of overall ecosystem function; (c) maintenance of existing cold water habitats; (d) preservation of water quality within Basin Plan objectives; (e) the connectivity of flows above and below Project dams, diversions, and powerhouses; (f) cooperatively developed resource objectives (by PCWA and resource agencies⁵); and (g) consideration of hydroelectric operations, recreational opportunities, and consumptive water deliveries. MIFs were developed for each stream reach during each water year type⁶.

5.2 Rationale for Condition 2: Gaging

Condition 2 requires the implementation of the Streamflow and Reservoir Elevation Gaging Plan developed by PCWA, in consultation with resource agencies staff from USFS, CDFW, and the State Water Board. The plan specifies how PCWA will comply with conditions related to stream flows and reservoir storage (Condition 7). PCWA is required to augment the plan with additional information, including its schedule for gage deployment, measures that will be implemented to protect water quality and the beneficial uses during construction and installation of gages, and reporting following gage deployment.

5.3 Rationale for Condition 3: Ramping Rates

Abrupt flow fluctuations in Project-affected stream reaches may strand or otherwise impact aquatic species, such as amphibians and spawning trout. To protect aquatic species from potential impacts of Project operations, reach-specific ramping rates were developed with

⁵ The term "resource agencies" refers to staff from USFS, CDFW, and the State Water Board.

⁶ Water year types are defined based on the water year forecast of unimpaired runoff in the American River below Folsom Lake as described in Condition 1.

PCWA and resource agencies staff. The ramp down rates outlined in Condition 3 also apply to pulse flows (Condition 6) and reservoir spills. The ramp-down on the declining limb of the hydrograph provides environmental and recreational benefits that do not exist with the more rapid decrease of reservoir spill flows that are currently implemented.

5.4 Rationale for Condition 4: Unplanned Outages

The possibility exists for an unplanned outage to occur at the Middle Fork Powerhouse and Ralston Powerhouse during normal Project operations. Such an outage could prevent delivery of MIFs in the Middle Fork American River below Oxbow Powerhouse or Middle Fork Interbay Dam, as required per Condition 1. The measures outlined in Condition 4 are designed to provide MIFs in the Middle Fork American River below the Middle Fork Powerhouse and Ralston Powerhouse during an unplanned outage at the Middle Fork Powerhouse and/or Ralston Powerhouse.

5.5 Rationale for Condition 5: Drainage Structure Emergency and Maintenance Release Points

Penstocks, canals, and other Project features are located on hillslopes or other unstable areas. If there is a canal failure or emergency release of water from these Project facilities, erosion may occur on hillslopes or unstable areas. Condition 5 requires PCWA to develop an Emergency Drainage Plan in consultation with the resource agencies, that will designate preferred canal drainage structures, protocols, and release points to be used during emergencies and maintenance activities, in order to minimize potential negative impacts to water quality and aquatic biota.

5.6 Rationale for Condition 6: Pulse Flows

The pulse flows required in Condition 6 were designed to meet the “Channel Morphology and Sediment Transport Objectives” (Channel and Sediment Objectives) that were collaboratively developed during the relicensing process by PCWA and resource agencies. The Channel and Sediment Objectives are to: (a) maintain and restore channel integrity; (b) maintain, improve, and restore fluvial processes to provide for balanced sediment transport, channel bed material mobilization, and distribution; (c) maintain, improve, and restore channel structural stability that contributes to diverse aquatic and riparian habitat; (d) maintain a sediment regime that addresses ecosystem values; (e) ensure that delivery and transport of sediment is balanced in order to prevent stream channels from excessively aggrading or degrading over time, and to allow a particle size distribution that will facilitate diverse streambed form within the stream channel; and (f) keep sediment regimes as close as possible to those that benefit aquatic and riparian biota.

5.7 Rationale for Condition 7: Reservoir Water Level Management

The reservoir minimum pool elevation objectives in Condition 7 are designed to protect contact and non-contact recreational beneficial uses described in the Basin Plan, and were collaboratively developed by PCWA and resource agencies. Condition 7 will allow Project reservoirs to maintain their aesthetic quality while meeting recreational needs, resource objectives, and hydropower generation uses. Factors considered in the development of reservoir levels included: (a) maintaining the functionality of recreational facilities and improvements; (b) maintenance of aesthetic resources; (c) the ability to provide for current recreation use, and anticipate future uses and trends; (d) the historic record of reservoir levels

and their associated uses, conflicts, and management; and (e) observations from USFS recreation managers for El Dorado and Tahoe National Forests.

5.8 Rationale for Condition 8: Recreational Flows below Oxbow Powerhouse

Recreational flows in the Middle Fork American River below Oxbow Powerhouse are designed to maintain the contact, and canoeing and rafting recreational beneficial uses as described in the Basin Plan. The Middle Fork American River below Oxbow Powerhouse is an extremely popular location for whitewater boating. Current Project operations result in higher flows during the summer and fall than would normally occur in the historical unimpaired condition, and as a result have attracted whitewater recreation users.

The unimpaired hydrograph for the Middle Fork American River below Oxbow Powerhouse indicates that in most water year types there is insufficient flow to support the whitewater recreation that occurs on this reach from approximately mid-June to late November or early December. The very popular Class IV-V Tunnel Chute run requires a minimum of 1,000 cfs in order to provide an acceptable whitewater boating recreational experience. The unimpaired hydrograph indicates that flows typically drop below this level between early June to early July and would not again reach the required magnitude of 1,000 cfs until late November or early December. Whitewater use data, both private (actual reported amount) and commercial use on the Tunnel Chute and Mammoth Bar runs, from 1995 through 2009, totals 270,710 people. Of this total, 231,961 people (or 86%) participated in whitewater boating activities from mid-June through the end of November. Condition 8 requires recreational flows in the Middle Fork American River below Oxbow Powerhouse, which were developed collaboratively by PCWA and the resource agencies.

5.9 Rationale for Condition 9: Recreation Management

The Project supports a variety of recreational activities and is a popular recreation destination due to its close proximity to large urban areas, such as the city of Sacramento. Condition 9 requires the implementation of the Recreation Plan, which was developed collaboratively by PCWA and the resource agencies. The Recreation Plan identifies PCWA's responsibilities related to the management of recreation facilities associated with the Project over the term of the new license. The Recreation Plan also identifies measures that PCWA will implement to enhance recreation opportunities in the vicinity of the Project.

5.10 Rationale for Condition 10: Monitoring Program

Condition 10 requires implementation of eight monitoring plans that were developed collaboratively by PCWA and the resource agencies, including monitoring plans for fish, amphibians, turtles, benthic macroinvertebrates, mercury bioaccumulation, riparian habitat, water quality, and water temperature. Together these plans form the Monitoring Program that is required in Condition 10, and which will inform whether modifications are needed to adequately protect water quality, aquatic resources, and beneficial uses. The methods and frequency of monitoring were designed to measure the response of aquatic resources to adjustments in streamflow and other Project-related items. Monitoring will determine if applicable resource objectives are achievable and being met. If resource objectives are not met, PCWA is required to consult with resource agencies, including State Water Board staff, to identify adaptive management measures. Adaptive management will be applied based on monitoring results, other sources of relevant scientific information, and a determination that modifications are necessary to achieve applicable ecological resource objectives.

5.11 Rationale for Condition 11: Spawning Habitat Improvement below Ralston Afterbay Dam

Condition 11 requires implementation of the Spawning Habitat Improvement Plan that was developed collaboratively by PCWA and the resource agencies. The Spawning Habitat Improvement Plan was designed to enhance trout spawning during spring flow releases, and to improve juvenile trout recruitment. Daily flow fluctuations are not conducive to successful spawning and early development of rainbow trout; and although the half-mile stretch of the Middle Fork American River below Ralston Afterbay Dam is not subject to the daily recreational flow fluctuations released at the downstream Oxbow Powerhouse, juvenile rainbow trout were observed only once in this reach during the course of Project relicensing studies in 2007. Consequently, the Project reach downstream of Ralston Afterbay Dam has been identified as a prime location for enhancing trout spawning during spring flow releases, and juvenile trout recruitment into the peaking reach downstream of Oxbow Powerhouse.

5.12 Rationale for Condition 12: Fish Entrainment at Ralston and Oxbow Powerhouse Intakes

Operation of the Ralston Powerhouse and Oxbow Powerhouse have the potential to cause harm to fish species in the immediate area of facility intake structures. Condition 12 requires the development of a study plan to monitor for fish entrainment, and if entrainment is high enough to warrant concern, requires PCWA to develop an approach to estimate or measure the survival of entrained fish at the Ralston Powerhouse and/or Oxbow Powerhouse intakes and outflows. Fish entrainment will be monitored during four seasons of the year (winter, spring, summer, fall) to ensure that representative entrainment estimates are obtained for typical powerhouse operations during different seasons and different fish life history periods. Based on the results of the entrainment study, Condition 12 requires PCWA to consult with USFS, CDFW, USFWS, and State Water Board staff regarding potential entrainment mitigation or prevention strategies.

5.13 Rationale for Condition 13: Large Woody Material

Large woody material is key to retaining habitat diversity and complexity in streams. A decrease in large woody material results in: loss of cover for aquatic species; decreased structural habitat complexity; decreased habitat availability; and a reduction in streamflow velocities and hydraulic features. Condition 13 requires development and implementation of a Large Woody Material Management Plan, with the goal of improving recruitment and residence time of large woody material in Project streams.

5.14 Rationale for Condition 14: Aquatic Invasive Species

Flow regulation by dams can create a stable flow environment preferable to invasive aquatic weeds such as *Didymosphenia geminata* (Didymo). Didymo seeks environments with lower discharge velocities and less variation in discharge. Its presence can result in dense algal blooms that block sunlight and disrupt ecological processes, causing a decline in native plant and animal life. Reservoir boating recreation has the potential to spread invasive zebra and quagga mussels to other reservoirs and streams. Zebra and quagga mussels have the potential to significantly alter aquatic ecosystems and foul Project facilities. As filter feeding organisms, invasive mussels consume free-floating algae. The mussels can consume substantial amounts of phytoplankton, thereby disrupting the food web of aquatic ecosystems. In addition, large colonies of invasive mussels can block or seriously compromise water intake and transport facilities in rivers and reservoirs. The Aquatic Invasive Species Management Plan required

under Condition 14 is designed to protect the aquatic ecosystem, as well as protect against invasive mussels in Project reservoirs, water conveyance facilities (i.e., canals and penstocks), and water-cooling systems.

5.15 Rationale for Condition 15: Bald Eagles

Operation of the Project and associated recreation use could impact bald eagles, which are protected under the wildlife beneficial use in the Basin Plan. Bald eagles are protected by the federal Migratory Bird Treaty Act⁷ and the state Bald and Golden Eagle Protection Act.⁸ These Acts require that the bald eagle be protected from human activities resulting in "take." Bald eagles are a riparian species that feed on fish and waterfowl, and can be sensitive to human disturbance. Implementation of the Bald Eagle Management Plan required by Condition 15 will protect bald eagle nesting sites from routine Project maintenance at Project facilities throughout the term of the FERC license. The Bald Eagle Management Plan was collaboratively developed by PCWA and the resource agencies.

5.16 Rationale for Condition 16: Erosion and Sediment Control and Management

Operation of the Project over the term of the new license has the potential to contribute to erosion and sedimentation. Condition 16 requires the development and implementation of an Erosion Control Plan that will provide direction for addressing Project-related erosion. The goal of the Erosion Control Plan is to provide direction for treating and controlling Project-related erosion during the term of the new license. The Erosion Control Plan will include guidelines for new construction or non-routine maintenance, and measures to prevent erosion, stream sedimentation, dust, and soil mass movement, during ground disturbance activities. Condition 16 also requires the implementation of the Sediment Plan that was developed collaboratively by PCWA and the resource agencies.

5.17 Rationale for Condition 17: Water Quality Protection

Proposed construction work related to modifications of Project facilities at Hell Hole Reservoir, Duncan Creek Diversion Dam, and North and South Fork Long Canyon Creek Diversion Dams, has the potential to affect water quality. Final designs and construction schedules will not be developed until after license issuance. Therefore, Condition 17 requires development and implementation of site-specific Water Quality Protection Plans prior to implementation of proposed construction, in order to protect water quality and the beneficial uses during Project-related construction.

5.18 Rationale for Condition 18: Reintroduction of Anadromous Fish

Anadromous fish may be reintroduced into the waters of the Project during the term of the FERC license. Condition 18 is designed to facilitate consultation between PCWA and the resource agencies that have jurisdiction over such a reintroduction. It is expected that early consultation would result in a smoother consultation process, which will aid in the protection of beneficial uses associated with anadromous fish (i.e., cold-water spawning habitat).

⁷ The Migratory Bird Treaty Act; 16 U.S.C. 703-712; 50 C.F.R 10

⁸ The Bald and Golden Eagle Protection Act, 16 U.S.C 668-668d' 50 C.F.R 10

5.19 Rationale for Condition 19: Annual Consultation Meetings

Monitoring plans and studies required under this certification contain adaptive management provisions to allow the resource agencies to determine, in consultation with PCWA, whether changes in operations of the Project and/or monitoring is necessary during the term of the new FERC license. Maintaining flexibility in monitoring and, where feasible, operations, will help ensure adequate protection of water quality and beneficial uses. Therefore, Condition 19 requires PCWA to conduct annual consultation meetings with resource agencies and other interested parties to review monitoring reports and discuss ongoing and forecasted operations, including revisions or modifications to monitoring and/or operations that may be needed to protect water quality and beneficial uses.

5.20 Rationale for Condition 20: Extremely Dry Conditions

California's history of drought and dry years illustrates the importance of contingency planning for multiple dry years or drought. It is difficult to anticipate the specific impacts of consecutive dry years, or a long-term drought, and identify where limited water supplies may be best used during times of shortage. Condition 20 provides the opportunity, following consultation with the State Water Board staff and resource agencies, and notice to interested parties, for PCWA to request Deputy Director approval of a Revised Operations Plan during consecutive Critical or Extreme Critical water year types, or drought years. This condition provides flexibility for adaptive management during times of extreme water shortage.

5.21 Rationale for Conditions 21 – 42

In order to ensure that the Project operates to meet water quality standards as anticipated, to ensure compliance with other relevant state and federal laws, and to ensure that the Project will continue to meet state water quality standards and other appropriate requirements of state law over the term of the new Project license, this certification imposes conditions regarding monitoring, enforcement, and potential future revisions. Additionally, California Code of Regulations, title 23, section 3860 requires imposition of certain mandatory conditions for all water quality certifications, which are included in this certification.

6.0 Conclusion

The State Water Board finds that, with the conditions and limitations imposed under this certification, the Project will be protective of state water quality standards and other appropriate requirements of state law.

7.0 Water Quality Certification Conditions

ACCORDINGLY, BASED ON ITS INDEPENDENT REVIEW OF THE RECORD, THE STATE WATER RESOURCES CONTROL BOARD CERTIFIES THAT OPERATION OF THE MIDDLE FORK AMERICAN RIVER HYDROELECTRIC PROJECT (FEDERAL ENERGY REGULATORY COMMISSION PROJECT NO. 2079) will comply with sections 301, 302, 303, 306, and 307 of the Clean Water Act, and with applicable provisions of state law, if Placer County Water Agency (Licensee) complies with the following terms and conditions.

CONDITION 1. Minimum Instream Flows

The Licensee shall implement minimum instream flows (MIFs) as soon as reasonably practicable but no later than 30 days after license issuance. The point of measurement for required MIFs for each stream reach is described in the MIF schedules, below. The schedules specify MIF by month or other designated period and water year type for each of the specified stream reaches. The Licensee shall report any deviation from the required MIF to the Deputy Director for the Division of Water Rights (Deputy Director) within 24 hours of the deviation, and furnish electronic streamflow records upon request.

Where infrastructure modifications are necessary to meet the MIFs, the Licensee shall implement the MIFs up to the maximum capacity of the existing infrastructure (e.g., outlet works) within 30 days of license issuance, and fully implement the MIFs within 30 days of completing infrastructure modifications. At the locations where ramp down or pulse flows (Condition 3 and 6, respectively) depend on existing infrastructure modification or construction of new Middle Fork American River Hydroelectric Project (Project) facilities for release or flow measurement, the pulse or down ramp of spill flow requirements shall be implemented within 30 days following completion of the infrastructure modification or construction.

1(A) Water Year Types

MIF requirements are specified for six water year types. The water year types are based on forecasts, or estimates, of American River unimpaired flow in acre-feet (ac-ft) below Folsom Lake. Water year types and associated American River unimpaired flow ranges are provided in Table 1.

Table 1. Water Year Types

Water Year Types	American River Unimpaired Flow Below Folsom Lake (ac-ft)
Wet (W)	≥ 3,400,000
Above Normal (AN)	≥ 2,400,000 to < 3,400,000
Below Normal (BN)	≥ 1,500,000 to < 2,400,000
Dry (D)	≥ 1,000,000 to < 1,500,000
Critical (C)	≥ 600,000 to < 1,000,000
Extreme Critical (EC)	< 600,000

For each water year (October 1 – September 30), the American River unimpaired flow (ac-ft) below Folsom Lake for the water year shall be determined using the California Department of Water Resources (DWR) Bulletin 120⁹ Forecast of Unimpaired Flow Below Folsom Lake and/or DWR’s estimated Full Natural Flow record for the American River at Folsom (California Data Exchange Center site AMF sensor 65; http://cdec.water.ca.gov/cgi-progs/staMeta?station_id=AMF), as noted below.

1(A)(1) Water Year Type Determination for Project Stream Reaches above Ralston Afterbay Dam

The Licensee shall determine the water year type for Project stream reaches above Ralston Afterbay Dam in accordance with Table 2. Within 15 days of each water year type determination, the Licensee shall provide written notice of the determination to the Deputy Director.

Table 2. Water Year Type Determination for Project Stream Reaches above Ralston Afterbay Dam

Time Period	Method for Determination Unimpaired Flow (ac-ft)	Water Year Type
June 1 – October 31	DWR Bulletin 120 May Forecast ¹	See water year types in Table 1 (W, AN, BN, D, C, EC)
November 1 – March 14	End of Water Year Estimate of Full Natural Flows ²	
March 15 – May 31	DWR Bulletin 120 March Forecast ¹	

¹ American River unimpaired flow (ac-ft) below Folsom Lake is to be determined using the DWR Bulletin 120 Forecast of Unimpaired Flow Below Folsom Lake.

² American River unimpaired flow (ac-ft) below Folsom Lake is to be determined by DWR’s Full Natural Flow record for the American River at Folsom (California Data Exchange Center site AMF sensor 65) after the end of the water year (October 1–September 30) (http://cdec.water.ca.gov/cgi-progs/staMeta?station_id=AMF).

1(A)(2) Water Year Type Determination for Stream Reaches in Middle Fork American River below Ralston Afterbay Dam and Oxbow Powerhouse

The Licensee shall determine the water year type for stream reaches in the Middle Fork American River below Ralston Afterbay Dam and Oxbow Powerhouse in accordance with Table 3 and related provisions of this certification. Within 15 days of each water year type determination, the Licensee shall provide written notice of the determination to the Deputy Director.

⁹ Bulletin 120 is a publication issued four times a year, in the second week of February, March, April, and May by DWR. It contains forecasts of the volume of seasonal runoff from California’s major watersheds, and summaries of precipitation, snowpack, reservoir storage, and runoff in various regions of California.

Table 3. Water Year Type Determination for Stream Reaches in Middle Fork American River below Ralston Afterbay Dam and Oxbow Powerhouse

Time Period	Method for Determination of Unimpaired Flow (ac-ft)	Water Year Type Classification
June 1 – October 31	DWR Bulletin 120 May Forecast ¹	See water year types in Table 1 (W, AN, BN, D, C, EC)
November 1 – February 14	End of Water Year Estimate of Full Natural Flows ²	
February 15 – March 14	DWR Bulletin 120 February Forecast ¹	
March 15 – May 31	DWR Bulletin 120 March Forecast ¹	

¹ American River unimpaired flow (ac-ft) below Folsom Lake is to be determined using the DWR Bulletin 120 Forecast of Unimpaired Flow Below Folsom Lake.

² American River unimpaired flow (ac-ft) below Folsom Lake is to be determined by DWR’s Full Natural Flow record for the American River at Folsom (California Data Exchange Center site AMF sensor 65) after the end of the water year (October 1–September 30) (http://cdec.water.ca.gov/cgi-progs/staMeta?station_id=AMF).

1(B) Minimum Instream Flow Compliance

The following apply to MIF provisions:

- (i) MIF shall be measured in cubic feet per second (cfs).
- (ii) MIF shall be initiated by 5:00 pm on the date specified in the flow schedule in Tables 4 through 11 for each location unless access to the release facility is prohibited by hazardous conditions (risk to operator safety). If this occurs, the Licensee shall notify the Deputy Director of the circumstances prohibiting access to the release facility as soon as possible, and no later than three business days after such incident, and the MIF shall be initiated as soon as practicable.
- (iii) The MIF specified from March 15 – May 31 shall not be lower than the MIF that was in effect on March 14.
- (iv) The MIF hourly running average measurements (based on flow measured in 15-minute or more frequent increments) shall never be less than the thresholds specified in Tables 4 through 11, except as described in (iv)(a) and (b) below. Note that with respect to measurement of MIFs, ‘as soon as practicable’ refers to the point in time when a new gage is installed and operating as designed.”
 - a. *Planned Temporary MIF Modification.* The Licensee may implement temporary MIF variances for non-emergency facility construction, modification, or maintenance. Non-emergency variance requests shall be submitted to the Deputy Director for approval as far in advance as practicable, but no less than four months in advance of the proposed temporary MIF variance. The request shall include: (1) a description of the proposed construction, modification, or maintenance; (2) the planned duration and magnitude of the MIF variance; (3) documentation of notification to the USFS, CDFW, and USFWS, and any comments received; (4) measures that will be implemented to protect water quality and beneficial uses; and (5) a schedule for the proposed construction, modification, or maintenance. The Deputy Director may require modifications as

part of approval. Upon Deputy Director approval, the Licensee shall provide public notice of the MIF variance, in accordance with Condition 1. The Licensee shall file with FERC the Deputy Director-approved modifications to MIF requirements and any approved amendments thereto.

- b. *Unplanned Temporary MIF Modification.* The MIFs may be temporarily modified if due to equipment malfunction reasonably beyond the control of the Licensee, as directed by law enforcement authorities or in emergencies. For the purposes of this condition, an “emergency” is defined as an unforeseen event that is reasonably out of the control of the Licensee and requires the Licensee to take immediate action either unilaterally or under instruction by law enforcement or other regulatory agency staff, to prevent imminent loss of human life or substantial property damage. An emergency may include, but is not limited to: natural events, such as landslides, storms, or wildfires; malfunction or failure of Project works¹⁰; and recreation accidents. Extremely dry conditions, including a drought for which the Governor of the State of California declares a drought emergency, shall not be considered an emergency for purposes of this condition.

To the extent possible, the Licensee shall notify the Deputy Director prior to any unplanned temporary MIF modification. In all instances, the Licensee shall notify the Deputy Director within 24 hours of the beginning of any unplanned temporary MIF modification. Within 96 hours of the unplanned temporary MIF modification, the Licensee shall provide the Deputy Director with an update of the conditions associated with the modification and an estimated timeline for returning to the required MIFs.

Within 30 days of any unplanned temporary MIF modification, the Licensee shall provide the Deputy Director with: (1) a written description of the modification and reasons for its necessity; (2) photo documentation of the incident and any resulting impacts; (3) a timeline for ending the MIF modification and returning to the required MIF; and (4) a plan to prevent a similar incident in the future, or if a similar incident cannot be avoided, a reason why such an incident cannot be avoided.

¹⁰ Project works must be inspected and maintained to manufacturers’ specified schedule or at least annually. The inspection schedule default is the most rigorous schedule. Upon State Water Board staff request, the Licensee shall provide documentation of all inspections, results, staff performing inspections, recommended maintenance, maintenance performed, schedule for performing maintenance, and the date(s) maintenance was performed. Lack of appropriate inspections, maintenance, or documentation may remove events from the “emergency” classification category, as determined by the Deputy Director.

1(C) Minimum Instream Flows for Duncan Creek below Duncan Creek Diversion Dam

The Licensee shall maintain the MIF to Duncan Creek below Duncan Creek Diversion Dam in accordance with Table 4 and related provisions of this certification. Within 30 days of license issuance, MIFs shall be measured at: (a) Duncan Creek near French Meadows, USGS gage number 11427700; and (b) Duncan Creek below the Duncan Creek Diversion Dam, USGS gage number 11427750. As soon as practicable, but no later than Year 4 after license issuance¹¹, MIFs shall be measured with a new gage at Duncan Creek diversion tunnel (see Condition 2). When inflow to Duncan Creek Diversion Dam is less than the MIF, the Licensee shall release the natural flow, where the “natural flow” is defined as the inflow to Duncan Creek Diversion Dam. The water year type determination for Duncan Creek below Duncan Creek Diversion Dam is outlined in Condition 1(A)(1) above.

Table 4. Minimum Instream Flows for Duncan Creek below Duncan Creek Diversion Dam

Month	Minimum Instream Flow (cfs) by Water Year Type ¹				
	Critical/ Extreme Critical	Dry	Below Normal	Above Normal	Wet
October	4 or NF	8 or NF	8 or NF	8 or NF	8 or NF
November	4 or NF	8 or NF	8 or NF	8 or NF	8 or NF
December	4 or NF	8 or NF	8 or NF	8 or NF	8 or NF
January	4 or NF	8 or NF	8 or NF	8 or NF	8 or NF
February	4 or NF	8 or NF	8 or NF	8 or NF	8 or NF
March 1-14	4 or NF	8 or NF	8 or NF	8 or NF	8 or NF
March 15-31	9 or NF	11 or NF	13 or NF	16 or NF	16 or NF
April	13 or NF	14 or NF	17 or NF	24 or NF	24 or NF
May	13 or NF	14 or NF	17 or NF	24 or NF	24 or NF
June	7 or NF	7 or NF	9 or NF	12 or NF	12 or NF
July	No Div ²	No Div ²	No Div ²	No Div ²	No Div ²
August	No Div	No Div	No Div	No Div	No Div
September	No Div	No Div	No Div	No Div	No Div

¹ Water year type determined per Condition 1(A)(1) of this certification.

² If July 1 inflow to the diversion exceeds the May MIF requirement for that year, then the July MIF requirement will be equal to the May MIF requirement for that year or natural flow (NF), whichever is less. The intent is to avoid a large flow spike at the end of the diversion season on July 1. Abbreviations: “NF” is Natural Flow; “No Div” is No Diversion

¹¹ For purposes of this certification, unless otherwise approved by the Deputy Director in writing, Year 1 begins 30 days after license issuance and extends for one calendar year thereafter, then Year 2 begins, and so on for the term of the license and any extensions.

1(D) Minimum Instream Flows for Middle Fork American River below French Meadows Dam

The Licensee shall maintain the MIF for the Middle Fork American River below French Meadows Dam in accordance with Table 5 and related provisions of this certification. Within 30 days of license issuance, MIF shall be measured at USGS gage number 11427500 in the Middle Fork American River at French Meadows. As soon as practicable, but no later than Year 3 after license issuance, MIFs shall be measured at the new gage in the Middle Fork American River at French Meadows Dam (see Condition 2). The water year type determination for the Middle Fork American River below French Meadows Dam is outlined in Condition 1(A)(1) above.

Table 5. Minimum Instream Flows for the Middle Fork American River below French Meadows Dam

Month	Minimum Instream Flow (cfs) by Water Year Type ¹				
	Critical/ Extreme Critical	Dry	Below Normal	Above Normal	Wet
October	8	9	10	11	13
November	8	9	10	11	13
December	8	9	10	11	13
January	8	9	10	11	13
February	8	9	10	11	13
March 1-14	8	9	10	11	13
March 15-31	11	11	11	15	16
April	11	13	13	20	20
May	11	13	13	20	20
June	8	11	12	16	17
July	8	9	10	11	13
August	8	9	10	11	13
September	8	9	10	11	13

¹ Water year type determined per Condition 1(A)(1) of this certification.

1(E) Minimum Instream Flows for Middle Fork American River below Middle Fork Interbay Dam

The Licensee shall maintain the MIF for the Middle Fork American River below Middle Fork Interbay Dam in accordance with Table 6 and related provisions of this certification. Within 30 days of license issuance, MIFs shall be measured in the Middle Fork American River below Middle Fork Interbay Dam at USGS gage number 11427770. As soon as practicable, but no later than Year 3 after license issuance, MIFs shall be measured at the new USGS gage to be sited in the Middle Fork American River below Middle Fork Interbay Dam (see Condition 2). The water year type determination for the Middle Fork American River below Middle Fork Interbay Dam is outlined in Condition 1(A)(1) above.

Table 6. Minimum Instream Flows for the Middle Fork American River below Middle Fork Interbay Dam

Month	Minimum Instream Flow (cfs) by Water Year Type ¹				
	Critical/ Extreme Critical	Dry	Below Normal	Above Normal	Wet
October	12	24	24	25	25
November	12	24	24	25	25
December	12	24	24	25	25
January	12	24	24	25	25
February	12	24	24	25	25
March 1-14	12	24	24	25	25
March 15-31	16	25	32	45	47
April	18	27	40	65	65
May	18	27	40	65	65
June	12	24	24	45	47
July	12	18	24	26	34
August	12	18	24	26	34
September	12	18	24	26	34

¹ Water year type determined per Condition 1(A)(1) of this certification.

1(F) Minimum instream flows for Rubicon River below Hell Hole Dam

The Licensee shall maintain the MIF for the Rubicon River below Hell Hole Dam in accordance with Table 7 and related provisions of this certification. Within 30 days of license issuance, MIFs shall be measured at USGS gage number 11428800 in the Rubicon River below Hell Hole Dam, near Meeks Bay, CA. As soon as practicable, but no later than Year 4 after license issuance, MIFs shall be measured at the new gage in the Rubicon River at Hell Hole Dam. The water year type determination for the Rubicon River below Hell Hole Dam is outlined in Condition 1(A)(1) above.

Table 7. Minimum Instream Flows for the Rubicon River below Hell Hole Dam

Month	Minimum Instream Flow (cfs) by Water Year Type ¹				
	Critical/ Extreme Critical	Dry	Below Normal	Above Normal	Wet
October	15	20	20	25	25
November	15	20	20	25	25
December	15	20	20	25	25
January	15	20	20	25	25
February	15	20	20	25	25
March 1-14	15	20	20	25	25
March 15-31	31	35	42	55	60
April	31	35	42	55	60
May	23	35	42	55	60
June 1-14	19	28	31	50	50
June 15-30	15	20	20	40	40
July	15	20	20	30	30
August	15	20	20	30	30
September	15	20	20	30	30

¹ Water year type determined per Condition 1(A)(1) of this certification.

1(G) Minimum Instream Flows for North Fork Long Canyon Creek below North Fork Long Canyon Creek Diversion Dam

The Licensee shall maintain the MIF for the North Fork Long Canyon Creek below North Fork Long Canyon Creek Diversion Dam in accordance with Table 8 and related provisions of this certification. Within 30 days of license issuance, MIF shall be measured at: (a) USGS gage number 11433085 in North Fork Long Canyon Creek below North Fork Long Canyon Creek Diversion Dam near Volcanoville; and (b) in North Fork Long Canyon Creek Diversion Tunnel at USGS gage number 11433080. As soon as practicable, but no later than Year 5 after license issuance, MIFs in the North Fork Long Canyon Creek below North Fork Long Canyon Creek Diversion Dam shall be measured at the new gage in North Fork Long Canyon Creek below the North Fork Long Canyon Creek Diversion Dam (see Condition 2) instead of USGS gage number 11433085. When inflow to the diversion is less than the MIF, the Licensee shall release the natural flow, where the “natural flow” is defined as the inflows to the diversion dam. The water year type determination for the North Fork Long Canyon Creek below North Fork Long Canyon Creek Diversion Dam is outlined in Condition 1(A)(1) above.

Table 8. Minimum Instream Flows for North Fork Long Canyon Creek below North Fork Long Canyon Creek Diversion Dam

Month	Minimum Instream Flow (cfs) by Water Year Type ¹				
	Critical/ Extreme Critical	Dry	Below Normal	Above Normal	Wet
October	2 or NF	2 or NF	2 or NF	2 or NF	2 or NF
November	2 or NF	2 or NF	2 or NF	2 or NF	2 or NF
December	2 or NF	2 or NF	2 or NF	2 or NF	2 or NF
January	2 or NF	2 or NF	2 or NF	2 or NF	2 or NF
February	2 or NF	2 or NF	2 or NF	2 or NF	2 or NF
March 1-14	2 or NF	2 or NF	2 or NF	2 or NF	2 or NF
March 15-31	6 or NF	10 or NF	7 or NF	7 or NF	7 or NF
April	6 or NF	10 or NF	10 or NF	11 or NF	11 or NF
May 1-14	6 or NF	10 or NF	10 or NF	11 or NF	11 or NF
May 15-31	2 or NF	5 or NF	10 or NF	11 or NF	11 or NF
June	2 or NF	5 or NF	5 or NF	6 or NF	6 or NF
July	No Div	No Div	No Div	No Div	No Div
August	No Div	No Div	No Div	No Div	No Div
September	No Div	No Div	No Div	No Div	No Div

¹ Water year type determined per Condition 1(A)(1) of this certification.
Abbreviations: “NF” is Natural Flow; “No Div” is No Diversion

1(H) Minimum instream flows for South Fork Long Canyon Creek below South Fork Long Canyon Creek Diversion Dam

The Licensee shall maintain the MIF for the South Fork Long Canyon Creek below South Fork Long Canyon Creek Diversion Dam in accordance with Table 9 and related provisions of this certification. Within 30 days of license issuance, MIFs shall be measured at: (a) USGS gage number 11433065 in South Fork Long Canyon Creek below South Fork Long Canyon Creek Diversion Dam near Volcanoville; and (b) South Fork Long Canyon Creek Diversion Tunnel, USGS gage number 11433060. As soon as practicable, but no later than Year 5 after license issuance, MIF shall be measured at the new gage in South Fork Long Canyon Creek below the South Fork Long Canyon Creek Diversion Dam (Condition 2), instead of USGS gage number 11433065. When inflow to the diversion is less than the MIF, the Licensee shall release the natural flow, where the “natural flow” is defined as the inflow to the diversion tunnel. The water year type determination for the South Fork Long Canyon Creek below South Fork Long Canyon Creek Diversion Dam is outlined in Condition 1(A)(1) above.

Table 9. Minimum Instream Flows South Fork Long Canyon Creek below South Fork Long Canyon Creek Diversion Dam

Month	Minimum Instream Flow (cfs) by Water Year Type ¹				
	Critical/ Extreme Critical	Dry	Below Normal	Above Normal	Wet
October	2.5 or NF	5 or NF	5 or NF	5 or NF	5 or NF
November	2.5 or NF	5 or NF	5 or NF	5 or NF	5 or NF
December	2.5 or NF	5 or NF	5 or NF	5 or NF	5 or NF
January	2.5 or NF	5 or NF	5 or NF	5 or NF	5 or NF
February	2.5 or NF	5 or NF	5 or NF	5 or NF	5 or NF
March 1-14	2.5 or NF	5 or NF	5 or NF	5 or NF	5 or NF
March 15-31	5 or NF	9 or NF	9 or NF	9 or NF	9 or NF
April	6 or NF	12 or NF	12 or NF	14 or NF	14 or NF
May	6 or NF	12 or NF	12 or NF	14 or NF	14 or NF
June	3 or NF	5 or NF	6 or NF	7 or NF	7 or NF
July	No Div	No Div	No Div	No Div	No Div
August	No Div	No Div	No Div	No Div	No Div
September	No Div	No Div	No Div	No Div	No Div

¹ Water year type determined per Condition 1(A)(1) of this certification.
Abbreviations: “NF” is Natural Flow; “No Div” is No Diversion

1(l) Minimum Instream Flows for Middle Fork American River below Ralston Afterbay Dam

The Licensee shall release a MIF of 3 cfs in the Middle Fork American River below Ralston Afterbay Dam until: (a) installation of new gaging equipment in the Middle Fork American River below Ralston Afterbay Dam; and (b) implementation of the Spawning Habitat Improvement Plan for the Middle Fork American River below Ralston Afterbay Dam (Condition 11). Within 30 days of installation of the new gaging equipment in the Middle Fork American River below Ralston Afterbay Dam and implementation of the Spawning Habitat Improvement Plan for the Middle Fork American River below Ralston Afterbay Dam (Condition 11), the Licensee shall maintain MIFs in accordance with Table 10 and related provisions of this certification. The water year type determination for the Middle Fork American River below Ralston Afterbay Dam is outlined in Condition 1(A)(2) above.

Table 10. Minimum Instream Flows for the Middle Fork American River below Ralston Afterbay Dam

Month	Minimum Instream Flow (cfs) by Water Year Type ¹				
	Critical/ Extreme Critical	Dry	Below Normal	Above Normal	Wet
October	3	3	3	3	3
November	3	3	3	3	3
December	3	3	3	3	3
January	3	3	3	3	3
February	3	3	3	3	3
March 1-14	3	3	3	3	3
March 15-31	3	25	25	25	25
April	3	25	25	25	25
May	3	25	25	25	25
June	3	10	10	10	10
July	3	10	10	10	10
August	3	10	10	10	10
September	3	10	10	10	10

¹ Water year type determined per Condition 1(A)(2) of this certification.

1(J) Minimum Instream Flows for Middle Fork American River below Oxbow Powerhouse

The Licensee shall maintain MIFs for the Middle Fork American River below Oxbow Powerhouse based on the month or other designed period and water year type in accordance with Table 11 and related provisions of this certification. MIFs shall be measured in the Middle Fork American River near Foresthill, USGS gage number 11433300. The water year type determination for the Middle Fork American River below Oxbow Powerhouse is outlined in Condition 1(A)(2) above.

Table 11. Minimum Instream Flows for the Middle Fork American River below Oxbow Powerhouse

Month	Minimum Instream Flow (cfs) by Water Year Type ¹					
	Extreme Critical	Critical	Dry	Below Normal	Above Normal	Wet
October	90	125	140	165	165	200
November	90	140	145	185	225	250
December	90	140	145	185	225	250
January	90	140	145	185	225	250
February	90	140	145	185	225	250
March 1-14	90	140	145	185	225	250
March 15-31	100	160	210	290	375	450
April	100	160	210	290	375	450
May	100	160	210	290	375	450
June	100	160	210	245	300	350
July	100	160	200	245	300	350
August	100	160	200	245	300	350
September 1-14	100	150	160	200	250	300
September 15-30	100	150	160	200	250	300

¹ Water year type determined per Condition 1(A)(2) of this certification.

CONDITION 2. Gaging

No later than six months following license issuance, the Licensee shall submit a Gaging Plan to the Deputy Director for review and approval. The Gaging Plan shall include:

- (a) The information contained in the *Streamflow and Reservoir Elevation Gaging Plan* that was submitted to FERC on November 30, 2012 as an attachment to the United States

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Department of Agriculture-Forest Service (USFS) Final Conditions and Recommendations (Final 4(e) Conditions)¹²;

- (b) Specifications for monitoring, maintenance, and modification of existing gages and installation of new gages, as necessary;
- (c) Type of equipment, calibration techniques, frequency of data collection, and procedures for installation and gathering data at each station;
- (d) Best management practices and measures that will be used to avoid or minimize water quality impacts during instream or stream bank work necessary to install, operate, and maintain the gages;
- (e) Quality assurance and quality control (QA/QC) protocols;
- (f) Information on how the Licensee will provide real-time streamflow information to the public via internet, or other appropriate easily accessible technology;
- (g) How “natural flow ” or “natural inflows” will be measured and reported for locations where MIFs (Condition 1) or pulse flows (Condition 6) are defined as natural flow or natural inflows;
- (h) A schedule for deployment of the gages that includes compliance with the schedules for gages associated with MIF and pulse flow requirements (Condition 1 and Condition 6, respectively);
- (i) Reporting of when gage installation and full operation has been completed at each location; and
- (j) Plan for how modifications to the Gaging Plan will be implemented throughout the FERC license.

The Gaging Plan shall be developed in consultation with USFS, CDFW, USFWS, and State Water Board staff. The Deputy Director may require modifications to the Gaging Plan as part of any approval. The Licensee shall begin implementation of the Gaging Plan upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein. The Licensee shall file with FERC the Deputy Director-approved Gaging Plan, and any amendments thereto.

CONDITION 3. Ramping Rates

Within 30 days of license issuance, the Licensee shall implement ramping rates that are within the operational capability of existing infrastructure. At the locations where ramping rate requirements are outside the capability of existing infrastructure, the Licensee shall implement the new requirements to the extent feasible, until infrastructure modifications necessary to meet required ramping rates are completed, and implement the ramping rates specified herein within 30 days thereafter.

¹² Sixteen plans were attached to the Final 4(e) Conditions submitted to FERC on November 30, 2012. The plans were developed in collaboration with Placer County Water Agency (PCWA), USFS, California Department of Fish and Wildlife (CDFW), and State Water Resources Control Board staff. Although the Final 4(e) Conditions were updated on March 5, 2013 and March 15, 2019, the plans were not revised.

3(A) Compliance with Ramp Down of Reservoir Spills

The Licensee shall ramp down spills at Hell Hole Dam and French Meadows Dam in compliance with the following:

- (i) Ramp down flows shall be measured in cfs as the average daily flow (arithmetic mean recorded in 15-minute flow intervals).
- (ii) Ramp down of spills shall occur during the timeframes specified in this certification, unless access to the streamflow release infrastructure is prohibited by hazardous conditions or equipment/infrastructure malfunctions. If this occurs, the Licensee shall notify the Deputy Director of the circumstances prohibiting access as soon as possible, and no later than five calendar days after such an incident, and the required ramp down shall be implemented as soon as practicable and to the greatest degree practicable.
- (iii) Ramp down of spills shall be maintained for at least the number of days (duration) specified in each ramp down step. Each step of the ramp-down may have a duration longer than that specified; however, in the Rubicon River below Hell Hole Dam and in the Middle Fork American River below French Meadows Dam, if the reason for the longer duration is not a natural event, then the total ramp down duration may be no longer than four additional days. If a natural long-duration inflow event occurs during the ramp down period that precludes the Licensee from meeting the ramp down requirements in Condition 3, the Licensee shall notify the Deputy Director of the variance as soon as reasonably practicable, and no later than within five days of becoming aware of the occurrence.
- (iv) In the Rubicon River below Hell Hole Reservoir, ramp down of spills shall be made using a combination of: (a) the new Hell Hole Dam spillway gates that will be installed as part of the Hell Hole Reservoir Seasonal Storage Increase Improvement Project (HHR Storage Project); and (b) releases from the Hell Hole Powerhouse, the Hell Hole Dam low level outlet, and MIF pipe (Low-Level Outlet Facilities). As part of the HHR Storage Project, the Licensee shall do the following:
 - (a) The Licensee shall consult with USFS, California Department of Fish and Wildlife (CDFW), United States Fish and Wildlife Service (USFWS), and State Water Resources Control Board (State Water Board) staff during the design and planning of the Hell Hole Dam spillway gates and development of a rating curve for the spillway gates. Within 60 days after development of a rating curve, the Licensee shall submit a Rating Curve Report to the Deputy Director for review and approval. The Deputy Director may require modifications as part of any approval. The Rating Curve Report shall include: (a) the proposed rating curve for the Hell Hole Dam spillway gates and supporting information; (b) documentation of consultation with USFS, CDFW, USFWS, and State Water Board staff; (c) comments and recommendations made in connection with the Rating Curve Report; and (d) a description of how the Rating Curve Report incorporates or addressed the comments and recommendations.
 - (b) Design and implement automated control of the spillway gates, such that the flow release setting shall be adjusted once every hour during a spill event.
 - (c) The Licensee shall use the current reservoir water surface elevation to set the gate position (according to the rating curve table) in order to meet the required flow release for the subsequent one-hour period. Total flow for the spill ramp down shall include the spillway gate setting flow, and any additional releases from the Low-Level Outlet Facilities. The flow setting (gate setting and flow from

the Low-Level Outlet Facilities) must, at the time of each hourly adjustment, be no less than specified in the schedules in Condition 3. If automated control of the spillway gate is not functioning (i.e., mechanical or communications malfunction), the Licensee shall use the same procedure outlined above, to manually adjust the spillway gate flow setting two times per day.

- (v) *Infrastructure Modification Testing.* Subsequent to infrastructure modifications, during the first two spill events when ramp down of spill flows occur at each Hell Hole Dam and French Meadows Dam (for a total of four spill events), the Licensee shall test the ability of the facilities to manage spills in compliance with ramping rate requirements. During these tests, the Licensee shall, to the best of its ability, comply with the ramping rates in this certification. During the first two spill events at each dam, deviations from the ramp down rates specified in this certification shall not be considered violations, but shall be reported to the Deputy Director within 30 days of the occurrence.
- (a) Within 30 days of the conclusion of the first spill event at each dam (i.e., within 30 days of completion of the first test spill event at Hell Hole Dam; within 30 days of completion of the first test spill event at French Meadows Dam), the Licensee shall submit a Ramping Rates Testing Report to the Deputy Director for the first test spill of the appropriate dam. The Ramping Rates Testing Report shall include the reservoir gaging information described in this condition, as well as stream gaging information from the Rubicon River above Ellicott Bridge (required per Condition 2).
- (b) Within six months after the end of the second spill event at each dam, the Licensee shall submit a Ramping Rates Recommendations Report (Recommendations Report) to the Deputy Director for review and approval. The Deputy Director may require modifications as part of any approval. The Licensee shall consult with USFS, CDFW, USFWS, and State Water Board staff as part of developing the Recommendations Report for each dam. The Recommendations Report shall include recommendations for modifying the spill ramp down schedule(s) contained in Condition 3, if facilities are not capable of meeting the requirements. In addition, the Licensee shall include the following in the Ramping Rates Recommendations Report: (a) background and supporting information for why the facilities are not capable of meeting the requirements; (b) documentation of consultation with USFS, CDFW, USFWS, and State Water Board staff; (c) comments and recommendations made in connection with the Recommendations Report; and (d) a description of how the Recommendation Report incorporates or addressed the comments and recommendations.

The Licensee shall implement the Recommendations Report upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

3(B) Ramp Down Requirements for Rubicon River below Hell Hole Dam

The Licensee shall ramp down spills in the Rubicon River below Hell Hole Dam as soon as practicable after the HHR Storage Project is completed, but no later than Year 6 after license issuance, unless an alternative compliance schedule is approved by the Deputy Director. The ramp down of spills shall be measured by the new gages at the Low-Level Outlet Facilities (Condition 2) and the spillway rating curve at Hell Hole Dam Spillway (Condition 3(A)(iv) and (v)).

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In the months of May through July, if a spill or multiple spills in excess of 600 cfs daily average flow¹³ (total combined spillway flow [calculated] and flow releases from the Low-Level Outlet Facilities) occur at Hell Hole Dam, the Licensee shall ramp down the declining hydrograph limb of the spill(s) the day after the daily average spill flow (total combined flow) reaches 600 cfs (or less), as described in Table 12.

If a spill event (total combined flow) occurs in the months of May through July that does not exceed 600 cfs daily average flow, but meets or exceeds the 400 cfs, 285 cfs, or 170 cfs flow levels as described in Table 12, then the Licensee shall ramp down spills according to the schedule in Table 12. Spills events that do not exceed 170 cfs (daily average flow) do not need to be ramped down.

Table 12. Ramp Down Requirements for Rubicon River below Hell Hole Dam

Spill Event	Day	Ramp Down Schedule
First 600 cfs spill event	Day 1	Establish the flow setting at 600 cfs ¹
	Day 5	Reduce the flow setting to 400 cfs
	Day 7	Reduce the flow setting to 285 cfs
	Day 10	Reduce the flow setting to 170 cfs
	Day 13	Reduce the flow setting to 95 cfs
	Day 17	Release MIF requirement ²
Subsequent 600 cfs (or greater) spill event after the ramp down of the first spill event	Day 1	Reduce the flow setting to 400 cfs
	Day 3	Reduce the flow setting to 285 cfs
	Day 6	Reduce the flow setting to 170 cfs
	Day 10	Reduce the flow setting to 95 cfs
	Day 14	Release MIF requirement ²

¹ During the first spill event, there must be at least four days of the 600 cfs flow setting. In order to provide whitewater boating flows, flows during these four days shall not exceed 800 cfs. Notice of the whitewater boating flows shall be posted on the Project website as required in Condition 8.

² Condition 1 of this certification.

3(C) Ramp Down Requirements for Middle Fork American River below French Meadows Dam

Within 30 days of license issuance, the Licensee shall comply with the ramp down spill flows requirements for the Middle Fork American River below French Meadows Dam outlined in this certification. The ramp down of spill flows in Years 1 and 2 after license issuance shall be measured at the Middle Fork American River at French Meadows gage (USGS gage number 11427500).

No later than Year 3 after license issuance, spill flows (combined spillway flow and releases from the low level and minimum flow outlets at French Meadows Dam) shall be measured at the Middle Fork American River at French Meadows Gage (USGS gage number 11427500) and daily average flow releases shall be measured at the new low-level outlet and minimum flow

¹³ Daily average flow is the average of the 15-minute flow data from midnight of one day to midnight of the following day.

outlet gages at the French Meadows Dam (Middle Fork American River at French Meadows Dam Gage).

In the months of May through July, if a spill or multiple spills in excess of 400 cfs daily average¹⁴ flow (total combined spillway flow and flow releases from the low level and minimum flow outlets at French Meadows Dam) occurs at French Meadows Dam, then the Licensee shall ramp down the declining hydrograph limb of the spill(s) the day after daily average spill flow (total combined flow) reaches 400 cfs (or less) as described in Table 13.

If a spill event (total combined flow) occurs in the months of May through July that does not exceed 400 cfs average daily flow, but exceeds the 275 cfs, 190 cfs, or 115 cfs flow levels as described in Table 13, then the Licensee shall ramp down spills according to the schedule in Table 13. Spill events that do not exceed 115 cfs (daily average flow) do not need to be ramped down.

Table 13. Ramp Down Requirements for the Middle Fork American River below French Meadows Dam

Spill Event	Day	Ramp-Down Schedule
400 cfs spill event in Years 1 and 2 of license issuance	Day 1	Release a minimum flow of 400 cfs
	Day 2	Reduce the flow to a minimum of 275 cfs
	Day 3	Reduce the flow to a minimum of 190 cfs
	Day 4	Reduce the flow to a minimum of 115 cfs
	Day 5	Reduce the flow to a minimum of 65 cfs
	Day 7	Release MIF requirement ¹
400 cfs spill event after Year 2 of license issuance	Day 1	Release an average daily flow of 400 cfs ± 10 percent
	Day 2	Reduce the flow to an average daily flow of 275 cfs ± 10 percent
	Day 3	Reduce the flow to an average daily flow of 190 cfs ± 10 percent
	Day 4	Reduce the flow to an average daily flow of 115 cfs ± 10 percent
	Day 5	Reduce the flow to an average daily flow of 65 cfs ± 10 percent
	Day 7	Release MIF requirement ¹

¹Condition 1 of this certification

3(D) Ramp Down Requirements for Middle Fork American River below Middle Fork Interbay Dam

Within 30 days of license issuance, during the ramp down of spills from French Meadows Dam (refer to Table 13), the Licensee shall allow the Middle Fork American River inflows to bypass the Middle Fork Interbay with a deviation not to exceed ±10 percent average daily flow. If average daily inflows into Middle Fork Interbay are greater than 155 cfs on the last day of the ramp down of spills from French Meadows Dam, as measured at the USGS gage number 11427760 (Middle Fork American River above Middle Fork Powerhouse Gage), then

¹⁴ Daily average flow is the average 15-minute flow data from midnight of one day to midnight of the following day.

the Licensee shall allow the Middle Fork American River inflows to bypass the Middle Fork Interbay until the average daily inflow is less than or equal to 155 cfs.

3(E) Ramp Down Requirements for Middle Fork American River below Oxbow Powerhouse

Within 30 days of license issuance, the Licensee shall implement the ramping rates described in Table 14 during the months of March through October in the Middle Fork American River below Oxbow Powerhouse, based on the flows measured at USGS gage number 11433300 (Middle Fork American River near Foresthill).

Table 14. Ramping Rate Requirements for Middle Fork American River below Oxbow Powerhouse

Ramp Up		Ramp Down	
Gage Flow (cfs) ¹	Maximum Flow Change (cfs/hr) ²	Gage Flow (cfs) ¹	Maximum Flow Change (cfs/hr) ²
≤ 175	300	> 1,300	750
> 175, up to 400	450	> 800, up to 1,300	550
> 400, up to 750	600	> 500, up to 800	400
> 750	750	≤ 500 to MIF	250

¹ Gage Flow is the discharge (cfs) at the Middle Fork American River near Foresthill (USGS gage number 11433300) at the beginning of the Oxbow Powerhouse flow change.

² Maximum Flow Change is the maximum increase in Oxbow Powerhouse release given the Gage Flow for the ramp up, or the maximum decrease in Oxbow Powerhouse release given the Gage Flow for the ramp down.

In Years 1 and 2 after license issuance (Year 1 begins 30 days after license issuance), the ramping rate in the Middle Fork American River downstream of Oxbow Powerhouse shall be measured at the Middle Fork American River near Foresthill Gage (USGS gage number 11433300).

No later than Year 3 after license issuance and as soon as the new Oxbow Powerhouse Penstock gage is operational, compliance with the ramping rate shall be measured at: (a) the new Oxbow Powerhouse Penstock gage; and (b) the Middle Fork American River near Foresthill gage (USGS gage number 11433300).

After the annual Fall maintenance outage at Oxbow Powerhouse¹⁵, which occurs in late September through February, the Licensee shall, to the best of its ability, regulate Oxbow Powerhouse flow releases in the Middle Fork American River below Oxbow Powerhouse with the objective of moderating peaking flows. The stated objective of “moderating peaking flows” means to reduce the difference between the minimum and maximum flows over any 24-hour period. This will include, to the degree reasonable and feasible, the use of available active Ralston Afterbay storage.

If Ralston Afterbay spills due to natural flow conditions at any time during “moderation of peaking flows”, the Licensee’s efforts to moderate peaking flows on the Middle Fork American

¹⁵ If the annual Fall maintenance outage does not occur, the Licensee shall, to the best of its ability, regulate Oxbow Powerhouse flow releases in the Middle Fork American River below Oxbow Powerhouse beginning in November.

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River shall immediately, but temporarily, cease for the duration of the spill event. As soon as practical following the cessation of the natural spill event, the Licensee shall resume efforts, to the best of its ability, to moderate peaking flows and shall do so through the end of February.

Upon request, the Licensee shall make available to State Water Board staff the streamflow records and supporting information related to Project operations related to ramping rates.

In the event of: (a) law enforcement or search and rescue activities; (b) Division of Safety of Dams compliance requirements; (c) equipment malfunction or failure that is directly related to providing the specified ramping rates; or (d) a large storm event that is beyond the Licensee's ability to control, noncompliance with the specific ramping rates identified in this section may be excused. The Licensee shall provide notice to the Deputy Director within 10 days after such an event occurs, and shall provide a report within one month after such an event that documents the reason for the ramping rate deviation.

CONDITION 4. Unplanned Outages

4(A) Unplanned Outage at Middle Fork and Ralston Powerhouses (May-September)

If a short-term (less than two weeks) unplanned outage occurs at both the Middle Fork Powerhouse and Ralston Powerhouse between May and September, the Licensee shall provide MIFs in the Middle Fork American River below Oxbow Powerhouse during the outage as follows:

- (viii) If the Ralston Afterbay water surface elevation is greater than 1,161 feet at the time of the unplanned outage, the MIF release requirement shall be 200 cfs or the MIF as specified in Condition 1 of this certification, whichever is less, until the water surface elevation declines to 1,161 feet or less.
- (ix) If the Ralston Afterbay water surface elevation is less than or equal to 1,161 feet any time during an unplanned outage, the MIF release requirement shall be the October MIF as specified in Condition 1 of this certification.

It may be necessary to release additional water from Hell Hole Reservoir into the Rubicon River, and from French Meadows Reservoir/Middle Fork Interbay into the Middle Fork American River to meet the MIF requirements in the Middle Fork American River below Oxbow Powerhouse for downstream consumptive demands. In this case, water released into the Rubicon River shall not exceed 55 cfs (60 cfs in Wet water years); and water released into the Middle Fork American River below French Meadows Reservoir/Middle Fork Interbay shall not exceed 80 cfs.

If the maximum flows in the Middle Fork American River are insufficient to meet the MIF requirements described in (i) and (ii) above, the Licensee shall not release flows above the maximum flow of 80 cfs in the Middle Fork American River below Middle Fork Interbay, unless the following three requirements have been satisfied:

- (1) Release of flows above 80 cfs in the Middle Fork American River below Middle Fork Interbay is necessary to meet consumptive demands and the required MIF of 75 cfs at the non-Project American River Pump Station;
- (2) Monitoring of foothill yellow-legged frogs (*Rana boylei*) has commenced (Condition 10); and
- (3) 24-hour advance notice is provided to the Deputy Director.

If the unplanned outage is predicted to extend beyond two weeks, then MIF in the (a) Middle Fork American River below Oxbow Powerhouse; (b) Middle Fork American River (from French Meadows Reservoir and/or the Middle Fork Powerhouse), and (c) Rubicon River below Hell Hole Dam Powerhouse shall be determined in consultation with USFS, CDFW, USFWS, and State Water Board staff for the remainder of the outage. Consultation shall begin within 48 hours of the Licensee determining that the unplanned outage is likely to extend beyond two weeks, and shall conclude as quickly as is practicable. After consultation, the Licensee shall implement the agreed upon MIF within 48 hours of State Water Board staff and other consulting agencies concurrence. If State Water Board staff and other consulting agencies are unable to concur within two weeks of implementation of flows identified in (i) or (ii), above, the Deputy Director may establish the required MIFs until concurrence is obtained or the outage concludes.

4(B) Unplanned Outage at Ralston Powerhouse (June – September), Middle Fork Powerhouse Operational

If a short-term (less than two weeks) unplanned outage occurs at the Ralston Powerhouse between June and September, but the Middle Fork Powerhouse is still operational, then water shall be released from the Middle Fork Powerhouse: (a) for MIF compliance in the Middle Fork American River below Oxbow Powerhouse; (b) for water supply; and (c) to avoid or minimize spill at Hell Hole Dam. The MIF streamflow requirements in the Middle Fork American River below Middle Fork Interbay Dam are described in Table 15.

Table 15. Minimum Instream Flow for Middle Fork American River below Middle Fork Interbay Dam During an Unplanned Outage (less than two weeks) at Ralston Powerhouse between June and September.

Month	Minimum Instream Flow (cfs) by Water Year					
	Extreme Critical	Critical	Dry	Below Normal	Above Normal	Wet
June	100	160	210	245	300	350
July	100	160	165	190	200	200
August	100	160	165	190	200	200
September	100	160	165	190	200	200

Water released into the Rubicon River, below Hell Hole Dam, shall not exceed 55 cfs (60 cfs in Wet water years); and water released into the Middle Fork American River below Middle Fork Interbay Dam shall not exceed 80 cfs. The Licensee shall not release flows above the maximum flow of 80 cfs in the Middle Fork American River below Middle Fork Interbay Dam, unless the following three requirements have been satisfied:

- (1) Release of flows above 80 cfs in the Middle Fork American River below Middle Fork Interbay Dam is necessary to meet consumptive demands and the required MIF of 75 cfs at the non-Project American River Pump Station;
- (2) Monitoring of foothill yellow-legged frogs has commenced (Condition 10); and
- (3) 24-hour advance notice is provided to the Deputy Director.

If the unplanned outage is predicted to extend beyond two weeks, then MIF in the (a) Middle Fork American River below Oxbow Powerhouse; (b) Middle Fork American River (from French Meadows Reservoir and/or the Middle Fork Powerhouse); and (c) Rubicon River below Hell

Hole Dam Powerhouse shall be determined in consultation with USFS, CDFW, USFWS, and State Water Board staff for the remainder of the outage. Consultation shall begin within 48 hours of the Licensee determining that the unplanned outage is likely to extend beyond two weeks, and shall be concluded as quickly as is practicable. After consultation, the Licensee shall implement the agreed upon MIF within 48 hours of State Water Board staff and other consulting agencies concurrence. If State Water Board staff and other consulting agencies are unable to concur within two weeks of implementation of flows identified in (i) or (ii), above, the Deputy Director may establish the required MIFs until concurrence is obtained or the outage concludes.

CONDITION 5. Drainage Structure Emergency and Maintenance Release Points

No later than one year after license issuance, the Licensee shall submit an Emergency Drainage Plan to the Deputy Director for review and approval. The primary goals of the Emergency Drainage Plan shall be to: (a) evaluate emergency and maintenance release points for penstocks and other drainage structures; and (b) determine protocols that can be deployed and improvements that can be made to minimize potential adverse water quality impacts when release points are used. The Deputy Director may require modifications to the Emergency Drainage Plan as part of any approval. The Emergency Drainage Plan shall be developed in consultation with USFS, CDFW, USFWS, and State Water Board staff. The Licensee shall file with FERC the Deputy Director-approved Emergency Drainage Plan, and any approved amendments thereto. The Licensee shall implement the Emergency Drainage Plan upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 6. Pulse Flows

6(A) Compliance and Reporting

Pulse flows are specified in the following sections by water year type (Condition 1(A)). Pulse flows shall meet the following criteria:

- (i) Pulse flows shall be measured in cfs.
- (ii) Pulse flows shall be initiated by 5:00 pm, no later than one day after the date specified, and subsequent flow changes shall be made on the corresponding dates in the schedule (by no later than 5:00 pm) unless access to the streamflow release infrastructure is prohibited by hazardous conditions (risk to operator safety). If this occurs, the Licensee shall notify the Deputy Director of the circumstances prohibiting access to the release facility as soon as possible, but no later than three days after such an incident, and the pulse flows shall be released as soon as practicable. If initiation of the pulse flow occurs on a day other than that specified, then all dates in the pulse flow schedule shall be shifted accordingly.
- (iii) Pulse flows shall be maintained at a minimum for the duration specified in the pulse flow schedule for each location. The pulse flows, including each step in the pulse flow ramp down, may have a longer duration than specified in the schedule; however, in the Rubicon River below Hell Hole Dam and in the Middle Fork American River below French Meadows Dam, the duration of the pulse flow shall not exceed four additional days, unless a spill is forecasted at Hell Hole Reservoir and French Meadows Reservoir, respectively.
- (iv) Once initiated, the average daily flow (arithmetic mean recorded in no more than 15-minute flow intervals) shall be compliant with the required pulse flow or target pulse flow.

The average daily flow compliance is intended to provide the Licensee with flexibility to adjust daily flows to meet MIF requirements without over- or under-releasing; it is not intended to provide the Licensee with the flexibility to substantially vary releases within a day for other reasons.

- (v) Pulse flows may be temporarily modified upon written approval by the Deputy Director. Requests for temporary modification of pulse flows shall be provided as soon as possible, in writing and include the basis for the request and supporting information.

During the first two pulse flow events below the small diversion dams in Duncan Creek, North Fork Long Canyon Creek, and South Fork Long Canyon Creek, the Licensee shall test the feasibility of compliance with the ramp down steps for the pulse flow schedules for each location (for total of six tests). The Licensee shall, to the best of its ability, comply with the ramp down steps of the pulse flow schedules specified in the following sections. During the first two pulse flow events at each location, deviations from the pulse flow requirements shall be reported to the Deputy Director within 30 days of each occurrence, but shall not be considered violations.

Within 30 days of concluding the second pulse flow at each location, the Licensee shall submit a Pulse Flow Testing Report to the Deputy Director. Within 120 days of submitting the Pulse Flow Testing Report, the Licensee shall if needed, develop and submit a Pulse Flow Modification Recommendations Report (Pulse Flow Modification Report) to the Deputy Director for review and approval. The Pulse Flow Modification Report shall be developed in consultation with USFS, CDFW, USFWS, and the State Water Board staff. The Pulse Flow Modification Report shall focus on the down ramp portion of pulse flow schedule(s) for each location contained in this certification.

The Licensee shall include with the Pulse Flow Modification Report: (a) documentation of consultation with USFS, CDFW, USFWS, and State Water Board staff; (b) comments and recommendations made in connection with the Pulse Flow Modification Report; and (c) a description of how the Pulse Flow Modification Report incorporates or addresses the comments and recommendations. The Deputy Director may require modifications as part of any approval. The Licensee shall file with FERC the Deputy Director-approved Pulse Flow Modification Report, and any approved amendments thereto. The Licensee shall implement the Pulse Flow Modification Report upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

6(B) Implementation Schedule

The Licensee shall implement the pulse flows in the required stream reaches within the timeframe outlined in Table 16, unless an alternative implementation schedule is approved by the Deputy Director. The Licensee shall notify the Deputy Director if issues emerge during the engineering design, permitting, or construction that may alter the implementation of the required pulse flow releases from those specified in Table 16.

Table 16. Implementation Schedule for Pulse Flows by Stream Reach

Pulse Flow Stream Reach		Implementation Schedule ^{1,2}
Middle Fork American River below French Meadows Dam		No later than Year 1 through License Term ³
Middle Fork American River below Middle Fork Interbay Dam		No later than Year 3 through License Term ³
Duncan Creek below Duncan Creek Diversion Dam		No later than Year 4 through License Term ³
North Fork Long Canyon Creek below North Fork Long Canyon Creek Diversion Dam		No later than Year 5 through License Term ³
South Fork Long Canyon Creek below South Fork Long Canyon Creek Diversion Dam		No later than Year 5 through License Term ³
Rubicon River below Hell Hole Dam	Interim Pulse Flows	Year 1 through no later than Year 5
	Pulse Flow Determined from Feasibility Study	No later than Year 6 through License Term ³

¹ Year 1 begins 30 days after license issuance and extends for one calendar year thereafter, then Year 2 begins, and so on for the term of the license.

² At locations where pulse flows depend on existing infrastructure modification or construction of new Project facilities for release or flow measurement, the pulse flow shall be implemented within 30 days following completion of the infrastructure modification or construction and no later than the timeline outlined in this table. For example, if the infrastructure improvements necessary for the Middle Fork American River below Middle Fork Interbay Dam are completed in Year 2, the Licensee shall implement the pulse flows within 30 days thereafter.

³ License Term refers to the term of the license and any extensions.

6(C) Middle Fork American River below French Meadows Dam

The Licensee shall implement the pulse flow schedule described in Table 17 beginning in Year 1 after license issuance, where Year 1 begins 30 days after license issuance. Pulse flows in Years 1 and 2 shall be measured in the Middle Fork American River at French Meadows USGS gage number 11427500. In Year 3 after license issuance, pulse flows shall be measured at the new low-level outlet gage and the minimum flow outlet gage at French Meadows Dam.

If a spill is forecast to occur at French Meadows Dam either (a) during ramp down of the pulse flow sequence, or (b) after the end of the pulse flow, the 190 cfs portion of the pulse flow sequence (refer to Table 17) shall be continued until the spill occurs or until a spill is no longer forecast. If a spill does not occur, then the remainder of the pulse flow ramp down sequence shall be completed. If a spill occurs during the pulse flow release, then the pulse flow requirements are no longer in effect and are superseded by spill ramp down requirements under Condition 3.

If the 24-hour average flow during the ramp down pulse flow sequence exceeds the 24-hour average flow of a previous step due to a spill or other conditions, then the pulse flow ramp down sequence must be restarted from the previous step, and the flows shall be ramped down according to the schedule in Table 17.

Table 17. Pulse Flow Requirements for Middle Fork American River below French Meadows Dam

Years After License Issuance	Water Year Type	Date	Pulse Flow Requirement
Years 1 and 2	Above Normal	May 7	Increase flow from MIF ¹ to a minimum of 200 cfs
		May 8	Increase flow to a minimum of 400 cfs
		May 10	Reduce flow to a minimum of 275 cfs
		May 12	Reduce flow to a minimum of 190 cfs
		May 15	Reduce flow to a minimum of 115 cfs
		May 18	Reduce flow to a minimum of 65 cfs
		May 22	Release MIF ¹
	Wet	May 15	Increase flow from MIF ¹ to a minimum of 200 cfs
		May 16	Increase flow to a minimum of 400 cfs
		May 24	Reduce flow to a minimum of 275 cfs
		May 26	Reduce flow to a minimum of 190 cfs
		May 29	Reduce flow to a minimum of 115 cfs
		June 1	Reduce flow to a minimum of 65 cfs
		June 5	Release MIF ¹
After Year 2	Above Normal	May 7	Increase flow from MIF ¹ to a target mean daily flow of 200 cfs ± 10 percent
		May 8	Increase flow to an average daily flow of 400 cfs ± 10 percent
		May 10	Reduce flow to an average daily flow of 275 cfs ± 10 percent
		May 12	Reduce flow to an average daily flow of 190 cfs ± 10 percent
		May 15	Reduce flow to an average daily flow of 115 cfs ± 10 percent
		May 18	Reduce flow to an average daily flow of 65 cfs ± 10 percent
		May 22	Release MIF ¹
	Wet	May 15	Increase flow from MIF ¹ to an average daily flow of 200 cfs ± 10 percent
		May 16	Increase flow to an average daily flow of 400 cfs ± 10 percent
		May 24	Reduce flow to an average daily flow of 275 cfs ± 10 percent
		May 26	Reduce flow to an average daily flow of 190 cfs ± 10 percent
		May 29	Reduce flow to an average daily flow of 115 cfs ± 10 percent
		June 1	Reduce flow to an average daily flow of 65 cfs ± 10 percent
		June 5	Release MIF ¹

¹ Condition 1 of this certification.

6(D) Middle Fork American River below Middle Fork Interbay Dam

The Licensee shall implement the following pulse flow schedules beginning no later than Year 3 after license issuance. Pulse flows shall be measured at: the new gage in the Middle Fork American River below Middle Fork Interbay Dam; and USGS gage number 11427760 in the Middle Fork American River above Middle Fork Powerhouse.

6(D)(1) Above Normal Water Year Types

In Above Normal water years, the Licensee shall allow natural inflows from the Middle Fork American River to bypass Middle Fork Interbay Dam (\pm 10 percent average daily flow) between May 7 and May 17¹⁶. If average daily inflows are greater than 155 cfs at the end of the pulse flow schedule (May 18), then the Licensee shall allow natural inflows from the Middle Fork American River to bypass Middle Fork Interbay Dam until the average daily inflow is less than or equal to 155 cfs for three consecutive days.

6(D)(2) Wet Water Year Types

In Wet water years, the Licensee shall allow natural inflows from the Middle Fork American River to bypass the Middle Fork Interbay Dam (\pm 10 percent average daily flow) between May 15 and May 31¹⁶. If average daily inflows are greater than 155 cfs at the end of the pulse flow schedule (June 1), then the Licensee shall allow natural inflows from the Middle Fork American River to bypass Middle Fork Interbay Dam until the average daily inflow is less than or equal to 155 cfs for three consecutive days.

If a spill occurs during the pulse flow release, the pulse flow requirements are no longer in effect and are superseded by spill ramp down requirements outlined in Condition 3.

6(E) Duncan Creek below Duncan Creek Diversion Dam

The Licensee shall implement the pulse flows described in Table 18 beginning no later than Year 4 after license issuance. Pulse flows shall be measured at: USGS gage number 11427750 in Duncan Creek below Duncan Creek Diversion Dam; and at the new gage located at the Duncan Creek Diversion tunnel.

During the ramp down of the pulse flow, if stream flows exceed the 24-hour average flow of a previous step (e.g., due to accretion or storm events), then the ramp down steps shall not be restarted. The pulse flows shall continue to be ramped down as specified in Table 18.

¹⁶ The dates may be shifted slightly based on pulse flow timing at French Meadows Dam, as described in Condition 6(C).

Table 18. Pulse Flow Requirements for Duncan Creek below Duncan Creek Diversion Dam

Water Year Type	Date	Pulse Flow Requirement
Above Normal	May 7	Release a minimum of 150 cfs or natural inflow, whichever is less
	May 8	Close diversion completely and bypass natural inflow
	May 10	Release a minimum of 190 cfs or natural inflow, whichever is less (Licensee may reopen diversion)
	May 12	Release a minimum of 130 cfs or natural inflow, whichever is less
	May 15	Release a minimum of 90 cfs or natural inflow, whichever is less
	May 18	Release a minimum of 45 cfs or natural inflow, whichever is less
	May 22	Release MIF ¹
Wet	May 15	Release a minimum of 150 cfs or natural inflow, whichever is less
	May 16	Close diversion completely and bypass natural inflow
	May 25	Release a minimum of 190 cfs or natural inflow, whichever is less (Licensee may reopen diversion)
	May 27	Release a minimum of 130 cfs or natural inflow, whichever is less
	May 30	Release a minimum of 90 cfs or natural inflow, whichever is less
	Jun 2	Release a minimum of 45 cfs or natural inflow, whichever is less
	Jun 6	Release MIF ¹

¹ Per Condition 1 of this certification.

6(F) North Fork Long Canyon Creek below North Fork Long Canyon Creek Diversion Dam

The Licensee shall implement the pulse flows in Table 19 beginning no later than Year 5 after license issuance. Pulse flows shall be measured at the: new gage below the North Fork Long Canyon Creek Diversion Dam; and North Fork Long Canyon Creek Diversion Tunnel Gage (USGS gage number 11433080). If the 24-hour average flow during the ramp down of the pulse flow exceeds the 24-hour average flow of a previous step, then the pulse flow shall not be restarted. The pulse flow sequence shall be ramped down according to the schedule in Table 19.

Table 19. Pulse Flow Requirements for North Fork Long Canyon Creek below North Fork Long Canyon Creek Diversion Dam

Water Year Type	Date	Pulse Flow Requirement
Above Normal	May 1	Release a minimum of 50 cfs or natural inflow, whichever is less
	May 2	Close diversion completely and bypass natural inflow
	May 4	Release a minimum of 35 cfs or natural inflow, whichever is less (Licensee may reopen diversion)
	May 6	Release a minimum of 21 cfs or natural inflow, whichever is less
	May 9	Release MIF ¹
Wet	May 15	Release a minimum of 50 cfs or natural inflow, whichever is less
	May 16	Close diversion completely and bypass natural inflow
	May 25	Release a minimum of 35 cfs or natural inflow, whichever is less (Licensee may reopen diversion)
	May 27	Release a minimum of 21 cfs or natural inflow, whichever is less
	May 30	Release MIF ¹

¹ Per Condition 1 of this certification.

6(G) South Fork Long Canyon Creek below South Fork Long Canyon Creek Diversion Dam

The Licensee shall implement the pulse flows in Table 20 beginning no later than Year 5 after license issuance. Pulse flows shall be measured at the: new gage in South Fork Long Canyon Creek; and South Fork Long Canyon Creek Diversion Tunnel (USGS gage number 11433060). If the 24-hour average flow during the ramp down of the pulse flow exceeds the 24-hour average flow of a previous step, then the pulse flow shall not be restarted. The pulse flow sequence shall be ramped down according to the schedule specified in Table 20.

Table 20. Pulse Flow Requirements for South Fork Long Canyon Creek below South Fork Long Canyon Creek Diversion Dam

Water Year Type	Date	Pulse Flow Requirement
Above Normal	May 1	Release a minimum of 100 cfs or natural inflow, whichever is less
	May 2	Close diversion completely and bypass natural inflow
	May 4	Release a minimum of 70 cfs or natural inflow, whichever is less (Licensee may reopen diversion).
	May 6	Release a minimum of 35 cfs or natural inflow, whichever is less
	May 9	Release MIF ¹
Wet	May 15	Release a minimum of 100 cfs or natural inflow, whichever is less
	May 16	Close diversion completely and bypass natural inflow
	May 25	Release a minimum of 70 cfs or natural inflow, whichever is less (Licensee may reopen diversion).
	May 27	Release a minimum of 35 cfs or natural inflow, whichever is less
	May 30	Release MIF ¹

¹ Per Condition 1 of this certification.

6(H) Rubicon River below Hell Hole Dam

The Licensee shall implement the pulse flow schedule described in Table 21 beginning in Year 1 after license issuance, where Year 1 begins 30 days after license issuance. Beginning no later than Year 6 after license issuance, the Licensee shall implement the pulse flow schedule specified in Table 21, as modified by the outcome of the Hell Hole Dam Outlet Feasibility Study (Section 6(H)(1)). Pulse flows shall be measured at the new gages in the Rubicon River below Hell Hole Dam (Condition 2).

If a spill is forecasted to occur at Hell Hole Reservoir during ramp down of a pulse flow, or after the end of a pulse flow, then the 200 cfs step of the pulse flow sequence shall be continued until the spill occurs or until a spill is no longer forecasted. If a spill occurs during a pulse flow release, the pulse flow requirements will be superseded by spill ramp-down requirements in Condition 3. If the 24-hour average flow during the ramp down steps of the pulse flow exceeds the 24-hour flow of a previous step, then the pulse flow ramp down shall be restarted from the previous step, and the flows ramped down according to the requirements in Table 21.

Table 21. Pulse Flow Requirements for the Rubicon River below Hell Hole Dam, Prior to Completion of the Hell Hole Outlet Feasibility Study

Water Year Type	Date	Pulse Flow Requirement
Above Normal	May 1	Increase flows from MIF release ¹ to a mean daily flow of 200 cfs ± 10 percent
	May 16	Reduce flow to a mean daily flow of 150 cfs ± 10 percent
	May 18	Reduce flow to a mean daily flow of 90 cfs ± 10 percent
	May 21	Release MIF ¹
Wet	May 15	Increase flows from MIF release to a mean daily flow of 200 cfs ± 10 percent
	June 21	Reduce flow to a mean daily flow of 150 cfs ± 10 percent
	June 23	Reduce flow to a mean daily flow of 90 cfs ± 10 percent
	June 26	Release MIF ¹

¹ Per Condition 1 of this certification.

6(H)(1) Hell Hole Dam Outlet Feasibility Study and Report

Within one year of license issuance, the Licensee shall submit a Hell Hole Dam Outlet Feasibility Study (Feasibility Study) to the Deputy Director for review and approval. The primary goal of the Feasibility Study shall be to identify the maximum pulse flow, between 200 cfs and 600 cfs, that can safely and reliably be released from the existing Hell Hole Dam low level outlet for the term of the new FERC license. The Feasibility Study shall be developed in consultation with USFS, CDFW, USFWS, and State Water Board staff. The Licensee shall include with Feasibility Study: (a) documentation of consultation with USFS, CDFW, USFWS, and the State Water Board staff; (b) comments and recommendations made by the agencies; and (c) a description of how the Feasibility Study incorporates or addresses the comments and recommendations. The Deputy Director may require modifications as part of any approval. The Licensee shall file with FERC the Deputy Director-approved Feasibility Study, and any approved amendments thereto.

At a minimum, the Feasibility Study shall include:

- (i) Criteria to determine the maximum pulse flow that can safely and reliably be released over the term of the new license;
- (ii) An incremental approach for releasing and evaluating pulse flow releases from 200 cfs to 600 cfs (e.g., 250 cfs, 300 cfs, 350 cfs, 400 cfs, etc.); and
- (iii) A reporting schedule that includes submittal of draft and final feasibility reports (Feasibility Reports) that describe the results and evaluate each test flow. The draft and final Feasibility Reports shall include the Licensee’s engineering assessment of the Feasibility Study pulse flows released and the recommended next steps, including whether the pulse flows in Table 21 should be modified. The draft and final Feasibility Reports shall be developed in consultation with USFS, USFWS, CDFW, and State Water Board staff.

The pulse flow releases shall be implemented in accordance with the Deputy-Director approved Feasibility Study up to the increased magnitude deemed safe, with the following conditions:

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- (1) The same volume of water that is used in the pulse flow prior to the Feasibility Study, as described in Table 21, shall be used in the finalized pulse flow release. For example, although the same volume of water may be used, the duration of the pulse flow release may be different than that described in Table 21 in accordance with the higher peak flow and modified ramp down schedule; and
- (2) The ramp down rate of the pulse flow shall be consistent with the rate of change specified in the pulse flow release and ramp-down schedule described in

Once pulse flows are initiated (i.e., the Feasibility Study is implemented), the Licensee shall promptly report any concern regarding system reliability from pulse flow releases to the Deputy Director, Division of Safety of Dams (DSOD), FERC, USFS, and CDFW.

Feasibility Report. The maximum magnitude of the pulse flows below Hell Hole Dam shall be determined based on the results of the Feasibility Study. If the pulse flow magnitude recommended in the Feasibility Report differs from that described in Table 21, then the pulse flow volume shall remain the same, and the duration and ramp down sequence shall be modified to maintain the volume of the prescribed pulse flow. If the magnitude of the pulse flow changes, the start date and duration of each step of the pulse flow shall be updated in consultation with USFS, CDFW, USFWS, and the State Water Board staff.

The Licensee shall submit the final Feasibility Report (see item (iii) above) to the Deputy Director for review and approval. If pulse flow changes are recommended, the final Feasibility Report shall include a request for pulse flow modifications with supporting information and be submitted to the Deputy Director for review and approval within 90 days of completing consultation. The Deputy Director may require modifications as part of any approval. The Licensee shall include with the final Feasibility Report: (a) documentation of consultation with USFS, CDFW, USFWS, and State Water Board staff; (b) comments and recommendations provided; and (c) a description of how the proposed modifications incorporate or address the comments and recommendations. The Licensee shall file with FERC the Deputy Director-approved final Feasibility Report, including the pulse flow modification (if applicable), and any approved amendments thereto.

The Licensee shall implement the modified pulse flows in the final Feasibility Report upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein and no later than Year 6 of the license.

CONDITION 7. Reservoir Water Level Management

7(A) Reservoir Minimum Pool Elevations

Within two years after license issuance, the Licensee shall implement the required reservoir minimum pool elevations in French Meadows Reservoir and Hell Hole Reservoir as detailed in Table 22. The minimum pool elevation requirements in Hell Hole Reservoir and French Meadows Reservoir shall be determined based on the water year types outlined in Condition 1. The minimum pool requirements shall be implemented beginning on June 1 of each calendar year.

The compliance gage locations for measuring reservoir water surface elevation shall be: (a) USGS gage number 11427400 for French Meadows Reservoir; and (b) USGS gage number 11428700 for Hell Hole Reservoir. Reservoir minimum pool requirements include that:

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- (i) Average daily reservoir water surface elevations (measured in 15-minute or more frequent intervals) shall be calculated using existing reservoir gages; and
- (ii) Average daily reservoir water surface elevations (measured in 15-minute or more frequent intervals) shall at all times be no less than the minimum pool elevation requirement, unless otherwise approved in writing by the Deputy Director.

For recreational purposes, the Licensee shall provide the Deputy Director with: (a) a forecast of monthly reservoir water surface elevations for the months of June through November on or before May 15; and (b) an updated forecast before July 1 each year. The Licensee shall provide reservoir water surface elevation information, including forecasts, to the public via the Internet and other appropriate technologies as specified in the Recreation Plan (Condition 9).

Table 22. Minimum Pool Elevations for French Meadows and Hell Hole Reservoirs

Reservoir	Water Year Type ¹	Date Range	Water Surface Elevation (ft)	Date Range	Water Surface Elevation (ft)
French Meadows Reservoir	Wet	6/1 – 9/15	5,220	9/16 – 5/31	5,152
	Above Normal	6/1 – 9/15	5,220	9/16 – 5/31	5,152
	Below Normal	6/1 – 9/15	5,220	9/16 – 5/31	5,152
	Dry	6/1 – 9/1	5,200	9/2 – 5/31	5,152
	Critical	6/1 – 9/1	5,175	9/2 – 5/31	5,152
	Extreme Critical	6/1 – 9/1	5,175	9/2 – 5/31	5,120
Hell Hole Reservoir	Wet	6/1 – Labor Day	4,530	After Labor Day–5/31	4,451
	Above Normal	6/1 – Labor Day	4,530	After Labor Day–5/31	4,451
	Below Normal	6/1 – Labor Day	4,530	After Labor Day–5/31	4,402
	Dry	6/1 – 9/1	4,485	9/2 – 5/31	4,402
	Critical	6/1 – 9/1	4,455	9/2 – 5/31	4,402
	Extreme Critical	6/1 – 9/1	4,404	9/2 – 5/31	4,341

¹ Based on American River Unimpaired Runoff Below Folsom Lake for current year, October 1 through September 30, as estimated by DWR Bulletin 120 on or about the beginning of May, as outlined in Condition 1 of this certification.

7(B) Reservoir Elevation Recreation Objectives

Within one year of license issuance, the Licensee shall implement the reservoir recreation water surface elevation objectives (reservoir objectives) in Table 23.

If the May 15 or July 1 reservoir water surface elevation forecasts indicate that the Licensee cannot meet the reservoir objectives, the Licensee shall consult¹⁷ with USFS, CDFW, USFWS,

¹⁷ During Critical or Extreme Critical water years, the objective of consultation is to: (a) determine appropriate reservoir water surface elevations based on available water (including projected water

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and State Water Board staff by June 1 or July 15, respectively. By June 30 (for May 15 forecast) or August 15 (July 1 forecast), the Licensee shall submit an Alternate Reservoir Operations Plan (AROP) to the Deputy Director for review and approval. At a minimum, the AROP shall include:

- (i) The alternate reservoir level forecasts for French Meadows Reservoir and/or Hell Hole Reservoir, with documentation supporting the basis for the alternate reservoir level(s) and identification of any actions the Licensee could or plans to take to maintain or limit the lower reservoir level(s); and
- (ii) Documentation of consultation, including any comments and recommendations and how they were addressed.

The Deputy Director may require modifications as part of any approval. The Licensee shall file with FERC the Deputy Director-approved AROP and any approved amendments thereto.

Within five years of license issuance, and every five years thereafter, the Licensee shall submit a Recreation Reservoir Elevation Objectives Report (Reservoir Report) to the Deputy Director for review and approval. The Reservoir Report shall be prepared in consultation with USFS, CDFW, USFWS, and State Water Board staff. At a minimum, the Reservoir Report shall include:

- (i) A summary of reservoir objectives implementation, including an analysis of when reservoir objectives were and were not achieved (e.g., time periods when objectives were and were not achieved);
- (ii) Reasons why reservoir objectives were not achieved, if applicable;
- (iii) Measures taken to achieve the reservoir objectives;
- (iv) Proposed measures to achieve reservoir objectives in the future;
- (v) Documentation of consultation, including any comments and recommendations received during consultation and how they were addressed; and
- (vi) Any proposed modifications to the reservoir objectives.

The Deputy Director may require modifications as part of any approval. The Licensee shall file with FERC the Deputy Director-approved Reservoir Report and any approved amendments thereto. The Licensee shall implement the Reservoir Report upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

deliveries) and priorities (e.g., boat ramp access); and (b) initiate implementation of any additional measures that will be funded by the Licensee due to the low reservoir levels (e.g., additional patrols, shoreline protection from motorized use, additional public information)

Table 23. Reservoir Recreation Objectives for French Meadows Reservoir and Hell Hole Reservoir

Reservoir	Water Year Type ¹	Date	Water Surface Elevation (ft)
French Meadows Reservoir	Wet	Jul 15	5,245
	Above Normal	Jul 15	5,245
	Below Normal	Jul 15	5,240
	Dry	Jul 15	5,220
	Critical	Jul 15	5,200
	Extreme Critical	--	--
Hell Hole Reservoir	Wet	Jul 15	4,590
	Above Normal	Jul 15	4,580
	Below Normal	Jul 15	4,570
	Dry	Jul 15	4,530
	Critical	Jul 15	4,530
	Extreme Critical	Sep 1	4,450

¹ Water year types are based on the DWR Bulletin 120 May forecast, per Condition 1 of this certification.

CONDITION 8. Recreational Flows below Oxbow Powerhouse

8(A) Whitewater Boating Flows

Within 30 days after license issuance, the Licensee shall provide the whitewater boating flows outlined in Tables 24, 25, and 26. The relevant water year types are defined in Condition 1. The whitewater boating flows shall be measured in the Middle Fork American River near the Foresthill gage (USGS gage number 11433300).

The following apply to whitewater boating flow provisions:

- (x) Whitewater boating flows shall be measured in cfs;
- (xi) Whitewater boating flows shall be provided during the specified timeframes;
- (xii) Once initiated, the streamflow hourly running average measurements (measured in 15-minute or more frequent intervals) shall be no less than the required whitewater boating streamflow;
- (xiii) If there is a forced or unplanned outage at the Middle Fork Powerhouse, Ralston Powerhouse, or Oxbow Powerhouse, whitewater boating flow requirements shall be suspended until the powerhouse(s) is returned to service;
- (xiv) Whitewater boating flows may be temporarily modified in emergency or non-emergency situations under the same conditions outlined for MIFs (Condition 1(B)(iv)); and
- (xv) The Licensee shall provide public notice of whitewater boating flows via the website, as detailed in the Recreation Plan (Condition 9).

Table 24. Class IV Run Whitewater Boating Flow Requirements for Summer Weekdays in Middle Fork American River below Oxbow Powerhouse

Water Year Type	Flow Magnitude ¹	Timing	Required Days/Week: June 1 through Labor Day	Required Days/Week: After Labor Day through Sept. 30
Wet	1,000 cfs	3 hours (9:00 am – 12:00 pm)	5 days (Monday – Friday)	4 days (Tue, Wed, Thurs, Fri)
Above Normal	1,000 cfs	3 hours (9:00 am – 12:00 pm)	5 days (Monday – Friday)	3 days (Tue, Wed, Fri)
Below Normal	1,000 cfs	3 hours (9:00 am – 12:00 pm)	4 days (Tuesday – Friday)	3 days (Tue, Wed, Fri)
Dry	1,000 cfs	3 hours (8:00 am – 11:00 am)	3 days (Tue, Wed, Fri), except for Friday before Labor Day and Memorial Day ²	2 days (Wed, Fri)
Critical	1,000 cfs	3 hours (8:00 am – 11:00 am)	2 days (Wed, Fri), except for Memorial Day ²	--
Extreme Critical	1,000 cfs	3 hours (8:00 am – 11:00 am)	1 day (Wed)	--

¹ Flow compliance shall be measured at the Middle Fork American River near Foresthill (USGS gage number 11433300).

² One of the days during this week is used for the Class II (Confluence Run) boating (refer to Table 26).

Table 25. Class IV Run Whitewater Boating Flow Requirements for Summer Weekends in Middle Fork American River below Oxbow Powerhouse

Water Year Type	Flow Magnitude ¹	Timing	Required Days/Week: Saturday before Memorial Day through Labor Day	Required Days/Week: After Labor Day through Sept. 30
Wet	1,000 cfs	4 hours (8:00 am – 12:00 pm)	Saturdays and Sundays	Saturdays and Sundays
Above Normal	1,000 cfs	4 hours (8:00 am – 12:00 pm)	Saturdays and Sundays	Saturdays and Sundays
Below Normal	1,000 cfs	4 hours (8:00 am – 12:00 pm)	Saturdays (except for Western States 100 and Tevis Cup Race Days) and Sundays	Saturdays and Sundays
Dry	1,000 cfs	3 hours (8:30 am – 11:30 am)	Saturdays (except for Western States 100 and Tevis Cup Race Days) and Sundays (except one Sunday ² in July)	Saturdays and Sundays
Critical	1,000 cfs	3 hours (8:30 am – 11:30 am)	Saturdays (except for Western States 100 and Tevis Cup Race Days) and Sundays (except one Sunday ² in July)	Saturdays
Extreme Critical	1,000 cfs	3 hours (8:30 am – 11:30 am)	Saturdays except for Western States 100 and Tevis Cup Race Days	---

¹ Flow compliance shall be measured at the Middle Fork American River near Foresthill (USGS gage number 11433300).

² This Sunday used for Class II Run (Confluence) boating (refer to Table 26).

Table 26. Class II Confluence Run¹ Whitewater Boating Flow Requirements for Summer Weekdays and Weekends

Water Year Type	Flow Magnitude ²	Timing	Weekdays	Weekends		
			Required Days: Memorial Day through Labor Day	Required Days: Saturday before Memorial Day through June 30	Required Days: July 1 through Labor Day	Required Days: After Labor Day through Sept 30
Wet	800 cfs	5 hours (3:00 am – 8:00 am)	--	--	Saturdays	Two Saturdays per Month
Above Normal	800 cfs	5 hours (3:00 am – 8:00 am)	--	--	Saturdays	Two Saturdays per Month
Below Normal	800 cfs	4 hours (4:00 am – 8:00 am)	--	Two Saturdays per Month	Two Saturdays per Month	One Saturday per Month
	1,000 cfs	3 hours (4:00 am – 7:00 am)	--	Western States 100 Race Day	Tevis Cup Race Day	--
Dry	1,000 cfs	3 hours (4:00 am – 7:00 am)	Memorial Day and Friday before Labor Day	Western States 100 Race Day	One Sunday in July and Tevis Cup Race Day	--
Critical	1,000 cfs	3 hours (4:00 am – 7:00 am)	Memorial Day	Western States 100 Race Day	One Sunday in July and Tevis Cup Race Day	--
Extreme Critical	1,000 cfs	3 hours (4:00 am – 7:00 am)	--	Western States 100 Race Day	Tevis Cup Race Day	--

¹ The “Confluence Run” is the river reach from the confluence of the Middle and North Forks of the American River to Folsom Reservoir.

² Flow compliance shall be measured at Middle Fork American River near Foresthill (USGS gage no. 11433300).

In addition to the whitewater boating flows in Tables 24, 25, and 26, up to two additional days per year may be scheduled for special whitewater flow events. Individuals, groups, or agencies may submit a request to the Licensee for single-day whitewater boating flow events by April 15 each year. The Licensee shall select the event(s) based on available water supply and existing consumptive demands, hydroelectric generation demands, and generating unit availability. By May 15 of each year, the Licensee shall respond to requests for single-day flow events and notify State Water Board staff of its responses to requests.

8(B) Special Event Recreation Coordination

The Licensee shall provide the whitewater boating and special event recreation flows in the Middle Fork American River below Oxbow Powerhouse as specified below:

Tevis Cup and Western State 100 Race Day Events

The Licensee shall coordinate annually with representatives of the Tevis Cup and Western States 100 Race Day events to identify and provide flows suitable for trail crossing conditions for these events (when such flows are within the control of the Licensee). When recreation flows for the Tevis Cup and Western States 100 Race Day events occur, recreation flows for these events take priority over the whitewater boating flows described in Condition 8(A).

Wounded Warrior Event

If the Licensee is notified by June 1 that a Horseshoe Bar Fish and Game Preserve Wounded Warrior event is scheduled during an annual maintenance outage, based on the annual maintenance outage schedule posted by the Licensee (by May 1), and the outage schedule changes, the Licensee shall work with the event organizers to provide steady flows during the event (for up to five days).

CONDITION 9. Recreation Management

Within 30 days of license issuance, the Licensee shall implement the Recreation Plan, as submitted to FERC on November 30, 2012, as an attachment to the Final 4(e) Conditions, in accordance with the schedule and requirements specified therein. Any construction or other related activities described in the Recreation Plan that may impact water quality or beneficial uses are subject to review and approval by the Deputy Director prior to implementation. For such activities, the Licensee shall provide the Deputy Director with a Site-Specific Recreation Plan for review and approval, specific to each proposed activity¹⁸, that includes:

- (a) Description of site conditions and the proposed activity;
- (b) Detailed descriptions, design drawings, and specific topographic locations of all control measures in relation to the proposed activity, which may include:
 - (i) Measures to divert runoff away from disturbed land surfaces;
 - (ii) Measures to collect and filter runoff from disturbed land surfaces, including sediment ponds at the diversion and powerhouse sites; and
 - (iii) Measures to dissipate energy and prevent erosion;
- (c) Revegetation measures for disturbed areas, which shall include use of native plants and locally-sourced plants and seeds; and
- (d) A monitoring, maintenance, and reporting schedule.

The Licensee shall file a Deputy Director-approved Site-Specific Recreation Plan with FERC. The Licensee shall implement Site-Specific Recreation Plans upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

The Licensee shall submit annual recreation reports and other documents (surveys, plans, etc.) associated with the Recreation Plan to the Deputy Director. As part of the annual recreation

¹⁸ Proposed activities may be combined into one Site-Specific Recreation Plan or be submitted separately, as proposed activities are ready for review.

reports, the Licensee may request Deputy Director approval of modifications to the Recreation Plan. The Licensee shall consult with the USFS, CDFW, USFWS, and State Water Board staff before proposing such modifications. The Deputy Director may require modifications as part of any approval. The Licensee shall file the updated Recreation Plan with FERC. The Licensee shall implement the updated Deputy Director-approved Recreation Plan upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 10. Monitoring Program

Within 30 days of license issuance, the Licensee shall implement the following eight monitoring plans¹⁹, in accordance with the schedule and requirements specified in each plan:

- (i) Benthic Macroinvertebrates Monitoring Plan
- (ii) Fish Population Monitoring Plan
- (iii) Foothill Yellow-legged Frog Monitoring Plan
- (iv) Geomorphology and Riparian Monitoring Plan
- (v) Mercury Bioaccumulation Monitoring
- (vi) Water Quality Monitoring Plan
- (vii) Water Temperature Monitoring Plan
- (viii) Western Pond Turtle Monitoring Plan

Within three months of license issuance, the Licensee shall submit an implementation schedule for the Geomorphology and Riparian Monitoring Plan to the Deputy Director for review and approval.

Within six months of submitting the initial report for each of the monitoring plans, the Licensee shall consult with USFS, CDFW, USFWS, and State Water Board staff to identify if plan modifications are needed and develop recommendations for monitoring plan modifications, if needed. Based on the outcome of the consultation, the Licensee shall submit proposed updates to applicable monitoring plans to the Deputy Director for review and approval. In addition to the proposed modification and supporting information, the submittal shall include: (a) documentation of consultation with USFS, CDFW, USFWS, and the State Water Board staff; (b) comments and recommendations provided; and (c) a description of how the Licensee incorporated or addressed the comments and recommendations. The Deputy Director may make modifications as part of any approval. Requests for subsequent monitoring plan updates shall be submitted to the Deputy Director for review and approval, and follow the consultation process outlined in this condition. The Licensee shall file with FERC any Deputy Director-approved updates to monitoring plans. The Licensee shall implement the modified plan(s) upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

¹⁹ The eight plans were submitted to FERC on November 30, 2012, as attachments to the Final 4(e) Conditions.

CONDITION 11. Spawning Habitat Improvement below Ralston Afterbay Dam

Within one year of license issuance, the Licensee shall submit a Spawning Habitat Improvement Plan (Habitat Improvement Plan) to the Deputy Director for review and approval. The primary goal of the Habitat Improvement Plan shall be to improve habitat in the 0.48-mile section of the Middle Fork American River immediately below Ralston Afterbay Dam to enhance trout spawning during spring flow releases and juvenile trout recruitment into the peaking reach downstream of Oxbow Powerhouse. At a minimum, the Habitat Improvement Plan shall include:

- (a) Specific work that will be performed, including the location and timing of the proposed work;
- (b) Measures that will be implemented during habitat improvement work to protect water quality and beneficial uses; and
- (c) Monitoring and reporting that will be performed.

The Habitat Improvement Plan shall be developed in consultation with USFS, CDFW, USFWS, and State Water Board staff. The Habitat Improvement Plan shall include: (a) documentation of consultation with USFS, CDFW, USFWS, and the State Water Board staff; (b) comments and recommendations provided; and (c) a description of how the Licensee addressed the comments and recommendations. The Deputy Director may require modifications to the Habitat Improvement Plan as part of any approval. The Licensee shall file with FERC the Deputy Director-approved Habitat Improvement Plan and any approved amendments thereto. The Licensee shall begin implementation of the Habitat Improvement Plan upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 12. Fish Entrainment at Ralston and Oxbow Powerhouse Intakes

Within one year of license issuance, the Licensee shall develop a Fish Entrainment Study Plan in consultation with USFS, CDFW, USFWS, and State Water Board staff, and submit it to the Deputy Director for review and approval. The Deputy Director may require modifications to the Fish Entrainment Study Plan as part of any approval. The Licensee shall file with FERC the Deputy Director-approved Fish Entrainment Study Plan and any approved amendments thereto. The primary goal of the Fish Entrainment Study shall be to monitor fish entrainment at the Ralston Powerhouse and Oxbow Powerhouse intakes and outflow during all four seasons of the year.

At a minimum, the Fish Entrainment Study Plan shall include:

- (i) Monitoring locations for: (a) Ralston Powerhouse intake (Middle Fork Interbay) and outflow; and (b) Oxbow Powerhouse intake (Ralston Afterbay) and outflow;
- (ii) Monitoring schedule for all four seasons of the year (winter, spring, summer, and fall);
- (iii) Monitoring approach for direct entrainment that includes:
 - (1) Collection of fish from each of the respective upstream forebays and rivers;
 - (2) Use of Passive Integrated Transponder (PIT) tags, radio/acoustic tags, or other similar alternative agreed on during consultation;

- (3) Use of an automatic PIT tag reader at the powerhouse intakes and/or outlets, stationary radio/acoustic receivers (with data loggers) at the powerhouse intakes or outlets, or other similar alternative agreed on during consultation;
- (4) Establishment of the number of fish, species, and sizes to be tagged, and a maximum sampling effort, as agreed on during consultation; and
- (5) Calibration of PIT tag readers, radio/acoustic receivers, or other potential monitoring method devices (if applicable) following manufacturer instructions, and maintenance of a calibration log;
- (iv) Method(s) for estimating fish populations. These estimates shall be obtained from the fish population monitoring studies in the river reaches immediately upstream of Middle Fork Interbay and Ralston Afterbay or, if not available, shall be developed as part of the Fish Entrainment Study (as needed) at the following locations: (a) Middle Fork American River upstream of Middle Fork Interbay; (b) Middle Fork American River upstream of Ralston Afterbay; and (c) Rubicon River upstream of Ralston Afterbay;
- (v) Methods for estimating or measuring survival of entrained fish at the Ralston Powerhouse and Oxbow Powerhouse. To the extent feasible, the methods shall estimate or measure the condition of entrained fish;
- (vi) Description of the data analysis to be performed, which at a minimum shall include the percent of fish standing crop upstream and percent survival of entrained fish; and
- (vii) A summary of consultation, including comments received and how the comments were addressed.

The Licensee shall implement the Fish Entrainment Study Plan upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

The Licensee shall submit an Entrainment Study Report to the Deputy Director for review and approval within 120 days following implementation of the Fish Entrainment Study Plan. The Entrainment Study Report shall be developed in consultation with USFS, USFWS, CDFW, and State Water Board staff. The Entrainment Study Report shall include: the data and analysis resulting from implementation of the Fish Entrainment Study Plan; potential entrainment mitigation or prevention strategies, if deemed necessary based on the results of the Fish Entrainment Study; and recommendations of any proposed actions. The Entrainment Study Report shall include: (a) documentation of consultation with USFS, CDFW, USFWS, and State Water Board staff; (b) comments and recommendations provided; and (c) a description of how the Licensee incorporated or addressed the comments and recommendations. The Deputy Director may require modifications to the Entrainment Study Report as part of any approval. The Licensee shall file with FERC the Deputy Director-approved Entrainment Study Report and any approved amendments thereto. The Licensee shall begin implementation of the Entrainment Study Report, if applicable, upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 13. Large Woody Material

Within one year of license issuance, the Licensee shall submit a Large Woody Material Management Plan (LWM Plan) to the Deputy Director for review and approval. The Deputy Director may require modifications to the LWM Plan as part of any approval. The LWM Plan shall be developed in consultation with USFS, CDFW, USFWS, and State Water Board staff.

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The Licensee shall file with FERC the Deputy Director-approved LWM Plan and any approved amendments thereto. At a minimum, the LWM Plan shall include:

- (i) Goals and objectives;
- (ii) Description of existing locations where large woody material collects at Project facilities;
- (iii) Description of potential options for moving large woody material below Project facilities, and for keeping large woody material in the river corridor;
- (iv) Identification of suitable locations where large woody material can be placed in the active river channel to be mobilized by two- to five-year high flow events;
- (v) Implementation schedule;
- (vi) A monitoring and reporting program that describes how the Licensee will evaluate and report on the performance of large woody material management efforts;
- (vii) An adaptive management program that describes how the Licensee plans to adjust large woody material management and monitoring methods based on evaluation of information and monitoring resulting from implementation of the LWM Plan; and
- (viii) A summary of consultation, including comments received and how the comments were addressed.

The Licensee shall begin implementation of the LWM Plan upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 14. Aquatic Invasive Species

Within one year of license issuance, the Licensee shall submit an Aquatic Invasive Species Management Plan (AIS Plan) to the Deputy Director for review and approval. The Deputy Director may require modifications to the AIS Plan as part of any approval. The AIS Plan shall be developed in consultation with USFS, CDFW, USFWS, and State Water Board staff. Primary goals of the AIS Plan shall include, but not be limited to addressing the invasive New Zealand mudsnail (*Potamopyrgus antipodarum*), Quagga mussels (*Dreissena bugensis*), and zebra mussels (*Dreissena polymorpha*) if they are found during monitoring in Project reservoirs and Project-affected stream reaches. In addition, if during the FERC license term scientific studies document a safe method of reducing the invasive algae *Didymosphenia geminate*, the Licensee shall update the AIS Plan to include implementation of the method in the Project area.

At a minimum, the AIS Plan shall include:

- (i) Maps and descriptions of monitoring locations in Project reservoirs and stream reaches;
- (ii) Description of monitoring methodologies, analyses, and interpretation of results;
- (iii) Monitoring and reporting schedule;
- (iv) Implementation of the following preventative aquatic invasive species best management practices in the FERC Project Boundary at Project reservoirs:
 - (1) A public education program, including signage and information pamphlets at public boat access sites, that describe the following prevention actions:

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- (a) Drain water from boats, motors, bilges, live wells, and bait containers before leaving a water access site;
 - (b) Remove visible plants, animals, and mud from boats before leaving waterbody;
 - (c) Clean and dry boats using CDFW accepted protocols before entering any waterbody, to prevent the spread of all aquatic invasive species;
 - (d) Dispose of unwanted bait in trash, including earthworms;
 - (e) Avoid the release of plants and animals into a waterbody unless they already came from that waterbody; and
 - (f) Prevent the spread of amphibian chytrid fungus;
- (2) If any reservoir access sites become infested with aquatic invasive species, the Licensee shall consult with appropriate agencies and institute appropriate best management practices, including, but not limited to signage, access restrictions, and inspection and cleaning stations; and
 - (3) In accordance with Fish and Game Code section 2302, Project reservoirs shall be assessed for their vulnerability to the introduction of non-native dreissenid mussel species (i.e., quagga and zebra mussels) and if necessary, further actions to prevent their introduction shall be designed and implemented.

The Licensee shall file with FERC the Deputy Director-approved AIS Plan and any approved amendments thereto. The Licensee shall begin implementation of the AIS Plan upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 15. Bald Eagles

Within six months of license issuance, the Licensee shall implement the Bald Eagle Management Plan²⁰, in accordance with the schedule and requirements specified therein. The Licensee shall provide State Water Board staff with the annual active nest monitoring reports and the five-year nest and winter roost survey reports. The Licensee shall submit any modifications to the Bald Eagle Management Plan, with supporting information, to the Deputy Director for review and approval. The modifications shall be developed in consultation with USFS, CDFW, USFWS, and State Water Board staff. The Licensee shall file with FERC the Deputy Director-approved Bald Eagle Management Plan and any approved amendments thereto. The Licensee shall implement approved modifications to the Bald Eagle Management Plan upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 16. Erosion Control and Sediment Management

16(A) Erosion Control Plan

Within one year of license issuance, the Licensee shall submit an Erosion Control Plan to the Deputy Director for review and approval. The Deputy Director may require modifications to the

²⁰ The Bald Eagle Management Plan was submitted to FERC on November 30, 2012, as an attachment to the Final 4(e) Conditions.

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Erosion Control Plan as part of any approval. The Erosion Control Plan shall be developed in consultation with USFS, CDFW, USFWS, and State Water Board staff.

At a minimum, the Erosion Control Plan shall include:

- (i) Identification of erosion sites throughout the Project area, for initial and periodic assessment monitoring. Assessment should include determination of whether the erosion is Project-related;
- (ii) Initial and periodic monitoring and assessment at Project-related erosion sites;
- (iii) Metrics to determine the effectiveness of erosion treatment measures;
- (iv) Criteria for prioritizing the treatment of Project-related erosion sites, including a risk rating and hazard assessment for scheduling erosion treatment measures and monitoring at each site;
- (v) Erosion control measures that incorporate current standards, follow regulations and guidance (e.g., best management practices), and are customized to site-specific conditions;
- (vi) Development and implementation of a treatment schedule (e.g., repair, mitigate, monitor) for Project-related erosion sites, including a list of sites requiring immediate mitigation, and schedule for implementation;
- (vii) Monitoring effectiveness of completed erosion control treatment measures to determine if further erosion control measures are needed. If erosion control measures are not effective, the Licensee shall implement additional erosion control measures and continue monitoring until the site is stabilized;
- (viii) Protocols for emergency erosion and sediment control;
- (ix) A process for documenting and reporting assessment and monitoring results, including periodic plan review, revision, and approval by the Deputy Director. Documentation shall include a GIS database for maps keyed to a narrative description of detailed, site-specific, erosion treatment measures and sediment monitoring results;
- (x) Erosion control guidelines for new construction or non-routine maintenance. These guidelines shall prevent erosion, stream sedimentation, dust, and soil mass movement during the period of ground disturbance until permanent measures can be instituted. The Licensee may reference Condition 17;
- (xi) Surveys to identify new Project-related erosion sites throughout the term of the new license.

The Licensee shall file with FERC the Deputy Director-approved Erosion Control Plan and any approved amendments thereto. The Licensee shall begin implementation of the Erosion Control Plan upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

16(B) Sediment Management Plan

Within six months of license issuance, the Licensee shall submit an updated Sediment Management Plan to the Deputy Director for review and approval. The updated Sediment Management Plan shall be based on the Sediment Management Plan dated February 2011, and provided to FERC on November 30, 2012, as an attachment to the Final 4e Conditions.

The updated Sediment Management Plan shall be modified to specify the proposed frequency of sediment management activities and demonstrate how the Licensee will comply with the Basin Plan. The Deputy Director may require modifications to the Sediment Management Plan as part of any approval. The Licensee shall file with FERC the Deputy Director-approved Sediment Management Plan, and any approved amendments thereto. The Licensee shall implement the Sediment Management Plan upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 17. Water Quality Protection

17(A) Hell Hole Reservoir Seasonal Storage Increase Improvement Project

At least one year prior to initiating ground disturbing work related to the Hell Hole Reservoir Seasonal Storage Improvement Project (HHR Storage Project), the Licensee shall submit a Water Quality Protection Plan (Water Quality Plan) for the HHR Storage Project to the Deputy Director for review and approval. The Water Quality Plan for HHR Storage Project shall be developed in consultation with USFS, CDFW, USFWS, and State Water Board staff. The Deputy Director may require modifications to the Water Quality Plan for HHR Storage Project as part of any approval. At a minimum, the Water Quality Plan for HHR Storage Project shall include:

- (i) Final design plans for construction;
- (ii) Implementation schedule;
- (iii) Description of measures that will be implemented to protect water quality and beneficial uses;
- (iv) Monitoring and reporting that will be implemented throughout the HHR Storage Project; and
- (v) A summary of consultation, including comments received and how the comments were addressed.

The Licensee shall file with FERC the Deputy Director-approved Water Quality Plan for HHR Storage Project and any approved amendments thereto. The Licensee shall implement the Deputy Director-approved Water Quality Plan for HHR Storage Project upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

17(B) Modifications at Duncan Creek, North Fork, and South Fork Long Canyon Creek Diversion Dams

At least one year prior to initiating ground disturbing work related to modifications at Duncan Creek, North Fork, and South Fork Long Canyon Creek Diversion Dams (Diversion Dams), the Licensee shall submit a Water Quality Plan for the Diversion Dams to the Deputy Director for review and approval. The Water Quality Plan for Diversion Dams shall be developed in consultation with USFS, CDFW, USFWS, and State Water Board staff. The Deputy Director may require modifications to the Water Quality Plan for Diversion Dams as part of any approval.

At a minimum, the Water Quality Plan for Diversion Dams shall include:

- (i) Final design plans for construction;
- (ii) Implementation schedule;

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- (iii) Description of measures that will be implemented to protect water quality and beneficial uses;
- (iv) Monitoring and reporting that will be implemented throughout the Diversion Dam modification work; and
- (v) A summary of consultation, including comments received and how the comments were addressed.

The Licensee shall file with FERC the Deputy Director-approved Water Quality Plan for Diversion Dams and any approved amendments thereto. The Licensee shall begin implementation of the Deputy Director-approved Water Quality Plan for Diversion Dams upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 18. Reintroduction of Anadromous Fish

If the National Marine Fisheries Service (NMFS) determines that anadromous fish passage above Folsom Dam is required under section 18 of the Federal Power Act, the Licensee shall consult with NMFS, USFS, CDFW, USFWS, and State Water Board staff to develop fish passage measures. The reintroduction of anadromous fish within the Project area may require, but not be limited to, evaluation of Project facilities and operations, flow regimes, availability of large woody material, graveled spawning habitat, and access to Project-affected tributaries. The State Water Board reserves the authority to modify or add conditions to this certification based on the outcome of the consultation process. The State Water Board also reserves the authority to require the Licensee to develop and conduct studies if federally listed anadromous fish are identified for reintroduction to the Project area. Such studies shall be designed in consultation with NMFS, USFS, CDFW, USFWS, and State Water Board staff, to determine appropriate measures to minimize potential impacts and protect water quality and beneficial uses.

CONDITION 19. Annual Consultation Meetings

Within one year of license issuance, the Licensee shall establish a Technical Review Group (TRG) to meet annually regarding implementation of the Project license. The first meeting of the TRG shall be held within two years of license issuance. At the annual meetings, the Licensee shall: (a) provide a summary of the past year's implementation of the Project's license, including the status and results of studies, a summary of activities conducted, and an overview and evaluation of data collected as required by conditions of this certification; (b) provide a summary of proposed activities; and (c) solicit input from the TRG to inform the development of adaptive management or other recommendations, as required by conditions of this certification. At a minimum, USFS, USFWS, CDFW, and State Water Board staff, Tribes, and nongovernmental organizations shall be invited to participate in the TRG. The annual meeting shall be open to the public. The Licensee shall provide 30-day notice of the annual meeting to the TRG. The Licensee shall work with the TRG to establish communication protocols to facilitate interactions between group members that allow for open participation and communication between all parties.

CONDITION 20. Extremely Dry Conditions

In the event of extremely dry conditions, which may include a year in which the Governor of the State of California declares a drought emergency for Placer County and/or El Dorado County, or

multiple consecutive Critical or Extreme Critical water years (as defined in Condition 1), the Licensee may request modification of the flow requirements of this certification. If the Licensee anticipates that it may request modification pursuant to this condition, the Licensee shall notify the Deputy Director, CDFW, USFS, and USFWS of the Licensee's concerns related to flows as early as possible, and no later than March 15 of the year in which a request may be submitted. If the Licensee requests modification pursuant to this condition, the Licensee shall develop a Revised Operations Plan in consultation with CDFW, USFS, USFWS, and State Water Board staff, for flows during the extremely dry conditions.

The Licensee shall provide notice of the proposed Revised Operations Plan to the TRG and other interested parties at least seven days prior to submittal to the Deputy Director. The Licensee's variance request shall include: (a) an estimate of water to be saved and the alternative beneficial uses for which the water is being conserved; (b) a timeline for the return to regular operations; (c) proposed monitoring for revised operations, including an estimation of any impacts the revised operations may have on any beneficial uses of water; and (d) proposed water conservation measures that will be implemented. If conservation measures are not applicable, the Licensee shall describe the circumstances and justification for not implementing water conservation measures.

The Licensee shall submit the proposed Revised Operations Plan to the Deputy Director for review and approval. The Licensee shall also provide a summary of any comments received and how the comments were addressed. The Deputy Director may require modifications to the Revised Operations Plan as part of any approval. The Licensee may implement the Revised Operations Plan upon receipt of Deputy Director and other required approvals, in accordance with the schedule and requirements specified therein. The Licensee shall file with FERC the Deputy Director-approved Revised Operations Plan, and any approved amendments thereto.

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CONDITION 21. The State Water Board's approval authority, including authority delegated to the Deputy Director or others, includes the authority to withhold approval or to require modification of a document prior to approval. The State Water Board may take enforcement action if the Licensee fails to provide or implement a required item in a timely manner. If a time extension is needed to submit an item for Deputy Director approval, the Licensee shall submit a written request for the extension, with justification, to the Deputy Director no later than 60 days prior to the deadline. The Licensee shall file with FERC any Deputy Director-approved time extensions.

CONDITION 22. The State Water Board reserves the authority to add to or modify the conditions of this certification: (i) to incorporate changes in technology, sampling, or methodologies; (ii) if monitoring results indicate that continued operation of the Project could violate water quality objectives or impair beneficial uses; (iii) to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act; (iv) to coordinate the operations of the Project and other hydrologically connected water development projects, where coordination of operations is reasonably necessary to meet water quality objectives and protect beneficial uses of water; and (v) to require additional monitoring and/or other measures, as needed, to ensure that continued operations of the Project meet water quality objectives and protect beneficial uses of the Middle Fork American River and its tributaries.

CONDITION 23. Future changes in climate projected to occur during the FERC license term may significantly alter the baseline assumptions used to develop the conditions of this certification. The State Water Board reserves authority to modify or add conditions in this certification to require additional monitoring and/or other measures, as needed, to verify that Project operations meet water quality objectives and protect the beneficial uses assigned to the Project-affected stream reaches.

CONDITION 24. The State Water Board shall provide notice and an opportunity to be heard in exercising its authority to add to or modify the conditions of this certification.

CONDITION 25. This certification is contingent on compliance with all applicable requirements of the Basin Plan.

CONDITION 26. Notwithstanding any more specific conditions in this certification, the Project shall be operated in a manner consistent with all applicable water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act. The Licensee must take all reasonable measures to protect the beneficial uses of the Middle Fork American River watershed.

CONDITION 27. Unless otherwise specified in this certification or at the request of the Deputy Director, data and/or reports shall be submitted electronically in a format accepted by the State Water Board to facilitate the incorporation of this information into public reports and the State Water Board's water quality database systems in compliance with Water Code section 13167.

CONDITION 28. This certification does not authorize any act which results in the taking of a threatened, endangered, or candidate species or any act which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (ESA) (Fish & G. Code §§ 2050 – 2097) or the federal ESA (16 U.S.C. §§ 1531 – 1544). If a “take” will result from any act authorized under this certification or water rights held by the Licensee, the Licensee must obtain authorization for the take prior to any construction or operation of the portion of the Project that may result in a take. The Licensee is responsible for meeting all applicable state and federal ESA requirements for the Project authorized under this certification.

CONDITION 29. The Licensee shall submit any change to the Project, including operations, technology changes or upgrades, or methodology, which would have a significant or material effect on the findings, conclusions, or conditions of this certification, to the State Water Board for prior review and written approval. The State Water Board shall determine significance and may require consultation with state and/or federal agencies. If the State Water Board is not notified of a change to the Project, it will be considered a violation of this certification. If such a change would also require submission to FERC, the change must first be submitted to and approved by the Executive Director of the State Water Board.

CONDITION 30. In the event of any violation or threatened violation of the conditions of this certification, the violation or threatened violation is subject to any remedies, penalties, process or sanctions as provided for under applicable state or federal law. For the purposes of section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process, or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification.

CONDITION 31. In response to a suspected violation of any condition of this certification, the State Water Board or Central Valley Regional Water Quality Control Board (Central Valley Regional Water Board) may require the holder of any federal permit or license subject to this certification to furnish, under penalty of perjury, any technical or monitoring reports the State Water Board deems appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. (Wat. Code, §§ 1051, 13165, 13267, and 13383.)

CONDITION 32. In response to any violation of the conditions of this certification, the State Water Board may add to or modify the conditions of this certification as appropriate to ensure compliance.

CONDITION 33. This certification shall not be construed as replacement or substitution for any necessary federal, state, and local approvals. The Licensee is responsible for compliance with all applicable federal, state, or local laws or ordinances and shall obtain authorization from applicable regulatory agencies prior to the commencement of Project-related activities.

CONDITION 34. Any requirement in this certification that refers to an agency whose authorities and responsibilities are transferred to or subsumed by another state or federal agency, will apply equally to the successor agency.

CONDITION 35. The Deputy Director and the Executive Officer of the Central Valley Regional Water Board (Executive Officer) shall be notified one week prior to the commencement of ground disturbing activities with the potential to adversely affect water quality. Upon request, a construction schedule shall be provided to agency staff. The Licensee shall provide State Water Board and Regional Water Board staffs access to the Project sites to document compliance with this certification.

CONDITION 36. A copy of this certification shall be provided to all contractors and subcontractors conducting work related to the Project, and copies shall remain in their possession at the Project site(s). The Licensee shall be responsible for work conducted by its contractor, subcontractors, or other persons conducting work related to the Project.

CONDITION 37. Onsite containment for storage of chemicals classified as hazardous shall be located away from watercourses and include secondary containment and appropriate management as specified in California Code of Regulations, title 27, section 20320.

CONDITION 38. Activities associated with operation and maintenance of the Project that threaten or potentially threaten water quality shall be subject to further review by the Deputy Director and Executive Officer.

CONDITION 39. Nothing in this certification shall be construed as State Water Board approval of the validity of any water rights, including pre-1914 claims. The State Water Board has separate authority under the Water Code to investigate and take enforcement action, if necessary, to prevent any unauthorized or threatened unauthorized diversions of water.

CONDITION 40. This certification is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Water Code section 13330 and California Code of Regulations, title 23, division 3, chapter 28, article 6 (commencing with section 3867).

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CONDITION 41. This certification is not intended and shall not be construed to apply to any activity involving a hydroelectric facility and requiring a FERC license or an amendment to a FERC license unless the pertinent application for certification was filed pursuant to California Code of Regulations, title 23, section 3855, subdivision (b) and that application for certification specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

CONDITION 42. This certification is conditioned upon total payment of any fee required under California Code of Regulations, title 23, division 3, chapter 28.



Eileen Sobeck
Executive Director

4/17/19

Date

Middle Fork American River Project Water Quality Certification

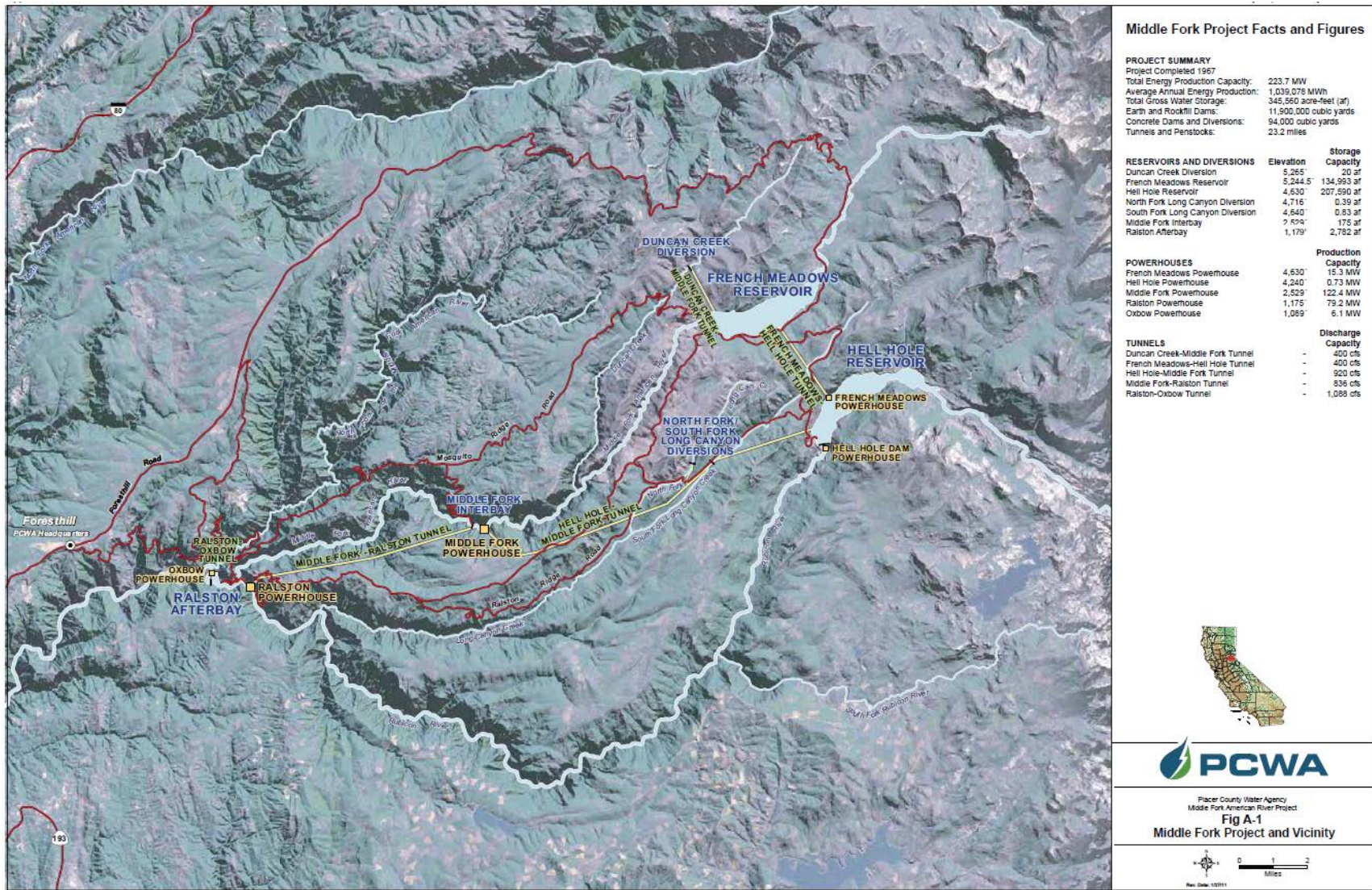


Figure 1. Middle Fork American River Project

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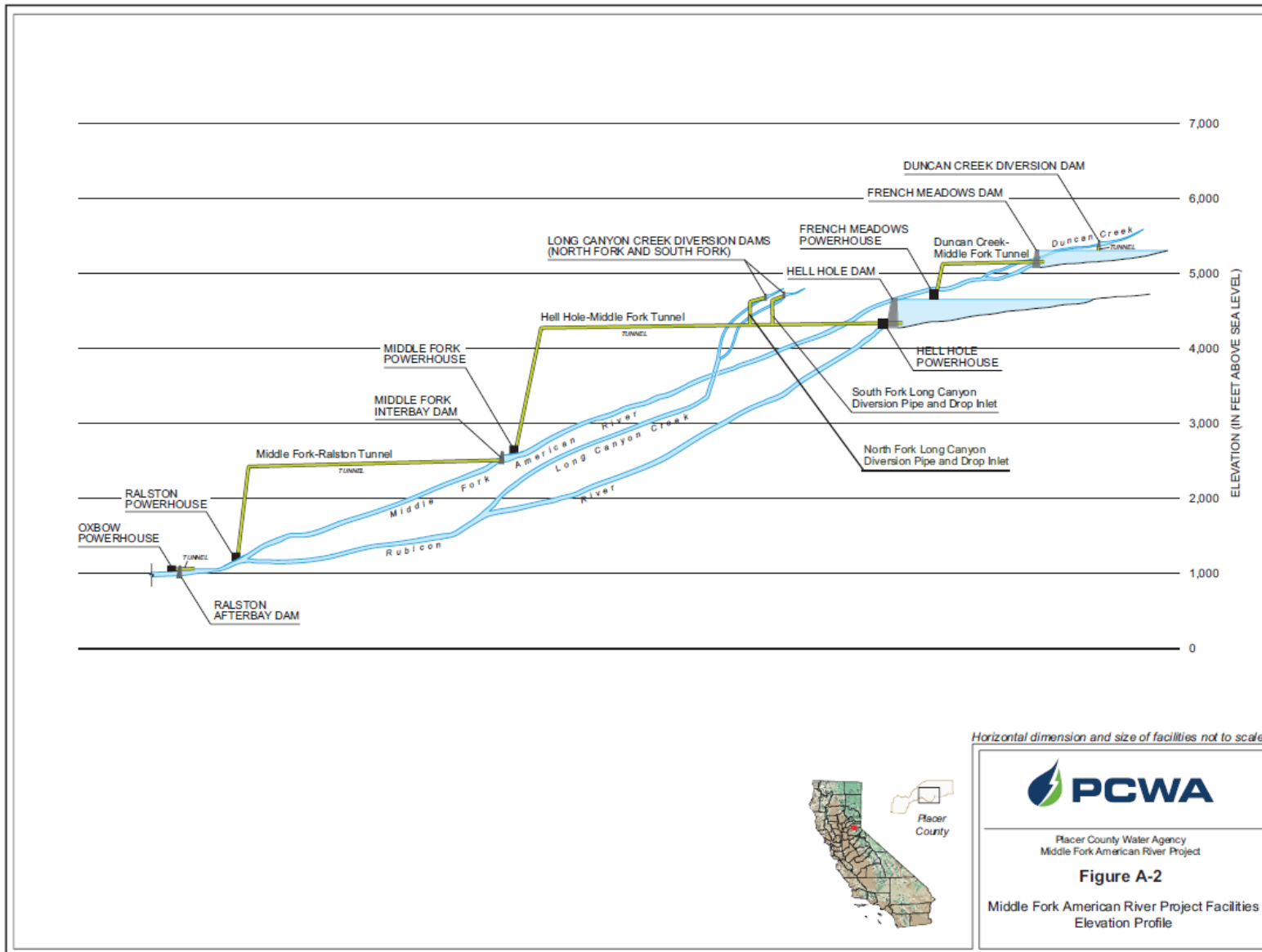


Figure 2. Elevation Profile for the Middle Fork American River Project