State Water Resources Control Board

August 20, 2021

Mr. Robert Steigmeyer
Land Planner – Environmental Management
Pacific Gas and Electric Company
12840 Bill Clark Way, Rm. 4178
Auburn, CA 95602
Sent via email: **RLSZ@pge.com**

Lake Fordyce Dam Seepage Mitigation Project
Placer and Nevada Counties
Fordyce Lake and Fordyce Creek

AMENDMENT TO WATER QUALITY CERTIFICATION

Dear Mr. Steigmeyer:

This water quality certification (certification) amendment is issued in response to Pacific Gas and Electric Company's (PG&E) request to amend the Lake Fordyce Dam Seepage Mitigation Project (Project) certification. PG&E's requested Project design changes are necessary to ensure the cofferdam, which is needed to complete dam safety improvements, is stable and structurally sound.

Project Background
PG&E owns and operates Lake Fordyce Dam, which is located on Fordyce Creek, a tributary of the South Fork of the Yuba River, in Nevada County. Lake Fordyce Dam is about seven miles northwest of Soda Springs, California, and 17 miles west-northwest of Truckee, California.

Lake Fordyce Dam is a 156-foot-high, 1,220-foot-long soil and rock-fill dam with a concrete liner on the upstream face that impounds Fordyce Creek to form Lake Fordyce. Lake Fordyce Dam does not generate hydroelectric energy but is operated as part of PG&E's Upper Drum-Spaulding Hydroelectric Project, which is licensed by the Federal Energy Regulatory Commission (FERC) and referred to as FERC Project No. 2310.

Lake Fordyce Dam has a long history of seepage. At full reservoir capacity, the dam currently seeps between 23 to 60 cubic feet per second (cfs). In 2005, the California Department of Water Resources, Division of Safety of Dams (DSOD) instituted a seepage threshold of 30 cfs for Lake Fordyce Dam. Seepage at Lake Fordyce Dam exceeded the threshold in November 2011. Accordingly, in 2012 DSOD required PG&E to submit a plan and schedule to address the seepage.

On May 26, 2020, PG&E submitted a certification application to the State Water Resources Control Board (State Water Board) for the Project. The Project involves repair of Lake Fordyce Dam to ensure compliance with DSOD's seepage threshold requirement. On October 30, 2020, the State Water Board issued a certification for the Project. Additionally, in compliance with the California Environmental Quality Act (CEQA), the State Water Board adopted an Initial Study/Mitigated Negative Declaration (IS/MND) that analyzes potential impacts associated with the Project, and also includes mitigation measures to reduce identified impacts to less than significant.

On March 24, 2021, PG&E staff contacted State Water Board staff with concerns that the original Project design involving construction of a cofferdam on existing sediment deposits could lead to cofferdam instability or failure. In order to address the cofferdam safety issues, PG&E requested to modify its original Project design and submitted a request for an amendment of the Project certification to the State Water Board on June 24, 2021.

California Environmental Quality Act
As the CEQA lead agency, the State Water Board reviewed and analyzed the effects of the proposed design changes in relation to the IS/MND adopted in October 2020. The State Water Board determined that PG&E's proposed design changes would not result in any new potentially significant effects or substantially increase the severity of any previously identified potentially significant effects. As such, the State Water Board has prepared a CEQA Addendum that discusses the proposed design changes and analyzes their environmental effects. The CEQA Addendum is available on the State Water Board **Drum-Spaulding Project** web page[1].

Noticing
On July 2, 2021, the State Water Board provided public notice of PG&E's request for an amendment to the Project certification, pursuant to California Code of Regulations, title 23, section 3858, by posting information describing the amendment request on the Division of Water Rights Water Quality Certification Program Public Notices webpage and noticing interested parties via email. The State Water Board received no comments in response to this notice.

Certification Amendment
PG&E's certification amendment request includes the following changes from the Project certified on October 30, 2020:

- Elimination of diver-assisted suction dredge to remove approximately 500 cubic yards of reservoir bed sediment from the cofferdam alignment.
- Elimination of geotubes to collect dredged sediment solids for offsite disposal.
- Mechanical dredging using a barge-mounted excavator with clam-shell bucket to remove approximately 5,000 cubic yards of reservoir bed sediment from the cofferdam alignment.

[1] https://www.waterboards.ca.gov/waterrights/water_issues/programs/water_quality_cert/drum_spaulding_ferc2310.html

- Addition of a small earthen bulkhead of rock material installed on the shore for loading and unloading materials to and from barges. After the dredging activity is complete, this rock material will be reused to construct the cofferdam.
- Installation of a turbidity curtain around the barge and dredge area to reduce water quality impacts to Lake Fordyce.
- Mercury testing for every 2,000 cubic yards of dredged sediment. Any hazardous soils will be disposed of offsite in accordance with applicable state and federal regulations.
- Addition of a permanent disposal site for the non-hazardous dredged sediments in the Project's downstream staging area, which is an upland area without hydraulic connectivity with receiving waters.
- Backfilling of the trench created by mechanical dredging with approximately 5,000 cubic yards of 12-inch crushed rock to form a more uniform and stable subgrade for the cofferdam.
- Adjustments to the Project schedule and timing of Project activities. The original Project design anticipated the Project would take three to four years. The proposed design changes anticipate the Project will take four years.

Conclusion

The State Water Board finds that implementation of the revised Project in accordance with the certification amendment, included as Attachment 1 (Strikethrough/Underline Version), Attachment 2 (Clean Version), and the conditions provided below, will comply with the state water quality standards of Lake Fordyce and Fordyce Creek and other appropriate requirements of state law. The State Water Board hereby amends the Project certification as detailed in Attachment 2. The language in Attachment 2 replaces the applicable language in the October 30, 2020 Project certification, as reflected in Attachment 1 (Strikethrough/Underline Version).

This certification amendment is issued with the following additional conditions:

1. This certification amendment is subject to modification or revocation upon administrative or judicial review, including 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).
2. This certification amendment 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 certification application was filed pursuant to California Code of Regulations, title 23, section 3855, subdivision (b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.
3. This certification amendment is conditioned upon total payment of any fee required under California Code of Regulations, title 23, division 3, chapter 28 and owed by the applicant.

All documents and other information that constitute the public record for this amendment will be maintained by the Division of Water Rights and are available for public review at the following address:

State Water Resources Control Board
Division of Water Rights
1001 I Street, Sacramento, CA 95814

Documents are currently available at this location by appointment only. Please email **dwr@waterboards.ca.gov** to discuss options for document review.

If you have questions regarding this letter, please contact Mr. Philip Meyer, Project Manager, by email at **Philip.Meyer@waterboards.ca.gov**.

Sincerely,

Eileen Sobeck
Executive Director

Attachments: Attachment 1: Lake Fordyce Dam Seepage Mitigation Project Certification Amendments (Strikethrough/Underline Version)
Attachment 2: Lake Fordyce Dam Seepage Mitigation Project Certification Amendments (Clean Version)

ec (with Attachments): Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
Via FERC eFiling

U.S. Environmental Protection Agency
Region 9, Water Division
Email: R9cwa401@epa.gov

Mr. Patrick Pulupa, Executive Officer
Central Valley Regional Water Quality Control Board
Email: Patrick.Pulupa@waterboards.ca.gov

Mr. Zachary Fancher, Senior Project Manager
United States Army Corps of Engineers
Email: Zachary.J.Fancher@usace.army.mil

cc (w/o Attachments): Interested Parties List

ATTACHMENT 1 – LAKE FORDYCE DAM SEEPAGE MITIGATION PROJECT
WATER QUALITY CERTIFICATION AMENDMENTS
(STRIKETHROUGH/UNDERLINE VERSION)

The State Water Resources Control Board hereby amends the water quality certification (certification) for Pacific Gas and Electric Company's Lake Fordyce Dam Seepage Mitigation Project to modify Section 1.0, Section 2.1, Section 4.0, Condition 1, Condition 2, Condition 4, Condition 6, and References, as provided below. Original text from the October 30, 2020, certification is shown in regular text. Deletions are shown in ~~**bold strikethrough**~~ text. Additions are shown in **bold underlined** text.

1.0 Project Description

Pacific Gas and Electric Company (PG&E or Applicant) owns and operates Lake Fordyce Dam, which is located on Fordyce Creek, a tributary of the South Fork of the Yuba River, in Nevada County.

Lake Fordyce Dam is about seven miles northwest of Soda Springs, California, and 17 miles west-northwest of Truckee, California. Lake Fordyce Dam is a 156-foot-high, 1,220-foot-long soil-and rock-fill dam with a concrete liner on the upstream face that impounds Fordyce Creek to form Lake Fordyce. The reservoir has a normal water storage capacity of 49,903 acre-feet (AF). Inflow to Lake Fordyce is fed by Meadow Lake, Sterling Lake, and White Rock Lake, as well as unregulated inflow from rain and snowmelt. (Figure 1) Lake Fordyce Dam does not generate hydroelectric energy, but is operated as part of PG&E's Upper Drum-Spaulding Hydroelectric Project (Federal Energy Regulatory Commission (FERC) Project No. 2310).

Lake Fordyce Dam currently has a seepage rate of between 23 to 60 cubic feet per second (cfs). In 2005, the California Department of Water Resources, Division of Safety of Dams (DSOD) instituted a seepage threshold of 30 cfs for Lake Fordyce Dam. Seepage at Lake Fordyce Dam exceeded this threshold in November 2011. Accordingly, in 2012, DSOD required PG&E to submit a plan and schedule to mitigate the seepage. The Lake Fordyce Dam Seepage Mitigation Project (Project) is intended to repair Lake Fordyce Dam and bring it into compliance with DSOD's seepage threshold.

The Project consists of a number of dam improvements designed to reduce seepage, including placing an impermeable membrane liner on the dam's upstream face to cutoff seepage through the embankment and constructing a new concrete plinth and grout curtain at the upstream toe of the dam to address seepage at the dam's low level outlet. These improvements require excavating a portion of the existing fill at the upstream toe of the dam and replacing it with engineered fill. Additionally, a bin-wall cofferdam would be constructed in Lake Fordyce to create a dry work area on the upstream face of the dam. **Cofferdam construction would require dredging 5,000 cubic yards of reservoir sediments and backfill with crushed rock to create a stable base for the cofferdam. Sediments dredged for cofferdam construction would be permanently disposed of at the Project's downstream staging area, an upland area without hydraulic connectivity with receiving waters.**

To implement the dam improvements, Lake Fordyce Road would be improved to provide access for construction equipment. Except for reservoir drawdown, which may occur as early as April of each construction season, the Project is scheduled to occur between mid-

July and mid-October each year for ~~**three**~~ **four** consecutive years. The specific seasonal duration of each construction year would be informed by weather conditions and the water year (e.g., snowpack). ~~**The cofferdam bin walls may be removed in a fourth year of construction if weather conditions prohibit removal of the coffer dam bin walls in the third construction year**~~.

The required minimum flow release of 5 cfs into Fordyce Creek would continue to occur during Project construction through a 60-inch-diameter bypass pipe that would be installed between the bin wall cofferdam and Lake Fordyce Dam's low-level outlet. During periods when the low-level outlet is closed, barge-mounted pumps would maintain the required 5 cfs. Additional information on the Project description can be found in Attachment A of the Project's certification application (PG&E, 2020)**, as well as in PG&E's application for amended certification (PG&E, 2021)**.

2.1. Water Quality Certification and Related Authorities

The federal Clean Water Act (33 U.S.C. §§ 1251-1388) was enacted "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." (33 U.S.C. § 1251(a).) The Clean Water Act relies significantly on state participation and support in light of "the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution" and "plan the development and use" of water resources. (33 U.S.C. § 1251(b).) Section 101 of the Clean Water Act (33 U.S.C. § 1251(g)) requires federal agencies to "co-operate with 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 any applicant for a federal license or permit that may result in a discharge into navigable waters to provide the licensing or permitting federal agency with certification that the project will comply with specified provisions of the Clean Water Act, including water quality standards 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 set effluent limitations and other conditions necessary to ensure compliance with the Clean Water Act and with "any other appropriate requirement of State law." (33 U.S.C. § 1341(d).) 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 Clean Water Act section 401 certification in California. (Wat. Code, § 13160.) The State Water Board has delegated authority to act on applications for certification to the Executive Director of the State Water Board. (Cal. Code Regs., tit. 23, § 3838, subd. (a).)

Water Code section 13383 authorizes the State Water Board to "establish monitoring, inspection, entry, reporting, and recordkeeping requirements" and obtain "other information as may be reasonably required" for activities subject to certification under section 401 of the Clean Water Act. For activities 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 (State Water Board, 2012). 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 (State Water Board, 2017b).

PG&E filed an application for water quality certification (certification) with the State Water Board under section 401 of the Clean Water Act on May 26, 2020, pursuant to its application to the United States Army Corps of Engineers (ACOE) for a permit under section 404 of the Clean Water Act. State Water Board staff provided public notice of the application pursuant to California Code of Regulations, title 23, section 3858, by posting information describing the Project on the State Water Board's website on June 29, 2020.

On October 26, 2020, State Water Board staff requested comments from the Central Valley Regional Water Quality Control Board (Central Valley Regional Water Board) on the certification. (See Cal. Code Regs., tit. 23, § 3855, subd. (b)(2)(B).) No comments were received. **On October 30, 2020, the State Water Board issued a certification for the Project.**

On June 24, 2021, PG&E filed a request to amend the October 30, 2020 certification. State Water Board staff provided public notice of the application pursuant to California Code of Regulations, title 23, section 3858, by posting information describing the Project on the State Water Board's website on July 2, 2021. No comments were received.

4.0 Rationale for Water Quality Certification Conditions

Certification conditions were developed to protect and enhance beneficial uses of California's waters and achieve compliance with associated water quality objectives. Section 401 of the federal Clean Water Act (33 U.S.C. § 1341) provides that the conditions contained in this certification be incorporated as mandatory conditions of any federal permit issued for the Project.

When preparing this certification, State Water Board staff reviewed and considered the: (1) Basin Plan (Central Valley Regional Control Board, 2018); (2) PG&E's May 26, 2020 certification application (PG&E, 2020); (3) PG&E's March 2020 application to the ACOE for a Clean Water Act section 404 individual permit (PG&E, 2020); (4) IS/MND (State Water Board, 2020); (5) PG&E's September 13, 2019 Lake Fordyce Dam Seepage Mitigation Project – Technical Memorandum – Proposed Turbidity Limits and Water Quality Compliance (PG&E, 2020); **(6) PG&E's June 24, 2021, application requesting amendment of the October 30, 2020 certification (PG&E, 2021)**; ~~(6)~~**(7)** existing water quality conditions; ~~(7)~~**(8)** Project related controllable factors; and ~~(8)~~**(9)** other information in the record.

The Project involves dredging, excavation, and dewatering the work area, and repairs to Fordyce Dam. Dredging, excavation, and dewatering have the potential to cause exceedances of the Basin Plan's turbidity water quality objective. Additionally, the

installation of a grout curtain involves the injection of cement and bentonite clay to reduce dam seepage. Grout has the potential to react with seepage traveling through the dam and could cause a change in pH in Fordyce Creek.

PG&E's certification application includes proposed actions to manage pH and turbidity. pH actions include the installation of a temporary pH monitoring and treatment system below Lake Fordyce Dam to treat seepage water before it's discharged to Fordyce Creek if it exceeds the Basin Plan's water quality objectives for pH. Turbidity actions include: construction management actions (such as using turbid water for dust control); ~~**use of geotubes and**~~ turbidity curtains to reduce the export of turbid water to Fordyce Creek **and Lake Fordyce**; and monitoring of flows and turbidity. Conditions of this certification require PG&E to implement its pH and turbidity control measures with modifications to ensure Project discharges to Fordyce Creek are protective of water quality and beneficial uses.

As the existing conditions for turbidity in Fordyce Creek are typically below one nephelometric turbidity unit (NTU), the Project, which is necessary for dam safety, is not able to comply with the numeric Basin Plan turbidity water quality objective on an instantaneous basis. Consistent with the Basin Plan, conditions in this certification apply averaging periods with corresponding turbidity limits, based on levels determined to be protective of the beneficial uses of Fordyce Creek. Beneficial uses in Fordyce Creek that would be most impacted by increased turbidity levels include cold freshwater habitat and cold water spawning, reproduction, and/or early development of fish. Rainbow trout, which are known to occur in Fordyce Creek and have been stocked in Lake Fordyce, are an indicator of these beneficial uses. Turbidity affects fish, such as rainbow trout, by impairing vision and altering feeding behavior, predator avoidance, and behavioral interaction with other fish. The higher the turbidity level, the shorter the duration a turbidity event must be to avoid adverse effects. To quantify the relationship between the magnitude of turbidity and exposure duration in fish, Newcombe and Jensen (1996) developed a "severity-of-ill-effect" (SEV) ranking model (SEV Model). The SEV Model incorporates magnitude and duration of turbidity events into SEV values and provides a basis for identifying turbidity thresholds that are protective of beneficial uses, including juvenile and adult life stages of cold water fish.

Newcombe (2003) modified the SEV Model so that it could be used to assess the impact of turbidity in clear, cold water systems such as Fordyce Creek. In Newcombe (2003), the SEV value index scores were grouped into four categories, based on behavioral, physiological, and survival effects: nil effects (scores of 0 to 0.5); minor effects (scores of 0.5 to 3.5); moderate, sublethal effects (scores of 3.5 to 8.5); and severe, lethal effects (scores of 8.5 to 14.5).

Conditions of this certification require the Project take all reasonable actions to manage turbidity levels and that SEV values do not exceed 3.5. SEV values at or below 3.5 are expected to cause behavior changes in fish (such as abandonment of cover) but are not expected to cause mortality. Required averaging periods for turbidity are provided in the certification conditions.

This certification imposes additional conditions regarding monitoring, enforcement, and potential future revisions. These are necessary for a variety of reasons, including to ensure that the Project operates to meet water quality standards and to ensure compliance with other relevant state and federal laws. Additionally, California Code of Regulations, title 23, section 3860 requires imposition of certain mandatory conditions for all certifications, which are included in this certification.

CONDITION 1 Water Quality Monitoring and Adaptive Management

A minimum of 30 days prior to Project implementation, the Applicant shall submit a Water Quality Monitoring and Adaptive Management Plan to the Deputy Director of the Division of Water Rights (Deputy Director) for review and approval. The Deputy Director may require modifications as part of any approval. The Water Quality Monitoring and Adaptive Management Plan shall be developed in consultation with Central Valley Regional Water Quality Control Board (Central Valley Regional Water Board) and State Water Resources Control Board (State Water Board) staff. The goal of the Water Quality Monitoring and Adaptive Management Plan shall be to protect water quality and beneficial uses from Project-related impacts.

At a minimum, the Water Quality Monitoring and Adaptive Management Plan shall include: (1) monitoring locations, frequency, and duration; (2) adaptive management protocols, including actions to implement if turbidity begins to approach the limits for averaging periods specified below that would result in a "severity-of-ill-effect" (SEV) value of greater than 3.5 or water quality objectives are determined to be adversely impacted by the Project; (3) description of quality assurance and quality control procedures; (4) reporting frequency; and (5) documentation of consultation with Central Valley Regional Water Board and State Water Board staff on development of the Water Quality Monitoring and Adaptive Management Plan.

The Water Quality Monitoring and Adaptive Management Plan shall, at a minimum, monitor turbidity, dissolved oxygen, pH, and temperature. Dissolved oxygen, pH, and temperature shall be maintained in accordance with the Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin (Basin Plan) water quality objectives. The Water Quality Monitoring and Adaptive Management Plan shall document how the Applicant will manage turbidity levels ~~**in Fordyce Creek**~~ at or below a SEV value of 3.5 on the Newcombe (2003) ranking model (SEV Model). Unless otherwise approved by the Deputy Director, the turbidity averaging periods and limits for each construction season shall be:

- No hourly average of turbidity shall exceed 165 nephelometric turbidity units (NTUs).
- No 12-hour average of turbidity shall exceed 55 NTUs.
- No two-day average of turbidity shall exceed 30 NTUs.
- No one-week average shall exceed 20 NTUs.
- No four-month average shall exceed 5 NTUs.

A minimum of four monitoring locations shall be required with stations located both above and below Lake Fordyce Dam. A global positioning system (GPS) point and a photograph shall be taken for each monitoring location. Downstream compliance monitoring shall occur via a sensor system to continuously monitor water quality at a minimum of 20-minute intervals. Each construction season, monitoring shall begin prior to dewatering the work area and use of the bin-wall cofferdam bypass system, and shall continue for the duration of the construction season, and for a minimum of three days following completion of the construction season. Monitoring reports shall be submitted to the Division of Water Rights Water Quality Certification Program Manager within 45 days of initiation of monitoring and every 30 days thereafter for the remainder of any Project activities.

The Applicant shall implement the Water Quality Monitoring and Adaptive Management Plan upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein. Any revisions to Water Quality Monitoring and Adaptive Management Plan shall be approved by the Deputy Director prior to implementation.

The Deputy Director and the Central Valley Regional Water Board Executive Officer (Executive Officer) shall be notified promptly, and in no case more than 24 hours following an exceedance of a water quality objective or the turbidity averaging period limits, as identified above. Project activities associated with the exceedance shall immediately cease and may not resume without approval from the Deputy Director.

CONDITION 2. Project Activities

Unless otherwise modified by conditions of this certification, the Applicant shall implement the Project as described in Attachment A of its May 26, 2020 certification application (PG&E, 2020)**, as well as its June 24, 2021, application for an amendment of the October 30, 2020 certification**.

CONDITION 4 Best Management Practices

The Applicant shall implement the following best management practices for the protection of surface waters:

- Control measures for erosion, excessive sedimentation, and sources of turbidity shall be implemented and in place prior to the commencement of, during, and after any ground disturbing activities, or any other Project activities that could result in erosion or sediment discharges to surface water.

- Caution shall be used when handling and/or storing chemicals (e.g., fuel, hydraulic fluid) near waterways. Appropriate materials shall be on site to prevent and manage spills to prevent impacts to surface waters.

- When not in use, equipment shall be stored in upland areas outside the boundaries of waterways.

- All construction equipment shall be inspected for leaks before entering the Project area. All equipment shall be well maintained and inspected daily while on site to prevent leaks of fuels, lubricants, or other fluids into waters of the United States or waters of the state. Stationary equipment (e.g., generators) within 100 feet of aquatic habitat shall be parked over secondary containment. Additionally, service and refueling procedures shall be conducted in a designated area, where no potential exists for fuel spills to seep or wash into waterways.

- Stockpiles shall be located outside of riparian habitat and protected with appropriate best management practices. If more than 0.25 inch of rain is forecasted during the construction season, all stockpiles shall be covered with plastic and surrounded with sediment control technologies or berms to prevent sediment run-off.

- **In addition to visual observations, composite samples shall be collected from the dredged sediment and analyzed for mercury. Dredged sediment characterization shall be conducted by analyzing a composite sample for every 2,000 cubic yards of sediment that is removed from Lake Fordyce. Any hazardous sediment shall be hauled offsite for disposal at an appropriately permitted commercial facility.**

CONDITION 6. Turbidity Control Measures

The Applicant shall implement the turbidity control measures identified in Attachment A of its certification application, and as modified below.

- Turbidity Curtains:

    - A turbidity curtain (or curtains) shall be used during construction and deconstruction of the bin-wall cofferdam to contain any suspended sediment from the reservoir bottom.

    - A turbidity curtain shall be used to isolate approximately 6,000 square feet of a cove in Lake Fordyce (as shown in Figure 2). Turbid water (as discussed further below) shall be discharged to this settling area before being discharged to Fordyce Creek.

    - **A turbidity curtain (or curtains) shall be used during all dredging activities to reduce the amount of suspended sediments in Lake Fordyce. Dredging activities and dredging barges shall be surrounded by turbidity curtains.**

- Work Area Dewatering: The area between the bin-wall cofferdam and Lake Fordyce Dam shall be dewatered to create a dry work area. During dewatering, turbidity shall be monitored and the discharge rate adjusted to control Fordyce Creek turbidity levels at or below those listed in Condition 1.

- The shallow, residual water that remains in the work area after dewatering, as well as seepage water that leaks from Lake Fordyce, will likely contain elevated levels of turbidity. This turbid water shall either remain in the work area or be pumped to the settling area behind the turbidity curtain in Lake Fordyce before being discharged to Fordyce Creek. Additionally, ground-disturbing activities that produce turbid water and wash water generated during excavation for the concrete plinth shall be pumped to the settling area in Lake Fordyce before discharge to Fordyce Creek.

- ~~**Divers: Divers with small diameter suction dredge hoses shall be deployed to minimize turbidity associated with dredging.**~~

- ~~**Handling of dredged materials: Dredged material (sediment/water slurry) shall be pumped to two approximately 25-foot-wide by 50-foot-long geotubes (geotextile filter bags used to separate sediment from water). A biodegradable biopolymer flocculant shall be added to the dredged material to bond particles and promote coagulation/flocculation of the sediment in the geotubes. The geotubes will retain the sediment and release filtered water, which shall be collected and discharged to the settling area in Lake Fordyce. The material collected in the geotubes shall be disposed of in accordance with all applicable laws and regulations.**~~

- Turbid water for dust control: To reduce the amount of potentially turbid water flowing to the settling area in Lake Fordyce, as much turbid water as practical from the work area shall be used for dust control on the access road and staging areas.

- Equalization of water following end of construction season: At the end of each construction season, the work area (i.e., dry area created by the cofferdam) shall be re-watered. When the water levels on both sides of the bin-wall cofferdam are equalized with no visible differences in turbidity between the two sides of the binwall cofferdam, releases through the low-level outlet may resume.

- Overwintering preparation: At the end of each construction season, the work area shall be prepared for overwintering. All construction equipment shall be removed from the site with the exception of stockpiled, clean rock and granular fill, which may remain on site for use in subsequent construction seasons. These materials shall be stored onsite in a manner that prevents erosion and sloughing into surface waters.

References

Central Valley Regional **Water Quality** Control Board. (2018, May). The Water Quality Control Plan **for the Sacramento River Basin and the San Joaquin River~~.~~ Basin Plan~~**~~.

PG&E. (2020, March 31). 401 Water Quality Certification and Waste Discharge Requirements Application for Dredged or Fill Impacts to Waters of the State. Lake Fordyce Dam Seepage Mitigation Project.

PG&E. (2020, September 13). Lake Fordyce Dam Seepage Mitigation Project – Technical Memorandum - Proposed Turbidity Limits and Water Quality Compliance.

PG&E. (2020, March). U.S. Army Corps of Engineers CWA Section 404 Individual Permit Application.

PG&E (2021, June 24). Application for Amended Water Quality Certification. Lake Fordyce Dam Seepage Mitigation Project.

State Water Board. (2012). Delegation of Authority to State Water Resources Control Board Members Individually and to the Deputy Director for Water Rights. Resolution No. 2012-0029.

State Water Board. (2013). Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for Residual Aquatic Pesticide Discharges to Waters of the United States From Algae and Aquatic Weed Control Applications. Water Quality Order No. 2013-0002-DWQ and NPDES No. CAG990005, as amended by Order No. 2014-0078-DWQ, Order No. 2015-0029-DWQ, Order No. 2016- 0073-EXEC.

State Water Board. (2017a). Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California - Tribal and Subsist**e**~~a~~nce Fishing Beneficial Uses and Mercury Provisions. Resolution No. 2107-0027.

State Water Board. (2017b). Redelegation of Authorities pursuant to Resolution No. 2012-0029.

State Water Board. (2019b). State Wetland Definition and Procedures for Discharge of Dredged or Fill Material to Waters of the State (Procedures). Resolution No. 2019-0015.

State Water Board. (2020, September). Draft Initial Study/Mitigated Negative Declaration. Lake Fordyce Dam Seepage Mitigation Project.

ATTACHMENT 2 – LAKE FORDYCE DAM SEEPAGE MITIGATION PROJECT
WATER QUALITY CERTIFICATION AMENDMENTS
(CLEAN VERSION)

The State Water Resources Control Board hereby amends the water quality certification (certification) for Pacific Gas and Electric Company's Lake Fordyce Dam Seepage Mitigation Project to modify Section 1.0, Section 2.1, Section 4.0, Condition 1, Condition 2, Condition 4, Condition 6, and References, as provided below.

1.0 Project Description

Pacific Gas and Electric Company (PG&E or Applicant) owns and operates Lake Fordyce Dam, which is located on Fordyce Creek, a tributary of the South Fork of the Yuba River, in Nevada County.

Lake Fordyce Dam is about seven miles northwest of Soda Springs, California, and 17 miles west-northwest of Truckee, California. Lake Fordyce Dam is a 156-foot-high, 1,220-foot-long soil-and rock-fill dam with a concrete liner on the upstream face that impounds Fordyce Creek to form Lake Fordyce. The reservoir has a normal water storage capacity of 49,903 acre-feet (AF). Inflow to Lake Fordyce is fed by Meadow Lake, Sterling Lake, and White Rock Lake, as well as unregulated inflow from rain and snowmelt. (Figure 1) Lake Fordyce Dam does not generate hydroelectric energy, but is operated as part of PG&E's Upper Drum-Spaulding Hydroelectric Project (Federal Energy Regulatory Commission (FERC) Project No. 2310).

Lake Fordyce Dam currently has a seepage rate of between 23 to 60 cubic feet per second (cfs). In 2005, the California Department of Water Resources, Division of Safety of Dams (DSOD) instituted a seepage threshold of 30 cfs for Lake Fordyce Dam. Seepage at Lake Fordyce Dam exceeded this threshold in November 2011. Accordingly, in 2012, DSOD required PG&E to submit a plan and schedule to mitigate the seepage. The Lake Fordyce Dam Seepage Mitigation Project (Project) is intended to repair Lake Fordyce Dam and bring it into compliance with DSOD's seepage threshold.

The Project consists of a number of dam improvements designed to reduce seepage, including placing an impermeable membrane liner on the dam's upstream face to cutoff seepage through the embankment and constructing a new concrete plinth and grout curtain at the upstream toe of the dam to address seepage at the dam's low level outlet. These improvements require excavating a portion of the existing fill at the upstream toe of the dam and replacing it with engineered fill. Additionally, a bin-wall cofferdam would be constructed in Lake Fordyce to create a dry work area on the upstream face of the dam. Cofferdam construction would require dredging 5,000 cubic yards of reservoir sediments and backfill with crushed rock to create a stable base for the cofferdam. Sediments dredged for cofferdam construction would be permanently disposed of at the Project's downstream staging area, an upland area without hydraulic connectivity with receiving waters.

To implement the dam improvements, Lake Fordyce Road would be improved to provide access for construction equipment. Except for reservoir drawdown, which may occur as early as April of each construction season, the Project is scheduled to occur between mid-July and mid-October each year for four consecutive years. The specific seasonal

duration of each construction year would be informed by weather conditions and the water year (e.g., snowpack).

The required minimum flow release of 5 cfs into Fordyce Creek would continue to occur during Project construction through a 60-inch-diameter bypass pipe that would be installed between the bin wall cofferdam and Lake Fordyce Dam's low-level outlet. During periods when the low-level outlet is closed, barge-mounted pumps would maintain the required 5 cfs. Additional information on the Project description can be found in Attachment A of the Project's certification application (PG&E, 2020), as well as in PG&E's application for amended certification (PG&E, 2021).

2.1. Water Quality Certification and Related Authorities

The federal Clean Water Act (33 U.S.C. §§ 1251-1388) was enacted "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." (33 U.S.C. § 1251(a).) The Clean Water Act relies significantly on state participation and support in light of "the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution" and "plan the development and use" of water resources. (33 U.S.C. § 1251(b).) Section 101 of the Clean Water Act (33 U.S.C. § 1251(g)) requires federal agencies to "co-operate with 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 any applicant for a federal license or permit that may result in a discharge into navigable waters to provide the licensing or permitting federal agency with certification that the project will comply with specified provisions of the Clean Water Act, including water quality standards 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 set effluent limitations and other conditions necessary to ensure compliance with the Clean Water Act and with "any other appropriate requirement of State law." (33 U.S.C. § 1341(d).) 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 Clean Water Act section 401 certification in California. (Wat. Code, § 13160.) The State Water Board has delegated authority to act on applications for certification to the Executive Director of the State Water Board. (Cal. Code Regs., tit. 23, § 3838, subd. (a).)

Water Code section 13383 authorizes the State Water Board to "establish monitoring, inspection, entry, reporting, and recordkeeping requirements" and obtain "other information as may be reasonably required" for activities subject to certification under section 401 of the Clean Water Act. For activities 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 (State Water Board, 2012). 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 (State Water Board, 2017b).

PG&E filed an application for water quality certification (certification) with the State Water Board under section 401 of the Clean Water Act on May 26, 2020, pursuant to its application to the United States Army Corps of Engineers (ACOE) for a permit under section 404 of the Clean Water Act. State Water Board staff provided public notice of the application pursuant to California Code of Regulations, title 23, section 3858, by posting information describing the Project on the State Water Board's website on June 29, 2020.

On October 26, 2020, State Water Board staff requested comments from the Central Valley Regional Water Quality Control Board (Central Valley Regional Water Board) on the certification. (See Cal. Code Regs., tit. 23, § 3855, subd. (b)(2)(B).) No comments were received. On October 30, 2020, the State Water Board issued a certification for the Project.

On June 24, 2021, PG&E filed a request to amend the October 30, 2020 certification. State Water Board staff provided public notice of the application pursuant to California Code of Regulations, title 23, section 3858, by posting information describing the Project on the State Water Board's website on July 2, 2021. No comments were received.

4.0 Rationale for Water Quality Certification Conditions

Certification conditions were developed to protect and enhance beneficial uses of California's waters and achieve compliance with associated water quality objectives. Section 401 of the federal Clean Water Act (33 U.S.C. § 1341) provides that the conditions contained in this certification be incorporated as mandatory conditions of any federal permit issued for the Project.

When preparing this certification, State Water Board staff reviewed and considered the: (1) Basin Plan (Central Valley Regional Control Board, 2018); (2) PG&E's May 26, 2020 certification application (PG&E, 2020); (3) PG&E's March 2020 application to the ACOE for a Clean Water Act section 404 individual permit (PG&E, 2020); (4) IS/MND (State Water Board, 2020); (5) PG&E's September 13, 2019 Lake Fordyce Dam Seepage Mitigation Project – Technical Memorandum – Proposed Turbidity Limits and Water Quality Compliance (PG&E, 2020); (6) PG&E's June 24, 2021, application requesting amendment of the October 30, 2020 certification (PG&E, 2021); (7) existing water quality conditions; (8) Project related controllable factors; and (9) other information in the record.

The Project involves dredging, excavation, and dewatering the work area, and repairs to Fordyce Dam. Dredging, excavation, and dewatering have the potential to cause exceedances of the Basin Plan's turbidity water quality objective. Additionally, the installation of a grout curtain involves the injection of cement and bentonite clay to reduce dam seepage. Grout has the potential to react with seepage traveling through the dam and could cause a change in pH in Fordyce Creek.

PG&E's certification application includes proposed actions to manage pH and turbidity. pH actions include the installation of a temporary pH monitoring and treatment system below

Lake Fordyce Dam to treat seepage water before it's discharged to Fordyce Creek if it exceeds the Basin Plan's water quality objectives for pH. Turbidity actions include: construction management actions (such as using turbid water for dust control); turbidity curtains to reduce the export of turbid water to Fordyce Creek and Lake Fordyce; and monitoring of flows and turbidity. Conditions of this certification require PG&E to implement its pH and turbidity control measures with modifications to ensure Project discharges to Fordyce Creek are protective of water quality and beneficial uses.

As the existing conditions for turbidity in Fordyce Creek are typically below one nephelometric turbidity unit (NTU), the Project, which is necessary for dam safety, is not able to comply with the numeric Basin Plan turbidity water quality objective on an instantaneous basis. Consistent with the Basin Plan, conditions in this certification apply averaging periods with corresponding turbidity limits, based on levels determined to be protective of the beneficial uses of Fordyce Creek. Beneficial uses in Fordyce Creek that would be most impacted by increased turbidity levels include cold freshwater habitat and cold water spawning, reproduction, and/or early development of fish. Rainbow trout, which are known to occur in Fordyce Creek and have been stocked in Lake Fordyce, are an indicator of these beneficial uses. Turbidity affects fish, such as rainbow trout, by impairing vision and altering feeding behavior, predator avoidance, and behavioral interaction with other fish. The higher the turbidity level, the shorter the duration a turbidity event must be to avoid adverse effects. To quantify the relationship between the magnitude of turbidity and exposure duration in fish, Newcombe and Jensen (1996) developed a "severity-of-ill-effect" (SEV) ranking model (SEV Model). The SEV Model incorporates magnitude and duration of turbidity events into SEV values and provides a basis for identifying turbidity thresholds that are protective of beneficial uses, including juvenile and adult life stages of cold water fish.

Newcombe (2003) modified the SEV Model so that it could be used to assess the impact of turbidity in clear, cold water systems such as Fordyce Creek. In Newcombe (2003), the SEV value index scores were grouped into four categories, based on behavioral, physiological, and survival effects: nil effects (scores of 0 to 0.5); minor effects (scores of 0.5 to 3.5); moderate, sublethal effects (scores of 3.5 to 8.5); and severe, lethal effects (scores of 8.5 to 14.5).

Conditions of this certification require the Project take all reasonable actions to manage turbidity levels and that SEV values do not exceed 3.5. SEV values at or below 3.5 are expected to cause behavior changes in fish (such as abandonment of cover) but are not expected to cause mortality. Required averaging periods for turbidity are provided in the certification conditions.

This certification imposes additional conditions regarding monitoring, enforcement, and potential future revisions. These are necessary for a variety of reasons, including to ensure that the Project operates to meet water quality standards and to ensure compliance with other relevant state and federal laws. Additionally, California Code of Regulations, title 23, section 3860 requires imposition of certain mandatory conditions for all certifications, which are included in this certification.

CONDITION 1 Water Quality Monitoring and Adaptive Management

A minimum of 30 days prior to Project implementation, the Applicant shall submit a Water Quality Monitoring and Adaptive Management Plan to the Deputy Director of the Division of Water Rights (Deputy Director) for review and approval. The Deputy Director may require modifications as part of any approval. The Water Quality Monitoring and Adaptive Management Plan shall be developed in consultation with Central Valley Regional Water Quality Control Board (Central Valley Regional Water Board) and State Water Resources Control Board (State Water Board) staff. The goal of the Water Quality Monitoring and Adaptive Management Plan shall be to protect water quality and beneficial uses from Project-related impacts.

At a minimum, the Water Quality Monitoring and Adaptive Management Plan shall include: (1) monitoring locations, frequency, and duration; (2) adaptive management protocols, including actions to implement if turbidity begins to approach the limits for averaging periods specified below that would result in a "severity-of-ill-effect" (SEV) value of greater than 3.5 or water quality objectives are determined to be adversely impacted by the Project; (3) description of quality assurance and quality control procedures; (4) reporting frequency; and (5) documentation of consultation with Central Valley Regional Water Board and State Water Board staff on development of the Water Quality Monitoring and Adaptive Management Plan.

The Water Quality Monitoring and Adaptive Management Plan shall, at a minimum, monitor turbidity, dissolved oxygen, pH, and temperature. Dissolved oxygen, pH, and temperature shall be maintained in accordance with the Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin (Basin Plan) water quality objectives. The Water Quality Monitoring and Adaptive Management Plan shall document how the Applicant will manage turbidity levels at or below a SEV value of 3.5 on the Newcombe (2003) ranking model (SEV Model). Unless otherwise approved by the Deputy Director, the turbidity averaging periods and limits for each construction season shall be:

- No hourly average of turbidity shall exceed 165 nephelometric turbidity units (NTUs).
- No 12-hour average of turbidity shall exceed 55 NTUs.
- No two-day average of turbidity shall exceed 30 NTUs.
- No one-week average shall exceed 20 NTUs.
- No four-month average shall exceed 5 NTUs.

A minimum of four monitoring locations shall be required with stations located both above and below Lake Fordyce Dam. A global positioning system (GPS) point and a photograph shall be taken for each monitoring location. Downstream compliance monitoring shall occur via a sensor system to continuously monitor water quality at a minimum of 20-minute intervals. Each construction season, monitoring shall begin prior to dewatering the work area and use of the bin-wall cofferdam bypass system, and shall continue for the duration of the construction season, and for a minimum of three days following completion of the construction season. Monitoring reports shall be submitted to the Division of Water Rights

Water Quality Certification Program Manager within 45 days of initiation of monitoring and every 30 days thereafter for the remainder of any Project activities.

The Applicant shall implement the Water Quality Monitoring and Adaptive Management Plan upon receipt of Deputy Director and any other required approvals, in accordance with the schedule and requirements specified therein. Any revisions to Water Quality Monitoring and Adaptive Management Plan shall be approved by the Deputy Director prior to implementation.

The Deputy Director and the Central Valley Regional Water Board Executive Officer (Executive Officer) shall be notified promptly, and in no case more than 24 hours following an exceedance of a water quality objective or the turbidity averaging period limits, as identified above. Project activities associated with the exceedance shall immediately cease and may not resume without approval from the Deputy Director.

CONDITION 2. Project Activities

Unless otherwise modified by conditions of this certification, the Applicant shall implement the Project as described in Attachment A of its May 26, 2020 certification application (PG&E, 2020), as well as its June 24, 2021, application for an amendment of the October 30, 2020 certification.

CONDITION 4 Best Management Practices

The Applicant shall implement the following best management practices for the protection of surface waters:

- Control measures for erosion, excessive sedimentation, and sources of turbidity shall be implemented and in place prior to the commencement of, during, and after any ground disturbing activities, or any other Project activities that could result in erosion or sediment discharges to surface water.

- Caution shall be used when handling and/or storing chemicals (e.g., fuel, hydraulic fluid) near waterways. Appropriate materials shall be on site to prevent and manage spills to prevent impacts to surface waters.

- When not in use, equipment shall be stored in upland areas outside the boundaries of waterways.

- All construction equipment shall be inspected for leaks before entering the Project area. All equipment shall be well maintained and inspected daily while on site to prevent leaks of fuels, lubricants, or other fluids into waters of the United States or waters of the state. Stationary equipment (e.g., generators) within 100 feet of aquatic habitat shall be parked over secondary containment. Additionally, service and refueling procedures shall be conducted in a designated area, where no potential exists for fuel spills to seep or wash into waterways.

- Stockpiles shall be located outside of riparian habitat and protected with appropriate best management practices. If more than 0.25 inch of rain is forecasted during the construction season, all stockpiles shall be covered with plastic and surrounded with sediment control technologies or berms to prevent sediment run-off.

- In addition to visual observations, composite samples shall be collected from the dredged sediment and analyzed for mercury. Dredged sediment characterization shall be conducted by analyzing a composite sample for every 2,000 cubic yards of sediment that is removed from Lake Fordyce. Any hazardous sediment shall be hauled offsite for disposal at an appropriately permitted commercial facility.

CONDITION 6. Turbidity Control Measures

The Applicant shall implement the turbidity control measures identified in Attachment A of its certification application, and as modified below.

- Turbidity Curtains:

    - A turbidity curtain (or curtains) shall be used during construction and deconstruction of the bin-wall cofferdam to contain any suspended sediment from the reservoir bottom.

    - A turbidity curtain shall be used to isolate approximately 6,000 square feet of a cove in Lake Fordyce (as shown in Figure 2). Turbid water (as discussed further below) shall be discharged to this settling area before being discharged to Fordyce Creek.

    - A turbidity curtain (or curtains) shall be used during all dredging activities to reduce the amount of suspended sediments in Lake Fordyce. Dredging activities and dredging barges shall be surrounded by turbidity curtains.

- Work Area Dewatering: The area between the bin-wall cofferdam and Lake Fordyce Dam shall be dewatered to create a dry work area. During dewatering, turbidity shall be monitored and the discharge rate adjusted to control Fordyce Creek turbidity levels at or below those listed in Condition 1.

- The shallow, residual water that remains in the work area after dewatering, as well as seepage water that leaks from Lake Fordyce, will likely contain elevated levels of turbidity. This turbid water shall either remain in the work area or be pumped to the settling area behind the turbidity curtain in Lake Fordyce before being discharged to Fordyce Creek. Additionally, ground-disturbing activities that produce turbid water and wash water generated during excavation for the concrete plinth shall be pumped to the settling area in Lake Fordyce before discharge to Fordyce Creek.

- Turbid water for dust control: To reduce the amount of potentially turbid water flowing to the settling area in Lake Fordyce, as much turbid water as practical from the work area shall be used for dust control on the access road and staging areas.

- Equalization of water following end of construction season: At the end of each construction season, the work area (i.e., dry area created by the cofferdam) shall be re-watered. When the water levels on both sides of the bin-wall cofferdam are equalized with no visible differences in turbidity between the two sides of the binwall cofferdam, releases through the low-level outlet may resume.

- Overwintering preparation: At the end of each construction season, the work area shall be prepared for overwintering. All construction equipment shall be removed from the site with the exception of stockpiled, clean rock and granular fill, which may remain on site for use in subsequent construction seasons. These materials shall be stored onsite in a manner that prevents erosion and sloughing into surface waters.

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