STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

In the Matter of Water Quality Certification for

PACIFIC GAS AND ELECTRIC COMPANY

MCCLOUD-PIT HYDROELECTRIC PROJECT

FEDERAL ENERGY REGULATORY COMMISSION PROJECT NO. 2106

Sources: McCloud River, Iron Canyon Creek, and Pit River

Counties: Shasta and Siskiyou

WATER QUALITY CERTIFICATION FOR FEDERAL PERMIT OR LICENSE (PART OF ORDER RESPONDING TO PETITIONS FOR CONSIDERATION)

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1.0 Project Description

The McCloud-Pit Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC) Project No. 2106, is located on the McCloud River, Pit River, and Iron Canyon Creek in Shasta and Siskiyou Counties, California, and is owned and operated by the Pacific Gas and Electric Company (PG&E). The Project consists of three existing developments: James B. Black; Pit 6; and Pit 7 (Figure 1). Project facilities consist of two storage reservoirs (McCloud and Iron Canyon Reservoirs), two regulating reservoirs (Pit 6 and Pit 7 Reservoirs), one afterbay (Pit 7 Afterbay), two tunnels, three powerhouses (James B. Black, Pit 6, and Pit 7 Powerhouses), and associated equipment and transmission facilities. The Project has a generation capacity of 368 megawatts (MW). The Project area totals 3,707.6 acres of land, of which: 1,651.4 acres (45 percent) are federally owned and managed by the United States Department of Agriculture − Forest Service (Forest Service); 1,239.4 acres (33 percent) are owned by PG&E; and the remaining 816.8 acres are private lands.

The original FERC license for the Project was issued on August 18, 1961 and expired on July 31, 2011. Since that time, the Project has been operating under annual licenses issued by FERC.

Shasta Dam is a United States Department of Interior – Bureau of Reclamation (USBR) dam that impounds waters of the Pit, Sacramento, and McCloud River basins to form Shasta Lake. The McCloud River originates at Moosehead Creek, southeast of Mt. Shasta, and flows southward, entering Shasta Lake from the north. The Pit River flows south from the town of Big Bend, and enters Shasta Lake on the east side. The Sacramento River enters Shasta Lake from its westernmost arm.

The Project transfers water from the McCloud River basin to the lower Pit River basin. Water generally moves though the Project to Shasta Lake as follows:

(i) Water moves from the McCloud Reservoir on the McCloud River to Iron Canyon Reservoir on Iron Canyon Creek via the McCloud Tunnel. Iron Canyon Creek is a tributary to the Pit River.

(ii) Water from Iron Canyon Reservoir moves via the Iron Canyon Tunnel to the James B. Black Powerhouse, located on the Pit River just downstream of PG&E's Pit 3, 4, 5 Hydroelectric Project (FERC Project No. 233), where it moves through the Pit 6 and Pit 7 Developments and enters Shasta Lake.

Below is a summary of the existing and proposed Project developments and associated facilities, as well as a summary of PG&E's early proposal to add two new developments (McCloud and Pit 7 Afterbay) to the Project.

1.1 James B. Black Development

The James B. Black Development diverts water from the McCloud River at McCloud Reservoir via the McCloud Tunnel and releases it into Iron Canyon Reservoir. Water is then transferred from Iron Canyon Reservoir, via the Iron Canyon Tunnel and penstock, to the James B. Black Powerhouse on the Pit River, approximately 0.5 miles upstream

of the Pit 5 Powerhouse (FERC Project No. 233). Power generated at the James B. Black Powerhouse is delivered from the switchyard to the grid via PG&E transmission lines. The main facilities associated with the James B. Black Development are:

1.1.1 McCloud Dam and Reservoir: McCloud Dam is a 241-foot (ft)-high, 630-ft-long earth- and rock-filled dam that impounds McCloud Reservoir on the McCloud River. McCloud Reservoir has a surface area of 520 acres and a maximum storage capacity of approximately 31,197 acre-feet (ac-ft). The spillway is located on the south side of McCloud Dam, and has an elevation of 2,658 ft, with a maximum spill capacity of 50,000 cubic feet per second (cfs). McCloud Reservoir has a normal maximum water surface elevation of 2,680 ft.

McCloud Dam is equipped with three radial gates, each measuring 27 ft by 24.5 ft, that discharge water via the spillway to the McCloud River below the dam. Additionally, there is one lower gate at the base of McCloud Dam connected to an 84-inch-diameter pipe that can be used if the pipe must be dewatered. A separate 20-inch-diameter valve was installed in 2011 to provide for manual priming of the pipe after dewatering is complete. The 84-inch pipe ultimately bifurcates into separate pipes, one leading to a 24-inch Howell-Bunger valve and the other to an 84-inch butterfly valve. The Howell Bunger valve releases instream flows to the McCloud River and the butterfly valve is for emergency use to control reservoir levels. All four gates are operated using hydraulically pressurized cylinders. Because there is no electric power at the site, the pressurized cylinders operate using a portable gas-powered hydraulic pump that is manually connected to the system. All four gates and the butterfly valve were designed to operate in only the fully open or fully closed position and cannot be throttled to adjust water flow. However, the Howell-Bunger valve can be throttled by fully opening or closing one or more of the four gates; it is therefore the only outlet used to make the 1961 FERC license-required instream flow releases. With all four gates fully opened, the maximum flow release from the Howell-Bunger valve is 245 cfs.

1.1.2 Recreation Facilities: The McCloud Reservoir and McCloud River recreation facilities include:

(i) Tarantula Gulch Boat Launch and Day Use Area (existing; proposed reconstruction);

(ii) Red Banks Day Use Area (proposed new construction);

(iii) Battle Creek Shoreline Access (proposed new construction);

(iv) West Dam and East Dam Shoreline Access (proposed new construction);

(v) Star City Creek Campground and Day Use Area (proposed new construction);

(vi) McCloud Dam River Access (proposed new construction); and

(vii) Base of McCloud Dam Day Use Area (proposed new construction).

1.1.3 McCloud Tunnel: The McCloud Tunnel is a 7.2-mile-long tunnel, with 563 ft of steel pipeline at Hawkins Creek Crossing, that hydraulically links McCloud Reservoir and Iron Canyon Reservoir. An intake tower in McCloud Reservoir, with an intake of approximate diameter of 17 ft collects water that routes southeasterly to Iron Canyon Reservoir. The McCloud Tunnel at Hawkins Creek Crossing has a maximum flow capacity of approximately 1,400 cfs. The differential in water surface elevations between the McCloud Reservoir and Iron Canyon Reservoir controls the amount of water drafted through the tunnel.

1.1.5 Recreation Facilities: Iron Canyon Reservoir recreation facilities include:

(i) Hawkins Landing Campground (existing; proposed reconstruction);

(ii) Hawkins Boat Launch (existing; proposed reconstruction);

(iii) Deadlun Campground (existing; proposed reconstruction);

(iv) Gap Creek Campground (proposed new construction);

(v) Iron Canyon Boat Launch and Day Use Area (proposed new construction); and

(vi) Three shoreline access parking areas and trails at Iron Canyon (proposed new construction).

1.1.6 Iron Canyon Tunnel and Penstock: Iron Canyon Reservoir is connected to the James B. Black Powerhouse by the 2.9-mile-long Iron Canyon Tunnel, an associated 1,194-ft-long pipeline at Willow Spring Creek Crossing, and a 5,467-ft-long steel penstock. The Iron Canyon Penstock bifurcates before reaching James B. Black Powerhouse to deliver water to the two turbine generator units. The Iron Canyon Tunnel and Penstock have a total flow capacity of 2,000 cfs.

1.1.7 James B. Black Powerhouse: James B. Black Powerhouse is located on the northwest bank of the Pit River, approximately 0.5 miles upstream of the non-Project Pit 5 Powerhouse (FERC Project No. 233). The James B. Black Powerhouse is a three-level, reinforced-concrete structure containing two vertical shaft impulse turbines. The combined maximum capacity of the turbines is 172 MW. The average annual generation from 1987 to 2016 for the James B. Black Powerhouse was 629.9 gigawatt-hours (GWh).

1.1.8 James B. Black Switchyard: Transmission lines (230-kilovolts [kV]) extend approximately 0.5 miles from the transformer bank in the switchyard adjacent to the James B. Black Powerhouse to the switchyard adjacent to the Pit 5 Powerhouse (FERC Project No. 233). These transmission lines are commonly referred to as the Black Tap.

1.2 Pit 6 Development

The Pit 6 Development produces power by moving water in the Pit River from the Pit 6 Reservoir through the Pit 6 Powerhouse, which is located at the base of Pit 6 Dam. The main facilities associated with the Pit 6 Development are:

1.2.1 Pit 6 Dam and Reservoir: Pit 6 Dam and Reservoir are located on the Pit River downstream of James B. Black Powerhouse. The Pit 6 Dam is a 183-ft-high, 560-ft-long concrete dam with a crest elevation of 1,432 ft. The top of Pit 6 Dam contains a trash rake, motors for two slide gates, and a control building. The control building houses a hydraulic system for two low-level outlets at the base of Pit 6 Dam. Pit 6 Reservoir has a maximum storage capacity of approximately 15,619 ac-ft and a maximum surface area of approximately 265 acres. The normal maximum water surface elevation of the reservoir is 1,425 ft. The Pit 6 Reservoir serves as the forebay for the Pit 6 Powerhouse. Two 18-ft-diameter steel penstocks, with a total flow capacity of 6,470 cfs, extend 602 ft from the dam to the turbines in the Pit 6 Powerhouse.

1.2.2 Pit 6 Powerhouse: Pit 6 Powerhouse is located along the east bank of the Pit River at the base of Pit 6 Dam. The Pit 6 Powerhouse is a four-level reinforced concrete structure, three levels of which are below ground. The Pit 6 Powerhouse contains two vertical-shaft Francis reaction turbines with a combined maximum capacity of 80 MW. The average annual generation from 1987 to 2016 for the Pit 6 Powerhouse was 341.2 GWh.

1.2.3 Pit 6 Switchyard: Transmission lines (230-kV) extend approximately 3.3 miles from the switchyard adjacent to the Pit 6 Powerhouse to PG&E's interconnected transmission system. These transmission lines are commonly referred to as the Pit 6 Tap.

1.3 Pit 7 Development

The Pit 7 Development produces power by moving water in the Pit River from the Pit 7 Reservoir through the Pit 7 Powerhouse, which is located at the base of Pit 7 Dam. The main facilities associated with the Pit 7 Development are:

1.3.1 Pit 7 Dam and Reservoir: Pit 7 Dam and Reservoir are located on the Pit River downstream of Pit 6 Powerhouse. Pit 7 Dam is a 228-ft-high, 770-ft-long concrete gravity dam. The top of the dam contains a trash rake, motors for two slide gates at the crest of the dam, and a control building. The control building houses hydraulic controls for two low-level outlets at the base of Pit 7 Dam. Pit 7 Reservoir has a maximum storage capacity of 34,142 ac-ft and a surface area of approximately 468 acres at a normal maximum water surface elevation of 1,270 ft. The Pit 7 Reservoir serves as the forebay for Pit 7 Powerhouse. Two 15-ft-diameter penstocks extend 572 ft from the Pit 7 Dam to the turbines in the Pit 7 Powerhouse. The total flow capacity of the penstocks is 7,440 cfs.

1.3.2 Recreation Facilities: Pit 7 Reservoir recreation facilities include:

(i) Two Upper Pit 7 Reservoir Trailheads (proposed new construction);

(ii) Lower Pit 7 Reservoir Shoreline Access Site (proposed new construction); and

(iii) Fenders Flat Day Use Area (existing; proposed reconstruction).

1.3.3 Pit 7 Powerhouse: Pit 7 Powerhouse is located along the east bank of the Pit River at the base of Pit 7 Dam. The Pit 7 Powerhouse consists of a four-level reinforced concrete structure, three levels of which are below ground. The Pit 7 Powerhouse contains two vertical-shaft reaction turbines with a maximum combined capacity of 112 MW. The average annual generation from 1987 to 2016 for the Pit 7 Powerhouse was 470.3 GWh.

1.3.4 Pit 7 Switchyard: Transmission lines (230 kV) extend approximately 3.5 miles from the switchyard adjacent to the Pit 7 Powerhouse to PG&E's interconnected transmission system. These transmission lines are commonly referred to as the Pit 7 Tap.

1.3.5 Pit 7 Afterbay Dam: Pit 7 Afterbay Dam is a 30-ft-high steel-reinforced rock-fill structure, including a variable-width concrete gravity weir section. Pit 7 Afterbay has a surface area of approximately 69 acres at a normal maximum water surface elevation of 1,067 ft (i.e., the maximum water surface of Shasta Lake). The purpose of the Pit 7 Afterbay is to attenuate changes in flow from the Pit 7 Powerhouse before the flow enters Shasta Lake.

Early PG&E Project Proposal. In PG&E's final license application, dated July 15, 2009 and filed with FERC on July 16, 2009, PG&E proposed two new hydropower developments:

(i) McCloud Development: The McCloud Development would consist of a new powerhouse (five to eight MW) below McCloud Dam that would use water stored in McCloud Reservoir, and an associated transmission line that would be routed from the new McCloud Powerhouse to the town of McCloud in Siskiyou County; and

(ii) Pit 7 Afterbay Development: The Pit 7 Afterbay Development would consist of a new powerhouse (10 MW) below the Pit 7 Afterbay Dam that would use water released from Pit 7 Afterbay, and an associated transmission line that would be routed from the new Pit 7 Afterbay Powerhouse to the existing Pit 7 Switchyard near Pit 7 Dam.

These new generation facilities would add about 45.4 additional acres in the Project boundary, of which about 4.6 acres would be federally owned lands managed by the Forest Service. However, PG&E did not finalize designs or capacities for these two hydropower developments. PG&E describes in its license application that the economic feasibility of the two proposed hydropower developments depends in part on conditions included in the new Project license (i.e., new minimum instream flow requirements). At this time it is State Water Board staff's understanding that PG&E has decided to wait

until it receives the new FERC license before it determines whether to pursue the two additional hydropower developments. Therefore, this water quality certification does not cover these two proposed hydropower developments.

1.4 Water Rights

PG&E holds seven water right licenses for non-consumptive use of water for power generation for the Project, which are summarized in Table A.

Table A. Water Rights Held by PG&E for Project

Application No./ License No.	Water Right Type	Priority Date	Storage Amount (ac-ft/year)	Direct Diversion (cfs)	Source	Point(s) of Diversion & Re-diversion	Places of Use (Powerhouses)
A014743/ 009189*	Appropriative	April 7, 1952	15,000	4,500	Pit River	• Pit 6 Dam	• Pit 6
A014785/ 010215	Appropriative	April 29, 1952	--	1,870	McCloud River	• McCloud Dam • Iron Canyon Dam • Pit 6 Dam • Pit 7 Dam	• James B. Black • Pit 6 • Pit 7
A015407/ 009190**	Appropriative	July 9, 1953	15,500	4,850	Pit River	• Pit 7 Dam	• Pit 7
A015717/ 010216	Appropriative	February 5, 1954	35,300	--	McCloud River	• McCloud Dam • Iron Canyon Dam • Pit 6 Dam • Pit 7 Dam	• James B. Black • Pit 6 • Pit 7
A015719/ 010161	Appropriative	February 5, 1954	19,943	454	Iron Canyon Creek	• Iron Canyon Dam • Pit 6 Dam • Pit 7 Dam	• James B. Black • Pit 6 • Pit 7
S010392*	Riparian	1965	--	8,000	Pit River	• Pit 6 Penstock	• Pit 6
S010393**	Riparian	1965	--	8,350	Pit River	• Pit 7 Penstock	• Pit 7

* The first 4,500 cfs diverted is reported in PG&E's license report for license no. 009189. Any additional diversions at this point of diversion are reported under S010392.

** The first 4,850 cfs diverted is reported in PG&E's license report for license no. 009190. Any additional diversions at this point of diversion point are reported under S010393.

2.0 Federal Energy Regulatory Commission Proceedings

PG&E filed a Notice of Intent and Pre-Application Document to relicense the Project under FERC's Integrated Licensing Process on July 27, 2006. (18 C.F.R. § 16.8.) On July 16, 2009, PG&E filed its final license application for the Project, dated July 15, 2009, with FERC. FERC issued a final Environmental Impact Statement (EIS) for the Project on February 25, 2011.

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 Resources Control Board (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.

PG&E filed an application for water quality certification (certification) with the State Water Board under section 401 of the Clean Water Act on January 27, 2010. State of Regulations, title 23, section 3858, by posting information describing the Project on the

State Water Board's website on October 4, 2012. On November 6, 2018, the State Water Board issued a denial without prejudice to PG&E for the Project, and on November 9, 2018, PG&E submitted a water quality certification application with the State Water Board for the Project.

State Water Board staff received comments from the Central Valley Regional Water Quality Control Board (Central Valley Regional Water Board) on the certification on November 1, 2019, which have been considered and addressed as part of this certification. (See Cal. Code Regs., tit. 23, § 3855, subd. (b)(2)(B).)

3.2 Water Quality Control Plans and Related Authorities

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* (Central Valley Basin Plan)[1]. The Central Valley Basin Plan designates the beneficial uses of water to be protected along with the water quality objectives necessary to protect those uses. The Central Valley Basin Plan identifies beneficial uses for surface waters in the McCloud River watershed as: municipal and domestic supply; power; contact recreation; canoeing and rafting (potential); other noncontact recreation; cold freshwater habitat; cold spawning habitat; and wildlife habitat. The Central Valley Basin Plan identifies beneficial uses for surface waters in the Pit River watershed, from the mouth of Hat Creek to Shasta Lake, as: municipal and domestic supply; irrigation; stock watering; power; contact recreation; canoeing and rafting; other noncontact recreation; warm freshwater habitat (potential); cold freshwater habitat; warm spawning habitat; cold spawning habitat; and wildlife habitat.

[1] 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

PG&E will need to obtain coverage under the *General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit)[2] 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.

3.4 Dredge or Fill Procedures

The *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (Dredge or Fill Procedures)[3] provide California's definition of wetland, wetland delineation procedures, and procedures for submitting applications for activities that could result in discharges of dredged or fill material to waters of the state. The Dredge or Fill Procedures ensure that State Water Board regulatory activities will result in no net loss of wetland quantity, quality, or permanence, consistent with Water Code sections 16200-16201. PG&E must comply with the Dredge or Fill Procedures when conducting dredge or fill activities that may impact waters of the state, including wetlands.

3.5 Aquatic Weed Control General Permit

The *Statewide National Pollutant Discharge Elimination System Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications* (Aquatic Weed Control General Permit)[4] applies to projects that require aquatic weed management activities. The Aquatic Weed Control General Permit sets forth detailed management practices to protect water quality from pesticide and herbicide use associated with aquatic weed control.

4.0 California Environmental Quality Act Compliance

The State Water Board is the lead agency for the purposes of California Environmental Quality Act (CEQA) compliance. (Pub. Resources Code, §§ 21000-21177) FERC issued

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

[3] Available at: https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/2021/procedures.pdf. Accessed April 14, 2026.

[4] State Water Board Order No. 2013-0002-DWQ and NPDES No. CAG990005, as amended by State Water Board Order No. 2014-0078-DWQ and any amendments thereto.

the draft EIS on July 30, 2010[5], and the final EIS on February 25, 2011[6], which analyzed the Project impacts as required under the National Environmental Policy Act (NEPA). The State Water Board released the draft Initial Study and Negative Declaration (IS/ND) on May 2, 2019 for a 30-day comment period. Comments on the draft IS/ND were received from seven parties. These comments were considered in development of the final IS/ND, which was released concurrent with this water quality certification. The final IS/ND does not analyze PG&E's proposed McCloud Development and Pit 7 Afterbay Development.

On December 6, 2019, PG&E (separately) and the Winnemem Wintu Tribe and North Coast Rivers Alliance (NCRA) (jointly) filed the Petitions with the State Water Board. Each petition requests modification of the Project certification, and the Winnemem Wintu Tribe and NCRA's petition additionally challenges the CEQA analysis prepared for the Project certification. In response to the Petitions, the State Water Board's Executive Director directed staff to reinitiate consultation with the Winnemem Wintu Tribe to inform whether, and if so, what additional CEQA work may be necessary (Order WQ 2020-0041-EXEC[7]). As part of the reinitiated consultation with the Winnemem Wintu Tribe, staff determined that preparation of a subsequent environmental impact report (SEIR) would be appropriate to analyze impacts to tribal cultural resources that were unknown during the original CEQA process. A Notice of Preparation for the SEIR was issued on March 10, 2022. A draft SEIR was released for public comment on April 7, 2026, with comments due on May 22, 2026.

The documents and other materials that constitute the public record are located at the State Water Board, Division of Water Rights, 1001 I Street, Sacramento, California. The State Water Board will file a Notice of Determination with the Office of Planning and Research within five days of issuance of this certification.

5.0 Rationale for Water Quality Certification Conditions

The certification conditions were developed to protect and enhance beneficial uses of California's waters and achieve compliance with associated water quality objectives[8]. Section 401 of the federal Clean Water Act (33 U.S.C. § 1341) provides that the

[5] Federal Energy Regulatory Energy Commission. 2010. July. Draft Environmental Impact Statement for Hydropower License, McCloud-Pit Hydroelectric Project, FERC Project No. 2106, California.

[6] Federal Energy Regulatory Energy Commission. 2011. February. Final Environmental Impact Statement for Hydropower License, McCloud-Pit Hydroelectric Project, FERC Project No. 2106, California.

[7] Available online at: https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2020/wqo2020_0041_exec.pdf. Accessed April 14, 2026.

[8] Designated beneficial uses and associated water quality objectives for surface waters in the area of the Project are described in Section 3.2 of this certification, and in Chapters 2 and 3 of the Central Valley Basin Plan.

conditions contained in this certification be incorporated as mandatory conditions of the new license issued by FERC for the Project.

When preparing the conditions in this certification, State Water Board staff reviewed and considered:

(i) The final license application submitted by PG&E to FERC, PG&E's application for certification, and any updates thereto;

(ii) Comments submitted by agencies and interested parties on the draft license application and certification application;

(iii) The final EIS prepared pursuant to NEPA (42 U.S.C. §§ 4332);

(iv) *Revised Forest Service Final Section 4(e) Conditions, Section 10(a) Recommendation and Comments, McCloud Pit Hydroelectric Project, FERC No. 2106* (Final 4(e)s), dated November 29, 2010;

(v) *California Department of Fish and Wildlife's (CDFW) Recommendations of the California Department of Fish and Game Pursuant to Federal Power Act Section 10(j) for FERC Project No. 2106-059* (CDFW 10(j) Recommendations);

(vi) National Marine Fisheries Service's (NMFS) *Federal Power Act Preliminary Section 18 Prescriptions, Terms, Conditions, Recommendations, And Comment*s;

(vii) NMFS' June 4, 2009 *Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project* (BiOp) and associated actions of the Interagency Fish Passage Steering Committee[9];

(viii) State Water Board's final IS/ND prepared pursuant to CEQA Public Resources Code, §§ 21000 – 21177 and comments thereon;

(ix) State Water Board's April 7, 2026, draft SEIR;

(x) Comments on the April 7, 2026, draft SEIR and updates to the draft SEIR proposed in response to those comments;

(xi) The *Winnemem Wintu Tribe Traditional Cultural Landscape Tribal Cultural Resource Memorandum and Analysis In Support of California Register of*

[9] In 2010, USBR formed the Interagency Fish Passage Steering Committee to lead anadromous fish reintroduction efforts required by NMFS' Biological Opinion. The Interagency Fish Passage Steering Committee includes USBR, NMFS, USFWS, Forest Service, California Department of Water Resources, CDFW, University of California, and the State Water Board.

Historical Resources Evaluation McCloud-Pit River Hydroelectric Project Relicensing (FERC Project No. 2106) developed by the Winnemem Wintu Tribe, Shelly Davis-King, and Crystal West as part of the SEIR process;

(xii) Petitions for reconsideration filed by PG&E and the Winnemem Wintu Tribe and North Coast Rivers Alliance, including the Tribe's supplement to its petition dated March 27, 2026.

(xiii) Responses received in response to the State Water Board's notice of the petitions for reconsideration filed by PG&E and the Winnemem Wintu Tribe and North Coast Rivers Alliance.

(xiv) Existing and potential beneficial uses and associated water quality objectives in the Central Valley Basin Plan;

(xv) Project related controllable water quality factors; and

(xvi) Other information in the record.

The following describes the rationale used to develop the conditions in this certification.

5.1 Rationale for Condition 1 – Minimum Instream Flows and Ramping Rates

Condition 1 contains water year specific minimum instream flow (MIF) requirements for specific Project reaches. The MIF requirements of this certification match those of Forest Service Final 4(e) Condition 19. The approach for evaluating and developing MIF requirements for Project stream reaches focused on the needs of aquatic biota (fish, amphibians, benthic macroinvertebrates [BMI], and riparian vegetation) and included the following steps: (1) an evaluation of ecosystem attributes and their condition under regulated and unimpaired stream flows; (2) development of a range of MIFs and ramping rates for the protection of aquatic resources in all water year types; and (3) an extensive hydrologic evaluation to develop MIFs and ramping rates that mimic the natural hydrograph to provide fluvial geomorphic processes in all water year types for the protection of aquatic resources and the aquatic ecosystem.

Condition 1(B)(1), Minimum Instream Flows and Ramping Rates for McCloud River below McCloud Dam, requires PG&E to ramp up flows prior to uncontrolled (i.e., non-operational or natural) spill events in increments not to exceed 100 cfs per hour to the extent feasible. Rapid flow increases outside of natural variability can weaken riverbanks via erosion, wash out riparian vegetation and aquatic organisms, and submerge spawning sites to below-optimal depths. (Hayes et al. 2018[10].) Up-ramping before spills can help reduce the rate of flow increase and provide more natural conditions for the downstream river channel and biotic community. Additionally, though

[10] Daniel S. Hayes, Julia M. Brändle, Carina Seliger, Bernhard Zeiringer, Teresa Ferreira, Stefan Schmutz. "Advancing towards functional environmental flows for temperate floodplain rivers." *Science of The Total Environment*, vol. 633, 2018, pp. 1089-1104. ISSN 0048-9697, https://doi.org/10.1016/j.scitotenv.2018.03.221.

accurate forecasting of uncontrolled spill events may not always be possible at this time, improvements to forecasting technology are likely over the 50-year term of the Project's new FERC license. As such, Condition 1(B)(1) requires up-ramping to the extent feasible (e.g., within the dependable range of predictability available via forecasting and other available technology).

Real-time flow information is important to inform agencies, PG&E, and the public (e.g., recreationists, fishermen, etc.) regarding flow conditions in the McCloud River below Project facilities. Flow conditions provide important information related to public safety, license compliance, and protection of recreational beneficial uses. Condition 1(C) requires PG&E to provide real-time flow information to: (1) California Data Exchange Center; (2) Dreamflows or its successor; and (3) United States Geological Service in annual hydrology summary reports. Additionally, Condition 1(C) requires PG&E to notice the Project's FERC docket a minimum of 30 days in advance of any known event that will affect MIF release.

5.2 Rationale for Condition 2 – Gaging and Facilities Modifications

Condition 2 requires PG&E to develop and implement a Gaging and Facilities Modification Plan in consultation with the Forest Service, CDFW, United States Fish and Wildlife Service (USFWS), and State Water Board staff. Facility modification at McCloud Dam will be necessary for PG&E to implement the MIFs required under Condition 1 of this certification. In addition, Condition 1 requires installation of a new gage to measure flows released at McCloud Dam, and some gages may need to be modified to ensure compliance with the MIFs. The Gaging and Facilities Modification Plan requires detailed descriptions and designs of facilities and gages that need to be constructed or modified, as well as measures that will be implemented to protect water quality and the beneficial uses.

5.3 Rationale for Condition 3 – Water Quality Monitoring and Management

Project operations have the potential to affect reservoir and stream water quality within and beyond the Project area. Condition 3(A) requires PG&E to develop and implement a Water Quality Monitoring and Management Plan (Water Quality Plan) in consultation with the Forest Service, CDFW, USFWS, Central Valley Regional Water Board, and State Water Board staff. To protect water quality and the beneficial uses of water described in the Central Valley Basin Plan, Condition 3(A) requires water quality monitoring and evaluation of potential impacts of Project operations and maintenance activities on water quality in Project stream reaches and reservoirs. Information gathered from implementation of the Water Quality Plan will be used to evaluate the effects of Project-related actions on water quality, and to identify, assess, and adaptively manage potential Project-related adverse water quality impacts.

Condition 3(B) requires PG&E to develop a Reservoir Turbidity Monitoring and Management Plan (Turbidity Plan) in consultation with the Forest Service, CDFW, USFWS, Central Valley Regional Water Board, Winnemem Wintu Tribe, Pit River Tribe, The Nature Conservancy (TNC), and State Water Board staff. The draft SEIR, released

on April 7, 2026, notes that additional turbidity data are needed to fully quantify the Project's potential impacts on turbidity in McCloud River. The draft SEIR identified two mitigation measures to address this: (1) Mitigation Measure WATER-1: Long-term Turbidity Control; and (2) Mitigation Measure WATER-2: Turbidity Measurement and Monitoring.

Significant high-turbidity events from Mud Creek, a tributary to McCloud River above McCloud Dam, are typical each year and frequently occur during the warmer, low-flow season. Sediment trapping within McCloud Reservoir decreases the total sediment load reaching the Lower McCloud River (Nevares and Stallman 2009[11]); however, existing flow and turbidity data suggest that outflow turbidity not only peaks higher than the inflow turbidity but also maintains a higher average over time. (State Water Board 2026[12].) Additionally, there is a large sediment delta in the McCloud River arm of the McCloud Reservoir. McCloud Reservoir had an original capacity of 35,234 acre-feet; between 1964 and 2007, it accumulated approximately 4,134,500 cubic meters (3,352 acre-feet) of sediment, reducing the original capacity by approximately 10 percent and resulting in an average annual sedimentation rate of 96,150 cubic meters per year. (Nevares and Stallman 2009.) At some point in the future, accumulated sediment may require removal, sequestration, or release downstream.

The Turbidity Plan will establish turbidity and sediment monitoring protocols and identify appropriate management actions, if applicable, to address: (1) the Project's impact to downstream turbidity; and (2) McCloud Reservoir sedimentation. The Turbidity Plan is consistent with Mitigation Measures WATER-1 and WATER-2.

5.4 Rationale for Condition 4 – Large Woody Material

Large woody material contributes to productive aquatic ecosystems and is an important component of stream channel maintenance and the formation of complex aquatic habitat both along stream margins and in active river channels. Large woody material provides cover and holding habitat for fish and organic matter that supports the aquatic food web. Large woody material in tributaries of the upper watersheds is carried progressively downstream during high flow events. Prior to the construction of Project dams, high flow events would distribute large woody material from the upper watersheds throughout downstream Project reaches. Presently, the Project prevents most incoming large woody material from entering the McCloud River downstream of McCloud Dam. The large woody material is instead impounded by McCloud Reservoir.

[11] Nevares, Steve (PG&E) and J. Stallman. 2009. Assessment of Channel Morphology and Fluvial Geomorphic Processes in the Lower McCloud River (GS-S2). Technical Memorandum 68.

[12] State Water Board. 2026. PG&E McCloud-Pit Hydroelectric Project Relicensing (FERC Project No. 2106)—Draft Subsequent Environmental Impact Report. Available online at: https://waterboards.ca.gov/waterrights/water_issues/programs/water_quality_cert/docs/2026/mccloud-dseir.pdf.

For this reason, under existing conditions the McCloud River downstream of McCloud Dam lacks the aquatic habitat expected of a heavily forested river reach.

Condition 4 requires PG&E to develop and implement a Large Woody Material Management Plan (LWM Plan) in consultation with the Forest Service, CDFW, USFWS, and State Water Board staff. The LWM Plan will specify large woody material augmentation procedures and associated monitoring to assess the effectiveness of its implementation in transporting and distributing large woody material throughout the McCloud River below the McCloud Dam.

5.5 Rationale for Condition 5 – Erosion and Sediment Management

Surface erosion and increased overland flow associated with Project-related construction and maintenance activities could release fine sediment into Project stream reaches. Additionally, the Project reduces the frequency of seasonal high flow events in river reaches below Project dams that could transport fine sediment. Accumulation of fine sediment can degrade water quality and adversely affect fish spawning and incubation success.

The erosion and sediment relicensing study GS-S1[13] inventoried 188 specific sites with noticeable erosion and/or sedimentation issues. Additionally, FERC[14] and the Forest Service[15] identified multiple sites that require erosion and/or sedimentation control measures, including Forest Service Road 38N11 (Hawkins Creek Road), Tarantula Gulch boat launch, Fenders Ferry Flat, and the Willow Creek siphon.

To manage existing erosion and minimize future erosion and sediment delivery to Project stream reaches and reservoirs, Condition 5 requires PG&E to develop and implement an Erosion and Sediment Management Plan (Erosion and Sediment Plan) in consultation with the Forest Service, CDFW, USFWS, and State Water Board staff. The Erosion and Sediment Plan will describe methods to inventory, assess, remediate, and monitor erosion sites, and outline site-specific temporary erosion control measures to be implemented during construction and maintenance activities.

5.6 Rationale for Condition 6 – Gravel Augmentation

Relicensing studies identified the need for gravel augmentation in the McCloud River below McCloud Dam. McCloud Dam traps gravel (sediment greater than 2 millimeters) originating from upstream sources. This limits available gravel that could support and enhance aquatic habitat in the McCloud River. Sediment supply to the McCloud River

[13] Nevares, Steve (PG&E), Jay Stallman and Ronna Bowers (Stillwater Sciences). 2009. Inventory and Assessment of Erosion and Sediment from Project Construction, Operation, and Maintenance (GS-S1). Technical Memorandum 67. January 29, 2009.

[14] FERC. Letter to Debbie Powell (PG&E). “Results of P-2106 Environmental Inspection.” November 7, 2018.

[15] Forest Service. Letter to Secretary Kimberly Bose (FERC). File Code 2770. May 3, 2019.

below McCloud Dam increases with distance from the dam as a result of sediment input from tributaries and riparian areas. The McCloud River, from McCloud Dam to five miles downstream, exhibits degraded habitat due to Project operations. This reach is characterized by a coarsening of the bed surface and reduction in the frequency and quantity of gravel deposits.

Condition 6 requires PG&E to develop and implement a Gravel Augmentation Plan in consultation with the Forest Service, CDFW, USFWS, and State Water Board staff. The Gravel Augmentation Plan will require addition of gravel to the McCloud River below McCloud Dam, as well as gravel mobilization monitoring and adaptive management measures.

5.7 Rationale for Condition 7 – Biological Resources

New and continued Project operations have the potential to cause changes to fish populations, special-status amphibian and turtle populations, and BMI assemblages within Project stream reaches. Biological monitoring can detect these changes, identify additional information needs, and guide adaptive management of Project operations.

Condition 7 requires PG&E to develop and implement a Biological Resources Monitoring Plan in consultation with the Forest Service, CDFW, USFWS, and State Water Board staff. The Biological Resources Monitoring Plan will outline monitoring requirements for fish, special-status amphibians and turtles, and BMI to ensure that Project operations do not negatively impact water quality and the beneficial uses of water.

5.8 Rationale for Condition 8 – Fish Stocking

Angling is one of the most popular activities associated with the Project. Based on relicensing recreation studies, the demand for angling in Project stream reaches is projected to increase 140 percent over the term of the new license. In addition, proposed upgrades to recreation facilities and construction of new recreation facilities may increase angling pressure in Project stream reaches. Increasing the number of catchable trout stocked will help meet the estimated demand associated with the projected growth in angling.

On September 19, 1967, the FERC license for the Project was amended to require that PG&E provide funding to the California Department of Fish and Game (renamed CDFW January 1, 2013) to stock 38,800 pounds of trout and 500,000 Kokanee salmon fingerlings per fiscal year in the McCloud River, Pit River, and Lake Shasta. In Recommendation 3 of the CDFW 10(j) Recommendations, CDFW specified a fish stocking recommendation that differs slightly from the requirements outlined in the 1967 FERC license. In response to the CDFW 10(j) Recommendations, PG&E stated its agreement with CDFW's fish stocking recommendation[16]. In addition, the Staff

[16] Pacific Gas & Electric Company's Reply Comments to Comments, Recommendations, Terms, and Conditions, filed with FERC on March 16, 2010.

Alternative in FERC's final EIS recommends a fish stocking plan be developed and implemented to evaluate the success of fish stocking efforts. Condition 8 mirrors the provisions of: (1) Recommendation 3 of the CDFW 10(j) Recommendations; and (2) the Staff Alternative in FERC's final EIS.

5.9 Rationale for Condition 9 – Recreation Facilities Management

The Project partially lies in and adjacent to the Shasta National Forest, which provides a variety of formal and informal recreational facilities and opportunities. Regional recreational opportunities include, but are not limited to fishing, camping, boating, hiking, scenic/wildlife viewing, hunting, and general day use activities such as picnicking and swimming. There are three developed recreation areas in the Project boundary: (1) Tarantula Gulch boat ramp at McCloud Reservoir; (2) Deadlun Creek Campground at Iron Canyon Reservoir; and (3) Hawkins Landing Campground and boat ramp at Iron Canyon Reservoir. These existing recreation areas are all in the James B. Black Development (see Section 1.1). PG&E proposed several new recreation areas in the James B. Black Development and the Pit 7 Development (Sections 1.1 and 1.3, respectively). Construction of new recreation areas and improvements to existing facilities has the potential to impact water quality and the beneficial uses in the Project area.

Condition 9 requires PG&E to develop and implement a Recreation Facilities Management Plan in consultation with the Forest Service, CDFW, USFWS, and State Water Board staff. The Recreation Facilities Management Plan will include: (1) measures to protect water quality during construction, monitoring; and (2) schedules to implement the proposed improvements and new recreation facilities.

5.10 Rationale for Condition 10 – Whitewater Recreation

Prior to Project construction, the natural hydrograph provided boating opportunities on the McCloud River. However, under the original license, the only opportunities for whitewater boating occur during spills over McCloud Dam. Contact and noncontact recreation, which include whitewater boating, are beneficial uses listed in the Central Valley Basin Plan for the McCloud River. In order to provide for these beneficial uses, PG&E proposed a boating recreation flow of 300 cfs over 11 days in its final license application. However, 300 cfs only provides for boating-based access to the river for fishing or camping, not whitewater boating. The minimum acceptable whitewater boating flow identified by the relicensing study RL-S3[17] was 500 cfs. PG&E's proposal would not provide adequate whitewater recreation opportunities.

Condition 10 requires PG&E to develop and implement a Whitewater Recreation Management Plan (Whitewater Plan) in consultation with the Forest Service, CDFW, USFWS, American Whitewater, California Sportfishing Protection Alliance, California

[17] Nevares, Steve (PG&E), Doug Whittaker and Bo Shelby (Stillwater Sciences). 2009. Lower McCloud River Report on Recreation Flow Assessment (RL-S3). Technical Memorandum 24.

Trout (CalTrout), Trout Unlimited, and State Water Board staff. The Whitewater Plan will require PG&E to evaluate data from the relicensing study RL-S3 to develop the magnitude, duration, timing, and frequency of whitewater recreation flows. Additionally, the Whitewater Plan will allow PG&E to propose situations in which it may be excused from providing whitewater recreation flows.

The draft SEIR identifies that whitewater recreation flows could have significant impacts to foothill yellow-legged frogs (FYLFs) if whitewater recreation flows are implemented during the FYLF breeding season. Accordingly, the Whitewater Plan includes provisions from Mitigation Measure BIO-1: Whitewater Flow Seasonality: (1) to evaluate and ensure any whitewater recreation flows occur prior to the FYLF breeding season (typically mid-spring, when water temperature reaches 12 degrees Celsius in McCloud River) (Nevares, Shepley, and Champe 2009[18]); and (2) to monitor for all life stages of FYLF during the first three years of whitewater recreation flows to ensure FYLFs are not being impacted. PG&E may propose changes to whitewater recreation flows depending on the results of FYLF monitoring.

5.11 Rationale for Condition 11 – Construction and Maintenance

Protection of the beneficial uses identified in the Central Valley Basin Plan requires effluent limitations and other limitations on pollutant discharges from point and nonpoint sources to the McCloud River, Pit River, and their tributaries. The Project includes replacement and rehabilitation of existing recreation facilities and other activities that may require construction or maintenance. Erosion from Project-related construction and maintenance activities has the potential to result in discharges that violate water quality standards. Condition 11 requires PG&E to comply with terms of the Construction General Permit and Dredge or Fill Procedures, if applicable, or to develop and implement Water Quality Monitoring and Protection Plans (WQMP Plans) to protect water quality and beneficial uses. WQMP Plans will be developed for construction and maintenance activities with the potential to cause erosion, stream sedimentation, release of hazardous materials, or otherwise impair water quality.

5.12 Rationale for Condition 12 – Reintroduction of Anadromous Fish Species

In its June 4, 2009 Biological Opinion, NMFS identifies a reasonable and prudent alternative (RPA) that is intended to “avoid the likelihood of jeopardizing the continued existence of listed species or resulting in the destruction or adverse modification of critical habitat” (50 CFR § 402.02). The RPA includes a Fish Passage Program Action[19] that would reintroduce federally listed anadromous fish above three dams operated by the USBR, including Shasta Dam. In 2022, reintroduction efforts were initiated by

[18] Nevares, Steve (PG&E), Holly Shepley, and Christine Champe (Stillwater Sciences). 2009. Results of Second Year Foothill Yellow-legged Frog Visual Encounter Surveys and Breeding Habitat Assessment in the Lower McCloud River (FA-S2), Updated July 2009. Technical Memorandum 29.

[19] NMFS issued an amendment to the Biological Opinion on April 7, 2011. However, the 2011 amendment did not change the requirements of the Fish Passage Program.

NMFS, USFWS, CDFW, and the Winnemem Wintu Tribe, resulting in the successful incubation and hatching of eggs and rearing of juvenile winter-run Chinook salmon in the McCloud River. In 2023, NMFS designated a nonessential experimental population[20] of winter-run Chinook salmon in McCloud River. (88 FR 58511.) Juveniles are captured in the McCloud River and released in the Sacramento River downstream of Keswick Dam[21], though it appears some juveniles have escaped capture and were able to reach adulthood and spawn in the Lower McCloud River as documented by CDFW in summer 2025. (CDFW 2025[22].) This effort has continued each year since 2022 and is ongoing, though funding sources and the precise actions that will be taken in the future are not entirely clear.

Condition 12 is intended to facilitate consultation between PG&E, the State Water Board, resource agencies with jurisdiction over reintroduction, and the Winnemem Wintu Tribe and Pit River Tribe in order to determine whether additional measures are necessary to protect existing or future populations of anadromous fish species in McCloud River.

5.13 Rationale for Condition 13 – Annual Consultation Meetings

Monitoring plans and studies required by this certification will assist resource agencies and State Water Board staff evaluate impacts associated with the implementation of new license conditions to hydrological, biological, and geomorphological resources in the Project area throughout the term of the license. Annual consultation meetings bring resource agencies and interested parties together to discuss monitoring results and resource trends, and develop adaptive management actions, if necessary, to protect water quality and beneficial uses. Condition 13 requires PG&E to conduct annual consultation meetings with resource agencies and other interested parties to review monitoring reports and discuss ongoing and forecasted operations, including revisions

[20] Under the federal Endangered Species Act, a nonessential experimental population is a population of a species authorized for release outside of the current range of the species and determined not to be essential to the continued existence of the species. (16 USC § 1539, subd. (j)(2).) Non-essential experimental populations are treated as species proposed to be listed under the federal ESA for purposes of Section 7 consultation, and critical habitat may not be designated for non-essential experimental populations. As part of the final rule designating the non-essential experimental salmon population, NMFS established “take” prohibitions under federal ESA section 4(d) that include an exception for unintentional, non-negligent take incidental to lawful activities including power production when such activities are in full compliance with all applicable laws and regulations. (88 FR 58517.)

[21] Keswick Dam is part of USBR’s Central Valley Project, about nine miles downstream of Shasta Dam on the Sacramento River.

[22] CDFW. 2025. Internal memorandum dated July 16 from Michael Memeo to Matt Johnson re “Observations of winter-run Chinook Salmon Spawning in the lower McCloud River on July 15, 2025.”

or modifications to monitoring and/or operations that may be needed to protect water quality and beneficial uses.

5.14 Rationale for Condition 14 – Extremely Dry Conditions

California's history of drought 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 14 provides the opportunity, following consultation with State Water Board staff, participating agencies, and notice to interested parties, for the Licensee to submit and request Deputy Director approval of a Revised Operations Plan to address water shortage issues during consecutive Dry or Critically Dry water year types or drought years. This condition provides flexibility for adaptive management during times of extreme water shortage.

5.15 Rationale for Condition 15 – Certification Scope

This certification only covers the developments existing at the time of certification: the James B. Black, Pit 6, and Pit 7 Developments. In PG&E's final license application, dated July 15, 2009, PG&E proposed two new hydropower developments (McCloud and Pit 7 Afterbay). However, PG&E did not finalize designs or capacities for the two proposed hydropower developments. PG&E explains in its license application that the economic feasibility of the two proposed hydropower developments depends in part on conditions included in the new Project license (i.e., new minimum instream flow requirements). At this time, it is the State Water Board's understanding that PG&E has decided to wait until it receives the new FERC license for the relicensing of the Project before it determines whether to build the two hydropower developments.

5.16 Rationale for Conditions 16 – 37

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 their lifetime, 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 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 proposed 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 RESOURCE CONTROL BOARD CERTIFIES THAT OPERATION OF THE MCCLOUD-PIT HYDROELECTRIC PROJECT (Federal Energy Regulatory Commission Project No. 2106) will comply with sections 301, 302, 303, 306, and 307 of the Clean Water Act, and with applicable provisions of State law, if Pacific Gas and Electric Company complies with the following terms and conditions.

CONDITION 1: Minimum Instream Flows and Ramping Rates

1(A) Water Year Types

The Licensee shall determine the water year type based on the forecast of unimpaired runoff as provided by the California Department of Water Resources (DWR) Bulletin 120[23] report for the "Percent of Average, April through July Forecast" for the McCloud River above Shasta Lake. Water year types shall be defined on a monthly basis as follows:

(i) Critically Dry: 0 to 75 percent of average;

(ii) Dry: 76 to 89 percent of average;

(iii) Below Normal: 90 to 99 percent of average;

(iv) Above Normal: 100 to 119 percent of average; and

(v) Wet: Greater than or equal to 120 percent of average.

In February, March, and April the Licensee shall determine the water year type based on the DWR Bulletin 120 forecast and shall operate for that month based on that forecast. The May forecast shall be used to establish the water year type for the remaining months until February of the subsequent year, when forecasting shall begin again. Within 15 days of each water year type determination, the Licensee shall provide written notice of the determination to the State Water Resources Control Board (State Water Board) staff.

1(B) Minimum Instream Flows and Ramping Rates

1(B)(1) McCloud River Below McCloud Dam

The Licensee shall implement the required minimum instream flows (MIFs) no later than 30 days following completion of facility modifications (see Condition 2). Prior to

[23] 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.

completing facility modifications needed to implement the new MIFs and no later than 30 days following license issuance, the Licensee shall implement the required MIFs within the capabilities of the existing MIF facilities (i.e., the McCloud Dam Howell-Bunger valve) and in a manner consistent with existing safety requirements.

The Licensee shall implement year-round MIFs in all water year types as outlined in Table 1 for the term of the Federal Energy Regulatory Commission (FERC) license and any extensions. Water year types are defined in Condition 1(A) above.

MIFs shall be implemented according to the dates specified in Table 1, or as soon as permitted by weather and site accessibility. Any delay in implementing MIFs due to weather or accessibility issues shall be immediately reported to the Deputy Director of the Division of Water Rights (Deputy Director). MIFs shall be measured at the following locations:

(i) In the McCloud River below McCloud Dam (United States Geological Survey [USGS] Gage No. 11367760, Pacific Gas and Electric Company [PG&E] Gage No. MC-7); and

(ii) Ah-Di-Na (USGS Gage No. 11367800, PG&E Gage No. MC-1).

Additionally, unless otherwise approved by the Deputy Director in writing, the Licensee shall install a gage either in or adjacent to the McCloud Dam to directly measure MIF releases from McCloud Dam. This gage shall be installed no later than three years following license issuance. The Licensee shall begin using the new gage within 30 days of completing construction. After the new gage has been appropriately calibrated and rated and the Licensee begins using the new gage for MIF compliance, the new gage shall replace MC-7 as a compliance point for measuring MIFs. The Licensee shall provide notification to the Deputy Director of its intent to use the new gage for MIF compliance at least 30 days prior to use of the new gage for MIF compliance and provide documentation for new gage’s calibration and rating. The Licensee may proceed with use of the new gage 30 days following Deputy Director notification unless the Deputy Director provides direction otherwise.

Table 1. Minimum Instream Flows (in cubic feet per second (cfs)) for the McCloud River below McCloud Dam (as measured at USGS Gage No. 11367760, PG&E Gage No. MC-7[24]) and at Ah-Di-Na (as measured at USGS Gage No. 11367800, PG&E Gage No. MC-1)

Time Period	McCloud River MIF by Water Year Type	Net Change in Flow from Year-round Minimum
Year-round minimum	Release ≥ 175 cfs at MC-7 and Maintain ≥ 200 cfs at MC-1	--
	Water Year Type (per Condition 1(A)) based on February 1 Bulletin 120	**Then change in flow will be:**
Feb 15–29	Critically Dry	No flow change
Feb 15–29	Dry	No flow change
Feb 15–29	Below Normal	Increase flow by 75 cfs at MC-7
Feb 15–29	Above Normal	Increase flow by 125 cfs at MC-7
Feb 15–29	Wet	Increase flow by 175 cfs at MC-7
Mar 1–15	Critically Dry	No flow change
Mar 1–15	Dry	Increase flow by 50 cfs at MC-7
Mar 1–15	Below Normal	Increase flow by 50 cfs at MC-7
Mar 1–15	Above Normal	Increase flow by 100 cfs at MC-7
Mar 1–15	Wet	Increase flow by 150 cfs at MC-7
	Water Year Type (per Condition 1(A)) based on March 1 Bulletin 120	**Then change in flow will be:**
Mar 16–31	Critically Dry	No flow change
Mar 16–31	Dry	No flow change
Mar 16–31	Below Normal	Increase flow by 50 cfs at MC-7
Mar 16–31	Above Normal	Increase flow by 50 cfs at MC-7
Mar 16–31	Wet	Increase flow by 150 cfs at MC-7
Apr 1–15	Critically Dry	No flow change
Apr 1–15	Dry	No flow change
Apr 1–15	Below Normal	No flow change
Apr 1–15	Above Normal	Increase flow by 50 cfs at MC-7
Apr 1–15	Wet	Increase flow by 50 cfs at MC-7
All Water Year Types (per Condition 1(A))		
Apr 16 – Jun 30	If flow releases are ≥ 200 cfs on April 15 at MC-7	Then decrease flow at MC-7 by 50 cfs each Friday after April 15 until flow is 200 cfs

[24] It is anticipated that the MC-7 gage will be replaced with a new gage as noted in Condition 1 of this certification. The MIF requirements for the MC-7 gage shall apply to the new gage 30 days following the Licensee's notification to the Deputy Director of the new gage, unless otherwise directed by the Deputy Director.

Time Period	McCloud River MIF by Water Year Type	Net Change in Flow from Year-round Minimum
Apr 16 – Jun 30	If flow releases are < 200 cfs on April 15 at MC-7	Then release 175 cfs at MC-7 and Maintain a minimum of 200 cfs at MC-1
Jul 1 – Aug 31	Release 175 cfs at MC-7 and Maintain a minimum of 215 cfs at MC-1	Release 175 cfs at MC-7 and Maintain a minimum of 215 cfs at MC-1
Sep 1 – Feb 15	Release 175 cfs at MC-7 and Maintain a minimum of 200 cfs at MC-1	Release 175 cfs at MC-7 and Maintain a minimum of 200 cfs at MC-1

Ramping Rates. No ramping is required between MIF changes. The Licensee shall ramp down all natural and operational spill events, once controllable by MIF valve operation (assumed to be at 1,000 cfs), in increments of no more than 150 cubic feet per second (cfs) each 48-hour period until the required MIF is reached (Table 1). If during the ramp down of a spill event a subsequent spill(s) occurs before the MIF is reached, the subsequent spill(s) shall also be ramped down until the required MIF is reached. To the extent feasible, the Licensee shall ramp up flows prior to uncontrolled spill events in increments not to exceed 100 cfs per hour.

The Licensee shall ramp up flows prior to controllable operational spills (i.e., spills required to perform maintenance) in increments not to exceed 200 cfs per 24-hour period. Unless otherwise approved by the Deputy Director and consistent with approval from the applicable dam safety agency, testing of the emergency low-level outlet valve (typically performed once annually), as required by DWR's Division of Safety of Dams (DSOD) or FERC's Division of Dam Safety and Inspections, shall be performed by either first: (1) opening the MIF valve to its full capacity (assumed to be 1,000 cfs) in compliance with the required ramping rate; or (2) initiating a spill through the spillway of the same value in compliance with the required ramping rate. Then, the Licensee may operate the low-level outlet from fully open to fully closed without additional ramping restrictions. Lastly, the Licensee shall either close the MIF valve or stop spillway flows, as applicable, in compliance with the above-stated ramping rate, until the required MIF is reached. DSOD or FERC's Division of Dam Safety and Inspections for storage management or safety, valve testing or operational spills shall not occur in April through June.

Long-term Ramping Rate Evaluation. Prior to completion of the facility modifications required for MIF compliance (see Condition 2), the Licensee shall consult with the United States Department of Agriculture – Forest Service (Forest Service), California Department of Fish and Wildlife (CDFW), United States Fish and Wildlife Service (USFWS), Winnemem Wintu Tribe, American Whitewater, and State Water Resources Control Board (State Water Board) staff to determine if revised ramping rates are necessary to protect aquatic resources in the McCloud River below McCloud Dam. If revised ramping rates are necessary, the Licensee shall develop a Long-term Ramping Rates Plan (LTRR Plan) in consultation with the Forest Service, CDFW, USFWS, Winnemem Wintu Tribe, American Whitewater, and State Water Board staff and submit

the LTRR Plan to the Deputy Director of the Division of Water Rights (Deputy Director) for review and approval no later than two years following license issuance. At a minimum, the LTRR Plan shall include:

(i) Purpose of the LTRR Plan;

(ii) Aquatic species for which ramping rates will be developed;

(iii) An assessment of which flows require ramping rates (e.g., MIFs, boating flows, spills);

(iv) Methods for determining long-term ramping rates (e.g. studies, tests, monitoring, etc.);

(v) Criteria for evaluating the effectiveness of the ramping rates;

(vi) Schedule for reporting study and/or monitoring results to Forest Service, CDFW, USFWS, Winnemem Wintu Tribe, American Whitewater, and State Water Board staff;

(vii) Proposed interim ramping rates for the McCloud River below McCloud Dam, if applicable;

(viii) Timeframe for implementing the LTRR Plan and submittal of a Long-term Ramping Rates Report (LTRR Report) to the Deputy Director for review and approval. The LTRR Report shall include the Licensee's proposed long-term ramping rates and supporting documentation;

(ix) A plan for how modifications to the LTRR Plan and LTRR Report will be implemented to address the need for updates to ramping rates throughout the term of the FERC license and any extensions; and

(x) Documentation of consultation with Forest Service, CDFW, USFWS, Winnemem Wintu Tribe, American Whitewater, and State Water Board staff, comments and recommendations made in connection with the LTRR Plan and LTRR Report, and a description of how it 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 LTRR Plan and LTRR Report, and any approved amendments thereto. The Licensee shall implement the LTRR Plan and LTRR Report upon receipt of Deputy Director approval and any other required approvals, in accordance with the schedule and requirements specified therein.

1(B)(2) Iron Canyon Creek Below Iron Canyon Dam

No later than 30 days following license issuance, the Licensee shall implement the MIFs in Iron Canyon Creek below Iron Canyon Dam, as outlined in Table 2 and measured at

USGS Gage No. 11363930, PG&E Gage No. MC-10. If gage modifications are required to ensure compliance with the required MIFs, the Licensee shall: (1) demonstrate compliance with the required MIFs within the capabilities of the existing gaging equipment prior to completing gage modifications and no later than 30 days following license issuance; and (2) demonstrate compliance with the required MIFs no later than 30 days following completion of gage modifications or three years following license issuance, whichever comes first. MIFs shall be implemented within three business days of the publication date of each DWR Bulletin 120, or as soon as permitted by weather and site accessibility. The Licensee shall implement the required MIFs throughout the term of the FERC license and any extensions.

Table 2. Minimum Instream Flows (in cfs) for Iron Canyon Creek below Iron Canyon Dam (as measured at USGS Gage No. 11363930, PG&E Gage No. MC-10)

Month	Below Normal, Dry, or Critically Dry*	Above Normal*	Wet*
October	7	7	10
November	7	7	10
December	7	10	15
January	7	10	15
February	7	10	15
March	10	15	20**
April	10	15	20**
May	7	10	15
June	7	10	15
July	7	7	10
August	7	7	10
September	7	7	10

* See Condition 1(A) for information on water year types.

** The flow control valve at Iron Canyon Dam shall be fully opened. The 24-hour average flow shall be a minimum of 20 cfs.

Ramping Rates. No ramping is required between monthly MIF changes. Valve testing for dam safety compliance shall only occur between March 1 and March 31. If the Licensee is unable to conduct the annual valve testing by March 31 due to safety concerns, the Licensee shill notify the Deputy Director and Forest Service prior to March 31. The Licensee shall submit to the Deputy Director for review and consideration of approval proposed dates for conducting valve testing, including information related to foothill yellow-legged frog (FYLF) breeding and potential impacts associated with the proposed valve testing. Unless otherwise directed by DSOD or FERC's Division of Dam Safety and Inspections, the Licensee shall not conduct valve testing outside of the March 1 through March 31 window without Deputy Director approval. Flows that are ramped up to test the flow valve shall occur in no more than 20 cfs increments that are spaced a minimum of 15-minutes apart. After flow valve testing,

flows shall be ramped down in increments of no more than 20 cfs that are spaced a minimum of 30-minutes apart.

1(B)(3) Pit River Below Pit 7 Dam

No later than 30 days following license issuance, the Licensee shall release an instantaneous MIF of 150 cfs in the Pit River below the Pit 7 Dam, as measured at USGS Gage No. 11365000, year-round and in all water year types. Instantaneous flow is defined as the value used to construct the 24-hour average flow, measured in 15-minute increments.

1(C) Minimum Instream Flow Measurement and Dissemination

MIFs for the McCloud River and Iron Canyon Creek shall be measured in two ways: (1) as a 24-hour average flow; and (2) as an instantaneous flow. The 24-hour average flow is the average of the instantaneous (15-minute) flow readings from midnight of one day to midnight of the following day, unless an alternate 24-hour timeframe is approved by the Deputy Director Deputy Director in writing. MIF measurement at Pit 7 shall be measured as an instantaneous flow. In the event of a Pit 6 Powerhouse outage, streamflow for the Pit River below Pit 6 Dam shall be measured as a 24-hour average flow.

The Licensee shall record instantaneous (15-minute) streamflow at all gages consistent with USGS standards. Instantaneous streamflow shall be measured continuously, and no less than: 80 percent of the 24-hour average flow period for MIFs that are less than or equal to 10 cfs; and 90 percent of the 24-hour average flow period for MIFs that are greater than 10 cfs.

For the purposes of measuring streamflows on the McCloud River below McCloud Dam, Pit River below the Pit 6 and 7 Dams, and Iron Canyon Creek below the Iron Canyon Dam, the Licensee shall operate and maintain gages consistent with all requirements of this certification.

The Licensee shall measure and document all MIF releases and associated streamflows, as measured at the gages required per this certification, in a publicly available and readily accessible format. The Licensee shall publicly notice via FERC's eFiling or successor notification process for the Project all known events that will affect MIF releases (e.g., powerhouse outages, construction, etc.) in Project reaches a minimum of 30 days in advance. The Licensee shall also make information about the typical drawdown patterns for McCloud and Iron Canyon Reservoirs publicly available in a readily accessible format.

Flow data at USGS Gage No. 11367800 (PG&E Gage No. MC-1) and USGS Gage No. 11367760 (PG&E Gage No. MC-7) shall be real-time data and posted on the California Data Exchange Center and made available to Dreamflows[25], or their successor

[25] A website that provides flow and related information for whitewater boaters.

websites. Upon completion of the quality assurance/quality control (QA/QC) process, the data shall be catalogued and made available to USGS in annual hydrology summary reports. The flow values (15-minute recordings) used to construct the 24-hour average flows shall be available to the resource agencies from the Licensee upon request.

1(D) Powerhouse Outages

The Licensee shall schedule maintenance or other planned powerhouse outages in a way that avoids negative ecological impacts from the resultant spills. The Licensee shall provide written notification to the Deputy Director at least 90 days prior to any planned or scheduled powerhouse outages that would affect stream flows in the Pit River, McCloud River, or Iron Canyon Creek stream reaches. Notification shall include a description of the outage and measures the Licensee will implement to minimize the magnitude and duration of spills into the Project reach. The Licensee may proceed with the planned powerhouse outage unless otherwise directed, in writing, by the Deputy Director. The Licensee shall post notice of the outage on the Licensee's public Project website.

1(E) Planned Temporary Flow Modifications

The Licensee may request 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 desired effective date. The Licensee shall notify the Forest Service, CDFW, and USFWS of the proposed temporary MIF variance. The request shall include: a description of the proposed construction, modification, or maintenance; the planned duration and magnitude of the MIF variance; documentation of notification to the Forest Service, CDFW, and USFWS, and any comments received; measures that will be implemented to protect water quality and beneficial uses; and a schedule for the proposed construction, modification, or maintenance. The Deputy Director may require modifications as part of any approval. Upon Deputy Director approval, the Licensee shall provide public notice of the MIF variance, in accordance with Condition 1(C). The Licensee shall file with FERC the Deputy Director-approved modifications to MIF requirements and any approved amendments thereto.

1(F) Unplanned Temporary Flow Modifications

The MIFs specified in Condition 1(B) may be temporarily modified if required by equipment malfunction reasonably beyond the control of the Licensee, as directed by law enforcement authorities or in emergencies. 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 works;[26] and recreation accidents. Drought is not considered an emergency for purposes of this condition.

When 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 streamflow modification. Within 96 hours of the beginning of any unplanned temporary stream flow 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 reason(s) for its necessity; (2) photo documentation of the emergency or reason for the stream flow modification; (3) a timeline for returning to the required MIFs or timeline when the MIFs resumed; (4) a description of corrective actions taken in response to an unplanned under-release of flow; and (5) a plan to prevent the need for modification of minimum instream flows resulting from a similar emergency or event in the future.

CONDITION 2: Gaging and Facilities Modifications

No later than one year following license issuance, the Licensee shall submit a Gaging and Facilities Modification Plan to the Deputy Director for review and approval. The Gaging and Facilities Modification Plan shall be developed in consultation with the Forest Service, CDFW, USFWS, and State Water Board staff. Construction and modification of facilities and gages required for the release and measurement of MIFs outlined in Condition 1 of this certification shall be completed and in use no later than three years following license issuance.

At a minimum, the Facility and Gage Modification Plan shall include:

(i) Purpose of the Gaging and Facilities Modification Plan;

(ii) List, map, and detailed description of existing and proposed new gages associated with the Project. The description shall include: (a) type of gages; (b)

[26] 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, USFS, CDFW, or USFWS' request, the Licensee shall provide documentation of all inspections, results, dates, staff performing inspections, and recommended maintenance, schedule for performing maintenance, and the date maintenance was performed. Lack of appropriate inspections, maintenance, or documentation may remove events from the "emergency" category, as determined by the Deputy Director.

frequency of data collection and data QA/QC procedures; (c) where data for the gages will be stored and made publicly available; and (d) gage maintenance.

(iii) Detailed descriptions of proposed facility and gage modifications necessary to comply with this certification, including relevant maps and designs;

(iv) Schedule for installation of new gage(s) and facilities modifications, and reporting upon completion of construction and modifications associated with the plan;

(v) Measures that will be implemented to protect water quality and beneficial uses during: (a) installation/construction, operation, and maintenance of gages over the term of the license and any extensions, and (b) construction of proposed facilities modifications to comply with MIFs;

(vi) Monitoring and reporting that will be implemented to during construction and modifications of gages and facilities;

(vii) A plan for how modifications to the Gaging and Facilities Modification Plan will be implemented to address gaging-related changes throughout the term of the FERC license and any extensions; and

(viii) Documentation of consultation with Forest Service, CDFW, USFWS, and State Water Board staff, comments and recommendations made in connection with the Gaging and Facilities Modification Plan, and a description of how it 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 Gaging and Facilities Modification Plan, and any approved amendments thereto. The Licensee shall implement the Gaging and Facilities Modification Plan upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 3: Water Quality Monitoring and Management

3(A) Water Quality Monitoring and Management

No later than one year following license issuance, the Licensee shall submit a Water Quality Monitoring and Management Plan (Water Quality Plan) to the Deputy Director for review and approval. The Water Quality Plan shall be developed in consultation with the Forest Service, CDFW, USFWS, Central Valley Regional Water Quality Control Board (Central Valley Regional Water Board), Winnemem Wintu Tribe, and State Water Board staff.

At a minimum, the Water Quality Plan shall include:

(i) List of water quality parameters to be monitored, as appropriate, that may include, but are not limited to: water temperature, dissolved oxygen, turbidity,

and bacteria. The list shall also include current Central Valley Regional Water Board's *Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin* (Central Valley Basin Plan) water quality objectives for the parameters;

(ii) Proposed monitoring plan, including monitoring locations with a map, sampling protocols, analytical methods, QA/QC procedures, and the schedule and frequency;

(iii) Specific monitoring that shall be performed includes:

a. Bacterial monitoring in all Project reservoirs during the recreation season and monitoring for recreation-related aquatic invasive species (e.g., quagga mussels, etc.) at key recreation locations including, but not limited to: boat ramps; day use areas; and near campgrounds. At a minimum, the Licensee shall monitor contaminants in Project reservoirs for the first five years following Water Quality Plan approval and the first two years following completion of each recreation facility construction and/or improvement. Following each monitoring period, the Licensee shall consult with Forest Service, CDFW, USFWS, Central Valley Regional Water Board, Winnemem Wintu Tribe, and State Water Board staff during or prior to the subsequent annual consultation meeting (see Condition 13) to determine whether: (1) the Licensee must take corrective measures to reduce contaminant levels; or (2) contaminant monitoring at Project reservoirs can be reduced. The Licensee shall consult with Forest Service, CDFW, USFWS, Central Valley Regional Water Board, Winnemem Wintu Tribe, and State Water Board staff to develop corrective measures and/or a revised monitoring schedule, if necessary. The Licensee shall submit proposed corrective measures and/or revised monitoring schedule to the Deputy Director for review and approval no later than six months following consultation;

b. Monitoring of dissolved oxygen in McCloud, Iron Canyon, Pit 6, and Pit 7 Reservoirs;

c. Water temperature monitoring from May 1 through September 30, for a minimum of 10 years following implementation of MIFs (Condition 1); and

d. Turbidity monitoring for the term of the license in the Lower McCloud River (at PG&E Gage Nos. MC-7 or MC-1) from April 25 through November 15 (i.e., the fishing season) for the purposes of recreational use (i.e., fishing). The Licensee shall notify the Deputy Director 10 days in advance, or as soon as feasible, if routine sensor maintenance or deployment in the spring is delayed due to late snows or high flows. If turbidity sensor deployment is delayed, the Licensee shall implement sensor deployment as soon as feasible, but no later than June 1 of each year, unless an alternative sensor deployment schedule is approved by the Deputy

Director. Turbidity levels shall be available in real-time from the date of deployment through November 15 on the Licensee's public Project website;

(iv) Format, schedule, and reporting to document, summarize, and analyze monitoring results. The Licensee shall propose any updates to the Water Quality Plan based on the monitoring results. Reports shall be submitted to State Water Board staff, Forest Service, CDFW, USFWS, Winnemem Wintu Tribe, and the Central Valley Regional Water Board;

(v) Provisions to monitor turbidity during construction or other soil disturbing activities; and

(vi) Documentation of consultation with Forest Service, CDFW, USFWS, Central Valley Regional Water Board, Winnemem Wintu Tribe, and State Water Board staff, comments and recommendations made in connection with the Water Quality Plan, and a description of how the Water Quality Plan 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 Water Quality Plan, and any approved amendments thereto. The Licensee shall implement the Water Quality Plan upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

3(B) Reservoir Turbidity Monitoring and Management

No later than one year following license issuance, the Licensee shall submit a Reservoir Turbidity Monitoring and Management Plan (Turbidity Plan) to the Deputy Director for review and approval. The Water Quality Plan shall be developed in consultation with the Forest Service, CDFW, USFWS, Central Valley Regional Water Board, Winnemem Wintu Tribe, Pit River Tribe, TN, and State Water Board staff. The goal of the Turbidity Plan shall be to evaluate turbidity sources to the Project area, how the Project impacts turbidity in the McCloud and Pit Rivers, and identify management actions if necessary to ensure Project operations are in compliance with the turbidity water quality objective detailed in the Central Valley Basin Plan.

Unless otherwise approved by the Deputy Director, and consistent with Mitigation Measures WATER-1 and WATER-2 identified in the State Water Board's Subsequent Environmental Impact Report, at a minimum, the Turbidity Plan shall include:

(i) Identification of locations and frequency of turbidity monitoring that will be performed. At a minimum monitoring shall be performed to measure turbidity inputs from Mud Creek, the McCloud River upstream of McCloud Reservoir, and other tributaries as appropriate (e.g., Huckleberry Creek);

(ii) Identification of location(s) and frequency of turbidity monitoring for flows below McCloud Dam;

(iii) Protocols for assessing sediment accumulation in McCloud and Iron Canyon Reservoirs, including total amount of sediment accumulated and the percentage of reservoir volume lost since reservoir construction. Sediment accumulation shall be monitored in the first full calendar year following Deputy Director approval of the Turbidity Plan and at least every five years thereafter;

(iv) Protocols for and frequency of monitoring McCloud Reservoir turbidity and temperature profiles. Turbidity and temperature profiles shall be monitored at least monthly from April through November;

(v) Timeframes for development of:

a. A numerical model of McCloud Reservoir turbidity and temperature;

b. A description of how Project operations affect turbidity, including anticipated effects of climate change; and

c. Identification of potential management actions the Licensee could implement to manage turbidity, sediment accumulation, and releases, as appropriate, with the Licensee's recommendation of actions to implement, if appropriate, or support for why no actions are needed. In evaluating management actions, the Licensee shall consider preliminary engineering solutions developed by CalTrout, TNC, and the McCloud River Club, which include multi-level intakes and connecting an upper reservoir intake to the Lower McCloud River;

(vi) Format, schedule, and reporting to document, summarize, and analyze monitoring results. The frequency with which the Licensee shall evaluate the Turbidity Plan and propose any updates to the Deputy Director for review and approval based on the monitoring results. Reports shall be submitted to Forest Service, CDFW, USFWS, Central Valley Regional Water Board, Winnemem Wintu Tribe, Pit River Tribe, TNC, and State Water Board staff; and

(vii) Documentation of consultation with Forest Service, CDFW, USFWS, Central Valley Regional Water Board, Winnemem Wintu Tribe, Pit River Tribe, TNC, and State Water Board staff, comments and recommendations made in connection with the Turbidity Plan, and a description of how the Turbidity Plan incorporates or addresses the comments and recommendations.

In accordance with the timeframes developed for item (v) above in Condition 3(B), the Licensee shall update the Turbidity Plan with new data, conclusions, and proposed management actions as appropriate during the term of the FERC license and any extensions thereto. If turbidity data and modeling required by this condition demonstrate that Project operations do not adversely contribute to turbidity concentrations below McCloud Dam, the Licensee may request that the Deputy Director approve discontinuation or modification of some or all of the turbidity data collection and modeling required by this condition. The Licensee shall update the Turbidity Plan in

accordance with the consultation requirements in items (vi) and (vii) above in Condition 3(B). Any updates to the Turbidity Plan shall be approved by the Deputy Director prior to implementation. The Deputy Director may require changes or implementation of additional management actions as part of any approval.

The Deputy Director may require changes as part of any approval to ensure protection of water quality and beneficial uses. The Licensee shall file with FERC the Deputy Director-approved Turbidity Plan, and any approved amendments thereto. The Licensee shall implement the Turbidity Plan and any amendments thereto upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 4: Large Woody Material

No later than one year following license issuance, the Licensee shall submit a Large Woody Material Plan (LWM Plan) to the Deputy Director for review and approval. The LWM Plan shall be developed in consultation with the Forest Service, CDFW, USFWS, Winnemem Wintu Tribe, and State Water Board staff. State Water Board staff will solicit comments from tribes regarding the LWM Plan prior to approval by the Deputy Director. Implementation of the Large Woody Material Plan shall facilitate the capture and removal of woody material from the surface of McCloud Reservoir and its placement into the Lower McCloud River downstream of McCloud Dam. The draft Large Woody Debris Plan included as Exhibit LWDP in Enclosure 3 of the Revised Forest Service Final Section 4(e) Conditions, Section 10(a) Recommendation and Comments, McCloud Pit Hydroelectric Project, FERC No. 2106 (Final 4(e)s), dated November 29, 2010, may serve as the basis for the LWM Plan required by this condition. At a minimum, the LWM Plan shall include:

(i) Specific objectives, including a description of: (a) what constitutes large woody material (i.e., size criteria) that will be captured, removed, stored, and placed as part of this condition; and (b) how other woody material will be handled or disposed of as part of Project operations;

(ii) Proposed monitoring to assess the effectiveness of the plan (e.g., mobilization and distribution of large woody material);

(iii) Detailed description of the methods, locations, and volume and frequency of large woody material capture, removal, storage, and placement;

(iv) Format, schedule, and reporting to document, summarize, and analyze monitoring results. The Licensee shall propose any updates to the LWM Plan based on the monitoring results. Reports shall be submitted to State Water Board staff, Forest Service, CDFW, and USFWS; and

(v) Documentation of consultation with Forest Service, CDFW, USFWS, Winnemem Wintu Tribe, and State Water Board staff, comments and recommendations made in connection with the LWM Plan, and a description of

how the LWM Plan 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 LWM Plan, and any approved amendments thereto. The Licensee shall implement the LWM Plan upon receipt of Deputy Director approval and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 5: Erosion and Sediment Management

No later than one year following license issuance, the Licensee shall submit an Erosion and Sediment Control Management Plan (Erosion and Sediment Plan) to the Deputy Director for review and approval. The Erosion and Sediment Plan shall be developed in consultation with the Forest Service, CDFW, USFWS, Winnemem Wintu Tribe, and State Water Board staff. The draft Erosion and Sediment Control Management Plan included as Exhibit ESCMP in Enclosure 3 of the Forest Service's Final 4(e)s may serve as the basis for the Erosion and Sediment Plan required by this condition. The primary goal of the Erosion and Sediment Plan shall be to address and control Project-related erosion and sedimentation during the term of the new license and any extensions. At a minimum, the Erosion and Sediment Plan shall include:

(i) Purpose of the Erosion and Sediment Plan;

(ii) A proposal to address the 188 specific sites identified in the erosion and sediment relicensing study GS-S1[27] (GS-SI) as well as the sites identified by FERC[28] and the Forest Service[29]. The proposal shall include:

a. Any new information on the sites since the original study was conducted;

b. How the Licensee will address the existing and potential future erosion and sedimentation issues at each site. This includes corrective measures to address existing impacts as well as stabilization to address future erosion and sedimentation problems;

c. Measures the Licensee will implement to protect water quality and beneficial uses while conducting the proposed work;

[27] Nevares, Steve (PG&E), Jay Stallman and Ronna Bowers (Stillwater Sciences). 2009. Inventory and Assessment of Erosion and Sediment from Project Construction, Operation, and Maintenance (GS-S1). Technical Memorandum 67. January 29, 2009.

[28] FERC. Letter to Debbie Powell (PG&E). "Results of P-2106 Environmental Inspection." November 7, 2018.

[29] Forest Service. Letter to Secretary Kimberly Bose (FERC). File Code 2770. May 3, 2019.

d. Prioritization of and a timeline to address all sites by no later than five years following license issuance. Priority shall be placed on the 56 sites ranked with high erosion potential per the results from the GS-S1;

e. Post-implementation monitoring that will be performed to ensure effective stabilization; and

f. Format, schedule, and reporting to document and summarize the work and monitoring results. The report(s) shall identify any additional follow up or long-term actions (e.g., vegetation maintenance and/or monitoring) that need to be implemented to ensure the stabilization work remains effective. Reports shall be submitted to State Water Board staff, Forest Service, CDFW, Winnemem Wintu Tribe, and USFWS;

(iii) Periodic inventories of the entire Project area to identify and assess sites with erosion and sedimentation issues. The Erosion and Sediment Plan shall identify a timeline for the inventories. At a minimum, the inventory work shall meet the following:

a. Use protocols established in the GS-S1 unless otherwise approved by the Deputy Director in writing;

b. The initial inventory shall include sites not identified under Item (ii) above. The inventory shall include Project roads, facilities, infrastructure, reservoir shorelines, recreational use areas, and areas of mass wasting, erosion, or sedimentation that are Project-related or affected by Project roads, facilities, and operations; and

c. Periodic monitoring, inventory, and reporting that: update site conditions, record the effectiveness of erosion treatment measures, and identify new erosion sites;

(iv) Criteria for ranking and treating erosion sites identified as part of the inventories, including a risk rating and hazard assessment for scheduling erosion treatment measures and monitoring at each erosion site, using protocols developed in the GS-S1;

(v) Protocols for monitoring completed erosion control treatment measures for a period of up to three years after treatment to determine the effectiveness of erosion control measures and if further erosion control measures are necessary;

(vi) Process and timeline for periodic submittals of the inventory (see iii above), including associated information and monitoring of existing sites, to the Deputy Director. If the inventory indicates existing or new sites with Project-related erosion and sedimentation issues, the Licensee shall prepare an amendment to the Erosion and Sediment Plan for Deputy Director review and approval. The plan amendment shall be prepared in consultation with the Forest Service,

CDFW, USFWS, Winnemem Wintu Tribe, and State Water Board staff and submitted to the Deputy Director within six months of submitting the inventory to the Deputy Director. The plan amendment shall include: (a) a ranking of the sites based on the criteria outlined in (iv) above; (b) a timeline for addressing sites with erosion and sedimentation issues; (c) measures/treatments that will be implemented to address erosion and sedimentation issues at each site; (d) measures that will be implemented to protect water quality and beneficial uses; (e) monitoring of sites to evaluate effectiveness of implemented measures/treatments as outlined in (v), above; and (f) reporting;

(vii) Site-specific temporary erosion control measures that will be implemented during construction-related activities;

(viii) Protocols for emergency erosion and sediment control that would be implemented upon notice to the Deputy Director, outside of the timeline and process outlined in (vi) above;

(ix) Protocols for daily monitoring of turbidity for a minimum of five years after license issuance in Iron Canyon Creek below Iron Canyon Dam (PG&E Gage No. MC-10) to ensure that the Licensee's erosion control measures have reduced sedimentation into Iron Canyon Creek and improved water quality below the dam. If after five years of monitoring elevated turbidity (i.e., above Central Valley Basin Plan standards) is still occurring at PG&E Gage No. MC-10, the Licensee shall, no later than six months following this determination, propose and implement continued and/or additional erosion control treatment measures and turbidity monitoring as part of the periodic inventories and associated erosion control treatments; and

(x) Documentation of consultation with Forest Service, CDFW, USFWS, and State Water Board staff, comments and recommendations made in connection with the plan, and a description of how the plan 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 Erosion and Sediment Plan, and any approved amendments thereto. The Licensee shall implement the Erosion and Sediment Plan upon receipt of Deputy Director approval and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 6: Gravel Augmentation

No later than one year following license issuance, the Licensee shall submit a Gravel Augmentation Plan to the Deputy Director for review and approval. The Gravel Augmentation Plan shall be developed in consultation with the Forest Service, CDFW, USFWS, Winnemem Wintu Tribe, and State Water Board staff. State Water Board staff will solicit comments from tribes regarding the Gravel Augmentation Plan prior to approval by the Deputy Director. The draft Coarse Sediment Management Plan

included as Exhibit CSMP in Enclosure 3 of the Forest Service's Final 4(e)s may serve as the basis for the Gravel Augmentation Plan required by this condition.

The primary goal of the Gravel Augmentation Plan shall be to develop implementation specifications for the periodic addition of 150 to 600 metric tons of clean, rounded gravel[30] to the McCloud River directly below the McCloud Dam spillway splash pool. The source of the gravel shall be deposits in McCloud Reservoir. At a minimum, the Gravel Augmentation Plan shall include:

(i) The purpose of the Gravel Augmentation Plan;

(ii) Method for removal, sorting, and cleaning of the source gravel, as well as disposal of any biproducts associated with the process;

(iii) Identification of location(s) and methods for gravel introduction/placement, and any facilities or improvements necessary to access the McCloud River below McCloud Dam and place gravel;

(iv) Identification of gravel storage sites;

(v) A schedule for gravel placement;

(vi) Method for placement;

(vii) Schedule and methods for monitoring mobilization of gravel dispersal;

(viii) Any measures the Licensee will implement to protect water quality and beneficial uses;

(ix) Adaptive management component to allow for: non-delivery of gravel in non-spill years, or in years when spring flows are insufficient to mobilize the gravel from the placement site(s); and increased gravel placement above the target period addition of 150 to 600 metric tons, if mobilization occurs and results from gravel dispersal monitoring indicate the river has capacity to transport greater gravel quantities;

(x) Format, schedule, and reporting to document, summarize, and analyze monitoring results. The Licensee shall propose any updates to the Gravel Augmentation Plan based on the monitoring results. Reports shall be submitted to State Water Board staff, Forest Service, CDFW, Winnemem Wintu Tribe, and USFWS; and

(xi) Documentation of consultation with Forest Service, CDFW, USFWS, Winnemem Wintu Tribe, and State Water Board staff, comments and recommendations made in connection with the Gravel Augmentation Plan, and

[30] Gravel may range in size from 8 to 128 millimeters.

a description of how the Gravel Augmentation Plan 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 Gravel Augmentation Plan, and any approved amendments thereto. The Licensee shall implement the Gravel Augmentation Plan upon receipt of Deputy Director approval and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 7: Biological Resources

No later than one year following license issuance, the Licensee shall submit a Biological Resources Monitoring Plan to the Deputy Director for review and approval. The Biological Resources Monitoring Plan shall be developed in consultation with the Forest Service, CDFW, USFWS, Winnemem Wintu Tribe, and State Water Board staff. The draft *Aquatic Biological Monitoring Plan* included as Exhibit ABMP in Enclosure 3 of the Forest Service's Final 4(e)s may serve as the basis for the Biological Resources Monitoring Plan required by this condition. At a minimum, the Biological Resources Monitoring Plan shall include:

(i) The purpose of the Biological Resources Monitoring Plan;

(ii) Biological resources monitoring performed on an annual basis for the first five years after implementation of MIFs (Condition 1 of this certification). Thereafter, biological monitoring shall occur once every five years throughout the term of the new license, unless an alternative monitoring schedule is approved by the Deputy Director;

(iii) Standardized sampling and data protocols consistent with relicensing studies to ensure comparability of survey results with existing data;

(iv) Fish population trend assessments. At a minimum, assessments shall include locations in: (1) the McCloud River below McCloud Dam; (2) Iron Canyon Creek below Iron Canyon Dam; and (3) Pit 7 Reservoir;

(v) Benthic macroinvertebrate (BMI) monitoring using the Surface Water Ambient Monitoring Program Protocols[31] or its successor program, or an alternative methodology approved by the Deputy Director. The protocols shall include population heterogeneity, composition, and trends. Locations of BMI monitoring shall include, at a minimum, reaches in: (1) McCloud River below McCloud Dam; and (2) Iron Canyon Creek below Iron Canyon Dam;

(vi) Monitoring of state and/or federally listed amphibian and turtle species. Monitoring locations of state and/or federally listed amphibian and turtle species shall include, at a minimum, reaches in: (1) McCloud River below

[31] State Water Board. 2017. Surface Water Ambient Monitoring Program: Quality Assurance Program Plan. May 2017, and any amendments thereto.

McCloud Dam; (2) Iron Canyon Creek below Iron Canyon Dam; (3) Pit 6 Reservoir; and (4) Pit 7 Reservoir;

(vii) Protocols to monitor for and prevent introduction or spread of invasive aquatic species. At a minimum, the Licensee shall comply with the State Water Board's Statewide National Pollutant Discharge Elimination System Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications[32]. If invasive aquatic species are found in the Project area, the Licensee shall consult with the Forest Service, CDFW, USFWS, Winnemem Wintu Tribe, and State Water Board staff to determine if management measures are necessary. If necessary, the Licensee shall develop management measures in consultation with the Forest Service, CDFW, USFWS, Winnemem Wintu Tribe, and State Water Board staff and submit the proposed management measures to the Deputy Director for review and approval. The Licensee shall implement the management measures upon receipt of Deputy Director approval and any other required approvals;

(viii) Monitoring of resident fish passage conditions at Gap Creek, Deadlun Creek, and Cedar Salt Log Creek road crossings around Iron Canyon Reservoir;

(ix) Format, schedule, and reporting to document, summarize, and analyze monitoring results. The reports shall include identification of any impacts to biological resources and recommendations to address such impacts. The Deputy Director may direct the Licensee to implement measures to address impacts associated with the Project. The Licensee shall propose any updates to the Biological Resources Monitoring Plan based on the monitoring results. Reports shall be submitted to State Water Board staff, Forest Service, CDFW, Winnemem Wintu Tribe, and USFWS; and

(x) Documentation of consultation with Forest Service, CDFW, USFWS, Winnemem Wintu Tribe, and State Water Board staff, comments and recommendations made in connection with the Biological Resources Monitoring Plan, and a description of how the Biological Resources Monitoring Plan 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 Biological Resources Monitoring Plan, and any approved amendments thereto. The Licensee shall implement the Biological Resources Monitoring Plan upon receipt of Deputy Director approval and any other required approvals, in accordance with the schedule and requirements specified therein.

[32] State Water Board Order No. 2013-0002-DWQ and National Pollutant Discharge Elimination System No. CAG990005, as amended by State Water Board Order No. 2014-0078-DWQ on May 20, 2014, and any amendments thereto.

CONDITION 8: Fish Stocking

In the first full calendar year following license issuance, the Licensee shall implement fish stocking as outlined in Recommendation 3 of the CDFW 10(j) Recommendations, dated January 28, 2010, and the Staff Alternative in FERC's final EIS. The Licensee shall notify the Deputy Director of any proposed updates to the fish stocking provisions, and if requested, submit such updates to the Deputy Director for review and approval. The Deputy Director may make modifications as part of any approval.

CONDITION 9: Recreation Facilities Management

No later than two years following license issuance, the Licensee shall submit a Recreation Facilities Management Plan (Recreation Plan) to the Deputy Director for review and approval. The Recreation Plan shall be developed in consultation the Forest Service, CDFW, USFWS, Winnemem Wintu Tribe, and State Water Board staff. The draft Recreation Development and Management Plan included as Exhibit RDMP in Enclosure 3 of the Forest Service's Final 4(e)s may serve as the basis for the Recreation Plan required by this condition. At a minimum, the Recreation Plan shall include:

(i) A description of operations and maintenance activities associated with the Project recreation facilities that have the potential to impact water quality, and measures that will be implemented to address any impacts;

(ii) Identification of recreation use surveys that will be conducted as part of the Project and submittal of the associated results to State Water Board staff. If results of the survey indicate an increase in recreation use, the Licensee shall evaluate the potential effects to determine whether modifications to Project facilities are needed to protect water quality and beneficial uses and provide the Deputy Director with the analysis and any associated recommendations for review and approval. The Deputy Director may make modifications as part of any approval;

(iii) A list, description, and schedule for modifications to existing and construction of new recreation facilities associated with the Project. For each facility modification or construction, the Licensee shall prepare and implement, once approved by the Deputy Director, a Water Quality Monitoring and Protection Plan (Condition 11) that outlines measures and monitoring the Licensee will implement to protect water quality, beneficial uses, and aquatic biological resources;

(iv) Format, schedule, and reporting to document, summarize, and analyze completion of recreation facility construction or modification and associated monitoring results; and

(v) Documentation of consultation with Forest Service, CDFW, USFWS, Winnemem Wintu Tribe, and State Water Board staff, comments and

recommendations made in connection with the plan, and a description of how the plan incorporates or addresses the comments and recommendations.

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

CONDITION 10: Whitewater Recreation

No later than two years following license issuance, the Licensee shall submit a Whitewater Recreation Management Plan (Whitewater Plan) to the Deputy Director for review and approval. The Whitewater Plan shall be developed in consultation the Forest Service, CDFW, USFWS, American Whitewater, California Sportfishing Protection Alliance, CalTrout, Trout Unlimited, Winnemem Wintu Tribe, and State Water Board staff. The primary goal of the Whitewater Plan shall be to develop whitewater recreation flows that provide adequate boating opportunities in the McCloud River throughout the term of the license and any extensions. The Licensee shall consider data collected from the relicensing study RL- S3[33] to develop whitewater recreation flows. If ramping rates for whitewater recreation flows are not developed in a LTRR Plan (see Condition 1(B)), the Whitewater Plan shall include appropriate ramp-up and ramp-down rates.

Unless otherwise approved by the Deputy Director, at a minimum, the Whitewater Plan shall include:

(i) Magnitude of whitewater recreation flows;

(ii) Duration of whitewater recreation flows. The duration may include all or portions of ramp-up and ramp-down periods if the magnitude requirement is met;

(iii) Frequency and timing of whitewater recreation flows. The Licensee shall provide whitewater recreation flows at least once every four years. When determining timing, the Licensee shall consider potential impacts of whitewater recreation flows to special-status species and angling in the McCloud River reach. Whitewater recreation flow releases below McCloud Dam shall occur only during the winter/spring high flow season (i.e., consistent with natural hydrologic timing of high flows). Whitewater recreation flows shall occur before the FYLF breeding season (e.g., when McCloud River temperatures reach 12 degrees Celsius, typically mid-spring but varies depending on the water year type and water temperature);

[33] Nevares, Steve (PG&E), Doug Whittaker and Bo Shelby (Stillwater Sciences). 2009. Lower McCloud River Report on Recreation Flow Assessment (RL-S3). Technical Memorandum 24.

(iv) Protocols for whitewater recreation surveys to document boater usage and determine whether changes to the Whitewater Plan are necessary based on whitewater boater usage. Monitoring at a minimum shall occur at the McCloud Dam put-in and Ash Camp put-in during periods of whitewater flow releases.

(v) Protocols for monitoring FYLF breeding during the first three years of whitewater recreation flows to verify that FYLF egg masses and tadpoles are not being scoured, washed out, or dewatered. The Licensee shall conduct FYLF monitoring in the vicinity of relicensing FYLF monitoring sites 119 (Lower McCloud River Mile [RM] 1.4), 120 (RM 1.7), and 122 (RM 2.0);

a. This requirement may be developed as part of the Biological Resources Monitoring Plan (Condition 7). FYLF breeding monitoring shall only be required when the Licensee releases flows specifically for the purpose of whitewater boating and is not necessary for operational flow releases or storm events;

(vi) Potential situations in which the Licensee may be excused from providing all or a portion of whitewater recreation flows (e.g., if flows were large enough to provide whitewater recreation opportunities, or providing recreational flows would result in adverse impacts to FYLFs);

(vii) Measures the Licensee will implement to facilitate whitewater boating opportunities (e.g., improved access to put-ins and take-outs such as snow plowing of access roads);

(viii) Noticing to inform the Forest Service, CDFW, USFWS, American Whitewater, California Sportfishing Protection Alliance, CalTrout, Trout Unlimited, Winnemem Wintu Tribe, State Water Board staff, and the public when the Licensee plans to release whitewater recreation flows;

(ix) Format, schedule, and reporting to document whitewater boating opportunities and use, as well as the results of FYLF monitoring in item (iv) above. The Licensee shall propose any updates to the Whitewater Plan based on the monitoring results and other related information; and

(x) Documentation of consultation with Forest Service, CDFW, USFWS, American Whitewater, California Sportfishing Protection Alliance, CalTrout, Trout Unlimited, Winnemem Wintu Tribe, and State Water Board staff, comments and recommendations made in connection with the plan, and a description of how the plan 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 Whitewater Plan, and any approved amendments thereto. The Licensee shall implement the Whitewater Plan upon receipt of Deputy Director approval and any other required approvals, in accordance with the schedule and requirements specified therein.

Based on the monitoring results of FYLF breeding or whitewater boating use, the Licensee may propose updates to the Whitewater Plan, including changes to or discontinuation of whitewater recreation flows. The Licensee shall develop any updates to the Whitewater Plan in accordance with the consultation requirements in item (x). Any updates to the Whitewater Plan shall be approved by the Deputy Director prior to implementation. The Deputy Director may require changes or implementation of additional management actions as part of any approval. The Licensee shall implement the updated Whitewater Plan upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 11: Construction and Maintenance

When applicable, the Licensee shall comply with the State Water Board's Construction General Permit[34], *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (Dredge or Fill Procedures)[35], and amendments to the aforementioned documents. The Licensee shall prepare and implement site-specific Water Quality Monitoring and Protection Plans (WQMP Plans) for Deputy Director approval for any construction and maintenance activities with the potential to impact water quality or beneficial uses, including construction or maintenance of recreation facilities and roads, that are not subject to the Construction General Permit or covered by another condition of this certification. WQMP Plans must demonstrate compliance with sediment and turbidity water quality objectives in the Central Valley Basin Plan. The WQMP Plans shall be consistent with the most current Forest Service National Best Management Practices for Water Quality Management on National Forest System Lands[36] or other appropriate documents.

The Licensee shall submit the WQMP Plans to the Deputy Director for review and approval at least 60 days prior to the desired start date of the applicable construction or maintenance activity. The objective of the WQMP Plans shall be to identify and implement control measures for construction, maintenance, or other activities with the potential to cause erosion, stream sedimentation, fugitive dust, soil mass movement, release of hazardous materials, or other water quality impairment.

The WQMP Plans shall be based on actual site geologic, soil, and groundwater conditions, and at a minimum shall include:

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[34] *General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities*. Water Quality Order No. 2009-0009-DWQ and NPDES No. CAS000002, as amended by Order No. 2010-0014-DWQ, Order No. 2012-0006-DWQ.

[35] Available at: https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/2021/procedures.pdf. Accessed April 14, 2026.

[36] National Best Management Practices for Water Quality Management on National Forest System Lands. Volume 1: National Core BMP Technical Guide (FS-990a). April 2012.

(i) Description of site conditions and the proposed activity;

(ii) Detailed descriptions, design drawings, and specific topographic locations of all control measures in relation to the proposed activity, which may include:

a. Measures to divert runoff away from disturbed land surfaces;

b. Measures to collect and filter runoff from disturbed land surfaces, including sediment ponds at the diversion and powerhouse sites; and

c. Measures to dissipate energy and prevent erosion;

(iii) Revegetation measures for disturbed areas, which shall include use of native plants and locally-sourced plants and seeds;

(iv) Measures for complying with the Dredge or Fill Procedures and Central Valley Basin Plan water quality objectives, as applicable; and

(v) A monitoring, maintenance, and reporting schedule.

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

CONDITION 12: Reintroduction of Anadromous Fish Species

12(A) Anadromous Fish Species Studies

No later than six months following license issuance, the Licensee shall initiate consultation with NMFS, Forest Service, CDFW, USFWS, the Winnemem Wintu Tribe, Pit River Tribe, and State Water Board staff to develop and evaluate available information and determine the need for studies related to winter-run Chinook salmon[37] in the McCloud River below McCloud Dam and the Project's potential impacts to present winter-run Chinook salmon in the McCloud River. At a minimum, consultation shall include:

(i) Identification of and a summary of existing information related to winter-run Chinook salmon in the McCloud River, which shall include consideration of flows developed by the McCloud River Structured Decision Making Working Group using the California Environmental Flows Framework;

[37] References to winter-run Chinook salmon in this condition shall be expanded to include other anadromous fish species if broader efforts result in the need for evaluation of additional species.

(ii) Identification and development of any study plans to identify Project potential impacts to Chinook salmon. Study plans shall consider Project operations, flow releases, water quality, and aquatic habitat impacts;

(iii) Documentation of consultation with NMFS, Forest Service, CDFW, USFWS, the Winnemem Wintu Tribe, Pit River Tribe, and State Water Board staff, comments and recommendations made in connection with the plan, and a description of how the plan incorporates or addresses the comments and recommendations.

Within two years of license issuance, the Licensee shall submit the study plans to the Deputy Director for review and consideration of approval. The Deputy Director may require changes to the study plans to ensure protection of water quality and beneficial uses. The Licensee shall implement the study plans upon receipt of Deputy Director approval and any other required approvals, in accordance with the schedule and requirements specified therein.

12(B) Anadromous Fish Species Study Report

Within one year of completion of any studies required per Condition 12(A), the Licensee shall provide a report to the Deputy Director for review and consideration of approval. The report shall be developed in consultation with NMFS, Forest Service, CDFW, USFWS, the Winnemem Wintu Tribe, Pit River Tribe, and State Water Board staff. At a minimum the report shall include:

(i) Results of completed and/or ongoing approved studies identifying any Project-related impacts to winter-run Chinook salmon habitat and populations in the McCloud River below McCloud Dam;

(ii) Recommendations, if appropriate, for additional data collection to better inform Project impacts;

(iii) Identification of adaptive management measures, if appropriate, to address Project impacts based on study plan(s) results. Adaptive management measures may include changes to the required flows, habitat restoration, access to McCloud River tributaries, or other protective measures;

(iv) Proposed changes, as appropriate, to update certification conditions to protect salmon, including conditions related to flows (Condition 1), water quality monitoring (Condition 3), large woody material (Condition 4), gravel augmentation (Condition 6), biological resources monitoring (Condition 7), and fish stocking (Condition 8); and

(v) Documentation of consultation with NMFS, Forest Service, CDFW, USFWS, the Winnemem Wintu Tribe, Pit River Tribe, and State Water Board staff, comments and recommendations made in connection with the report, and a description of how the report incorporates or address the comments and recommendations.

The Deputy Director may require changes based on the report (e.g., to measures or conditions) to ensure protection of water quality and beneficial uses. The Licensee shall begin implementation of the Deputy Director-approved measures in accordance with the schedule and requirements specified in the Deputy Director approval and receipt of any other required approvals.

12(C) Federal Requirements Related to Anadromous Fish Species

Federal or state agencies may propose fish passage or related actions at Shasta Dam and/or McCloud Dam during the term of the new license, thereby potentially introducing Endangered Species Act (ESA)-protected anadromous fish species into Project-affected stream reaches. Such actions could require the need to reevaluate Project facilities, flow regimes, fish stocking plans, large woody material management, gravel augmentation, and sediment management.

The Deputy Director may require the Licensee to develop and conduct studies, and provide associated reports, if any authorized federal or state agency proposes fish passage or related actions. Any studies and reports shall be reviewed and approved by the Deputy Director prior to implementation. The Deputy Director may require changes as part of any approval. Such studies shall be designed in consultation with NMFS, Forest Service, CDFW, USFWS, the Winnemem Wintu Tribe, Pit River Tribe, and State Water Board staff and may include, but are not limited to, the development of fish passage, flows, or other measures. The Licensee is encouraged to include all interested parties in consultation conducted pursuant to this provision.

If any authorized federal or state agency proposes fish passage or related actions, the Deputy Director may require the Licensee to develop and submit a plan for Deputy Director review and consideration of approval to ensure adequate protection of Central Valley Basin Plan water quality objectives and beneficial uses applicable to anadromous fish. The plan shall evaluate the need for changes to the conditions of this certification, including at a minimum conditions related to: flows (Condition 1), water quality monitoring (Condition 3), large woody material (Condition 4), gravel augmentation (Condition 6), biological resources monitoring (Condition 7), and fish stocking (Condition 8). The Licensee shall provide the plan to the Deputy Director on the timeline identified in the Deputy Director's request and provide any comments and recommendations received from the agencies and/or tribes as part of consultation along with how such comments and recommendations were considered. The Deputy Director may require changes as part of any approval. The Licensee shall file with FERC the Deputy Director-approved studies, reports, and/or plans, and any approved amendments thereto. The Licensee shall implement the studies and plans, and any amendments thereto, upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein.

CONDITION 13: Annual Consultation Meetings

No later than one year following license issuance, the Licensee shall establish a Technical Review Group (TRG) to meet annually regarding implementation of the

Project license. At a minimum, the Forest Service, CDFW, USFWS, tribes, nongovernmental organizations, and State Water Board staff shall be invited to participate in the TRG. The annual meeting shall be noticed at least 30 days in advance on the Licensee's Project webpage and open to the public. The TRG shall establish communication protocols to facilitate interactions between group members that allow for open participation and communication between all parties.

The first meeting of the TRG shall be held no later than the first full calendar year after license issuance. At the annual meetings, the TRG shall:

(i) Review the status of implementing the FERC license and certification conditions;

(ii) Review monitoring data from all monitoring conducted the previous year;

(iii) Review elements of current year maintenance plans and any non-routine maintenance;

(iv) Discuss foreseeable changes to Project facilities or features;

(v) Discuss the status of salmonid reintroduction plans;

(vi) Discuss necessary revisions or modifications to plans approved as part of this certification; and

(vii) Discuss species listing implications, including:

a. Needed protection measures for species newly listed as threatened, endangered, or sensitive;

b. Changes to existing plans for actions that may no longer be necessary due to delisting of a species; and

c. Changes to existing plans to incorporate new information about species requiring protection.

The Licensee shall provide at least 30-days' notice of the annual meeting to the TRG. Materials shall be provided to TRG members at least 30 days prior to the annual meeting. The Licensee shall submit a report to State Water Board staff that summarizes the annual consultation meeting no later than 60 days following the annual consultation meeting.

CONDITION 14: 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 Shasta County or Siskiyou County, or multiple consecutive Dry or Critically Dry water year types, 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 Forest Service, CDFW, USFWS, and the Deputy Director 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 the Forest Service, CDFW, 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 interested parties at least seven days prior to submittal to the Deputy Director. The Licensee's request shall include: an estimate of water to be saved and the alternative beneficial uses for which the water is being conserved; a timeline for the return to regular operations; proposed monitoring for the revised operations, including an estimation of any impacts the revised operations may have on any beneficial uses of water; and 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.

CONDITION 15: Certification Scope

This certification only covers the hydropower developments existing at the time of certification: the James B. Black, Pit 6, and Pit 7 Developments. This certification does not cover: the proposed McCloud and Pit 7 Afterbay Developments. If the Licensee proposes to add new hydropower developments to the Project, it will need to request an amendment to this certification and the FERC license to incorporate such changes.

CONDITIONS 16 – 37

CONDITION 16. Any plan developed as a condition of this certification will require review and approval by the Deputy Director. 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 proposal, plan, or report 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. The Licensee shall not implement any plans or

reports until after receiving Deputy Director approval and any other necessary regulatory approvals.

If Deputy Director approval of any plan is not received 14 days prior to an applicable FERC deadline, the Licensee may file the plan with FERC. However, Deputy Director approval is required prior to plan implementation. The Licensee must amend its filing with FERC if changes are made as part of the Deputy Director's subsequent approval.

CONDITION 17. The State Water Board may add to or amend the conditions of this certification: (1) to incorporate changes in technology, sampling, or methodologies; (2) if monitoring results indicate that continued operation of the Project could violate water quality objectives or impair beneficial uses; (3) 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; (4) to coordinate the operations of this 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 (5) to require additional monitoring and/or other measures, as needed, to ensure that continued Project operations meet water quality objectives and protect beneficial uses of the McCloud River, Pit River, Iron Canyon Creek, or their tributaries.

CONDITION 18. Future changes in climate projected to occur during the term of the Project's FERC license may alter the baseline assumptions used to develop the conditions of this certification and necessitate adaptive management. Reports and plans submitted by the Licensee for approval under this certification shall consider the effects of climate change on the Project's operations and, as necessary, propose updates to operations to ensure protection of water quality and beneficial uses and compliance with other appropriate requirements of state law, including other applicable water quality control plans and policies and future amendments thereto. The Deputy Director may identify the need for, and set a deadline for, submittal of a report and/or plan focused on additional assessment of potential impacts to water quality and beneficial uses that may have changed from the baseline assumptions used to develop the conditions of the certification, along with recommended changes to address the changed climate conditions and ensure water quality and beneficial use protections. The Deputy Director may include recommendations regarding potential actions that shall be considered by the Licensee in this report and/or plan to ensure ongoing protection of water quality and beneficial uses and compliance with applicable requirements of state law, including other applicable water quality control plans and policies and future amendments thereto. The Licensee shall implement the plan upon approval by the Deputy Director and any other required approvals, and the Deputy Director may require changes as part of any approval.

CONDITION 19. 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 20. This certification is contingent on compliance with all applicable requirements of the Central Valley Basin Plan.

CONDITION 21. Notwithstanding any more specific conditions in this certification, the Project shall be operated in a manner consistent with all 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 McCloud River, Pit River, Iron Canyon Creek, or their tributaries.

CONDITION 22. 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 California Water Code section 13167.

CONDITION 23. 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 ESA (Fish & Game 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 requirements of the applicable ESAs for the Project authorized under this certification.

CONDITION 24. The Licensee shall submit any change to the Project, including operations, facilities, 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 and approved by the Executive Director of the State Water Board unless otherwise delegated in this certification or other State Water Board approval.

CONDITION 25. 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 ensure compliance with the water quality standards and other pertinent requirements incorporated into this certification. 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 26. In response to a suspected violation of any condition of this certification, the State Water Board or 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 27. 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 activities.

CONDITION 28. 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 29. Upon request, a construction schedule shall be provided to agency staff. The Licensee shall provide State Water Board and Central Valley Regional Water Board staffs access to Project sites to document compliance with this certification.

CONDITION 30. A copy of this certification shall be provided to any contractor and all subcontractors conducting Project-related work, 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 Project-related work.

CONDITION 31. Onsite containment for storage of chemicals classified as hazardous shall be away from watercourses and include secondary containment and appropriate management as specified in California Code of Regulations, title 27, section 20320.

CONDITION 32. 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 33. 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 34. This certification is subject to modification or revocation upon administrative or judicial review, including but not limited to review and amendment pursuant to California Water Code, section 13330 and California Code of Regulations, title 23, division 3, chapter 28, article 6 (commencing with section 3867).

CONDITION 35. 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 36. This certification is conditioned upon total payment of any fee required under California Code of Regulations, title 23, division 3, chapter 28.

CONDITION 37. The Licensee shall ensure no net loss of wetland or riparian habitat functions and is responsible for compliance with the Dredge or Fill Procedures and any amendments thereto, and Water Code sections 16200-16201.

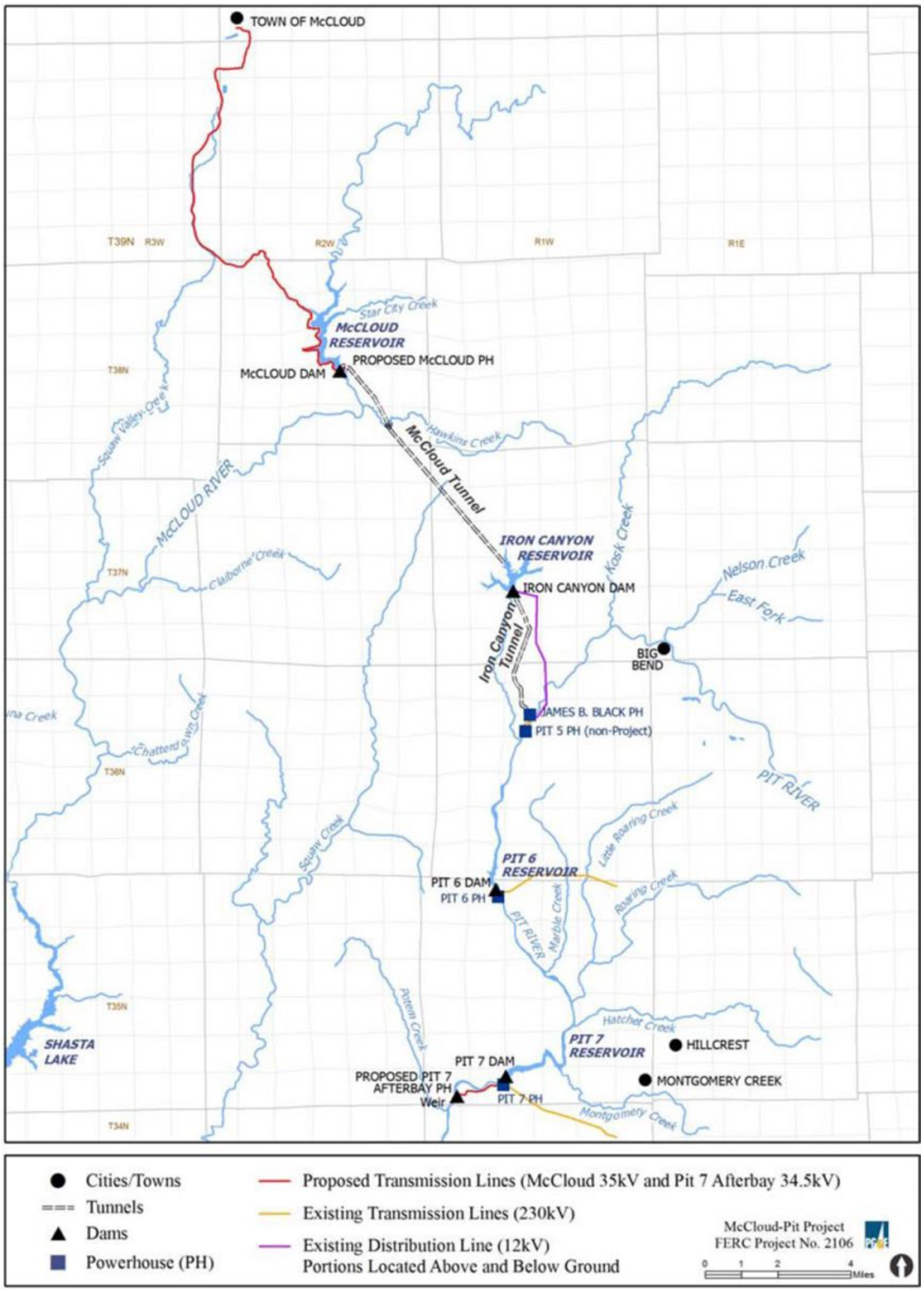

Figure 1. Project Location Map

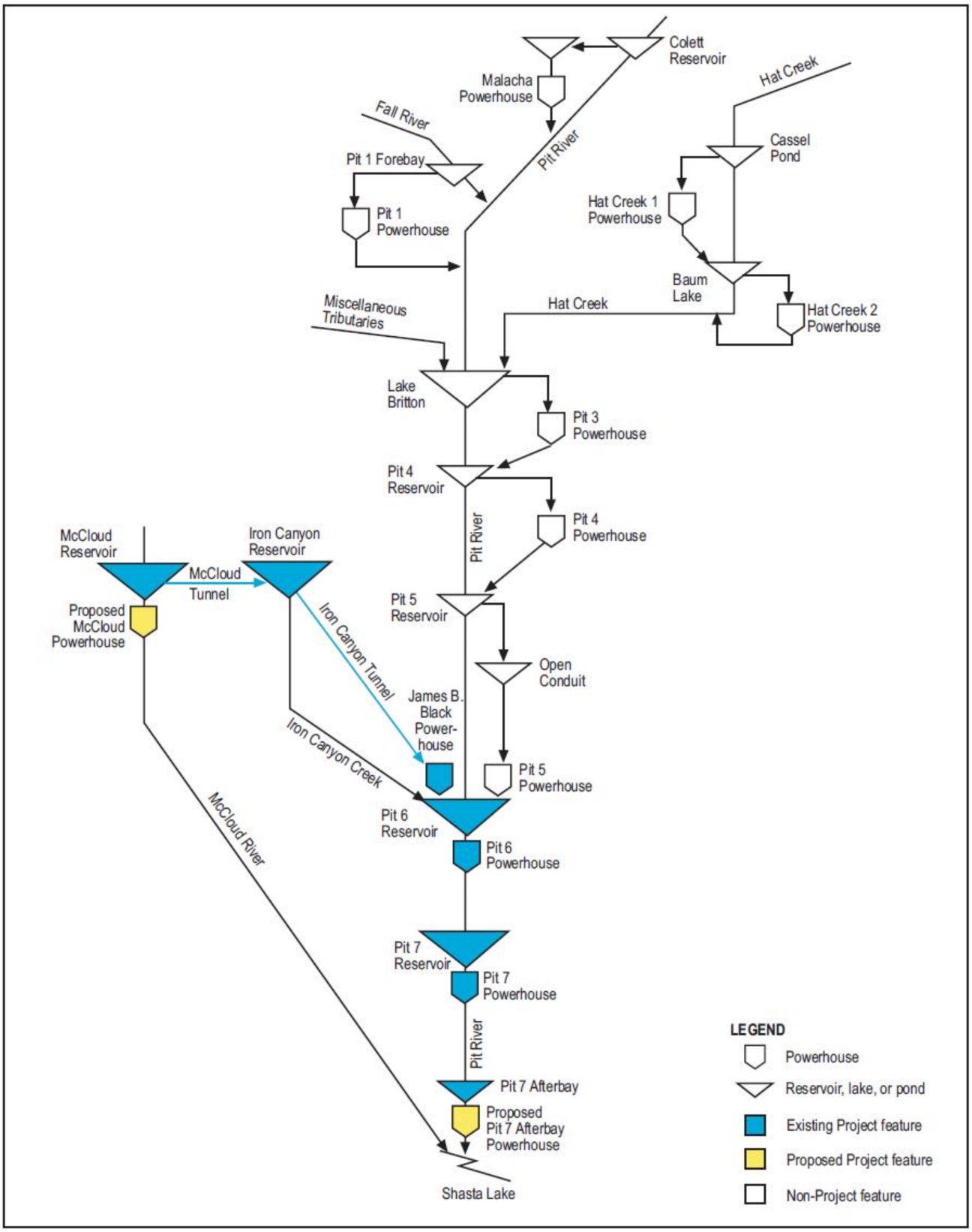

Figure 2. Schematic of McCloud-Pit Hydroelectric Project Operations