

STATE OF CALIFORNIA  
STATE WATER RESOURCES CONTROL BOARD

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In the Matter of Water Quality Certification for the

**PIT 3, 4 AND 5 HYDROELECTRIC PROJECT**

**FEDERAL ENERGY REGULATORY COMMISSION PROJECT NO. 233**

SOURCES: Pit River

COUNTY: Shasta County

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**Introduction**

Pacific Gas and Electric Company (PG&E) has applied to the Federal Energy Regulatory Commission (FERC) for a new license for its Pit 3, 4, and 5 Hydroelectric Project (Project). The Project spans approximately 38 miles of the Pit River in Shasta County near the towns of Burney and Big Bend. The Project includes four dams, four reservoirs and three powerhouses with a combined generation capacity of 325 megawatts, and is described in detail in PG&E's final license application submitted in October 2001. PG&E proposes to operate the Project in accordance with the Protection, Mitigation and Enhancement (PM&E) measures of the Pit River Collaborative Team (PRCT) Agreement, which are designed to protect and enhance environmental resources, including various measures to protect and monitor water quality, measures to control flows to the bypassed reaches and manage Lake Britton water levels to enhance habitat for aquatic biota.

Before FERC can issue a new license for the Project, PG&E must obtain water quality certification under section 401 of the Clean Water Act from the State Water Resources Control Board (State Water Board) (33 U.S.C. § 1341). The State Water Board must certify that the Project will comply with the applicable provisions of the Clean Water Act, including water quality standards set forth in the Water Quality Control Plan for the California Regional Water Quality Control Board, Central Valley Region (Basin Plan). The State Water Board analyzes the Project's overall effect on water quality and includes conditions in the certification, if necessary, to adequately protect the designated beneficial uses identified in the Basin Plan.

When determining what conditions may be necessary to adequately protect beneficial uses of water on the Pit River, the State Water Board considers the system potential, or natural background conditions in the watershed. The hydrology of the Pit River is unique when compared to other California Rivers because of the high year-round base flow. During the dry periods of summer and fall, inflow to Lake Britton is a combination of spring flows from Big Lake, Hat Creek and Burney Creek. Higher flows during the winter and spring result from local precipitation and snow melt runoff from the Warner Mountains in northeastern California. The

greatest flow variation occurs during the spring run-off period and is affected by snow pack in the Warner Mountains and precipitation.

Based on hydrologic records, average estimated monthly-unimpaired flows in the Pit River ranged from 2,007 cubic feet per second (cfs) (August) to 4,629 cfs (March) in the Pit 3 reach; 2,062 cfs (August) to 4,870 cfs (March) in the Pit 4 reach; and 2,171 cfs (August) to 5,254 cfs (March) in the Pit 5 Reach. The minimum instream flow requirements in PG&E's current FERC license are 150 cfs in the Pit 3 Reach, 150 cfs in the Pit 4 Reach, and 100 cfs in the Pit 5 Reach. For the past 50 years, PG&E has maintained these substantially lower flow conditions except during high-flow spill events that exceed Project capacity, typically occurring in the late winter through spring. Power operation has eliminated small and some midsized spring high-flow events, which have eliminated important stream processes that provide sediment transport, cleanse gravels, support riparian plants, and provide other ecosystem benefits. In addition, when powerhouses are off line for maintenance or due to mechanical failure, water is routed down the river resulting in short spikes in flow during the time of year when flows are normally low and steady. Operation of the Project, and its associated reduced flows and altered hydrology, has increased water temperature in the Pit 4 and 5 Reaches resulting in impairments to flow dependant beneficial uses, reduced aquatic habitat, increased riparian encroachment, out-of-season spill events, reduced sediment transport, and a loss of whitewater boating opportunities.

### **Pit River Collaborative Team**

The Pit River Collaborative Team (PRCT) was formed in November 1998 to serve as a forum for negotiation, compromise, and agreement among the agencies, tribes, non-governmental agencies (NGO's), and individuals with authority or interests in the Pit River. The PRCT met regularly over five years, culminating in the submittal of the PRCT Agreement to FERC on October 29, 2003. The scope of the final PRCT Agreement was limited to flow-related PM&E measures that better emulate the natural, unimpaired hydrology of the Pit River to the extent possible while balancing the needs of flow dependent resources, including fisheries, foothill yellow-legged frogs (FYLF), western pond turtles, riparian plants, macroinvertebrates (such as insects and mollusks), bald eagles, various recreational uses (whitewater boating, wading-based fishing, and swimming), water quality (including water temperature), and power production. PRCT measures were also developed to protect or enhance resources in Lake Britton, including water quality, fish habitat, and recreational uses. This was achieved through the careful balancing of resources by thoroughly evaluating the needs of each resource. The evaluation started with a review of the status of each resource under the current Project operations. Once the current status was established, the PRCT determined if the Project met the desired conditions of the agencies, or other PRCT members.

State Water Board staff provided input on Basin Plan water quality standards compliance to the PRCT as it developed recommended resource protection measures, and assisted the PRCT in crafting proposed measures with full consideration of the water quality standards. In general, the PRCT Agreement measures, as selected by FERC staff as its preferred alternative in the Final Environmental Impact Statement, adequately protect designated beneficial uses and properly balance the needs of various flow-dependent resources. Water quality certification conditions implement the substantive requirements of the flow-related PM&E measures in the PRCT

Agreement, with some language amendments designed to make the measures enforceable conditions.

## **Water Quality Certification Conditions**

### **Minimum Stream Flows**

The goal of the Minimum Stream Flows condition is to achieve the greatest increase in aquatic habitat for fish, while balancing the needs of anglers, other aquatic species, foraging bald eagles, and power generation, with a hydrograph shape that more closely resembles the unimpaired condition. Minimum stream flows are adjusted seasonally so that higher minimum stream flows are provided during the wetter winter seasons and reduced stream flows are provided during the summer dry period, while allowing for greater power generation during the period of highest power demand (i.e. summer period). The minimum stream flows increase in magnitude in each consecutive downstream reach to mimic the increase in stream flows that would occur in the unimpaired condition. Additional stream flow will occur naturally within each reach based on inflow from tributaries and springs supplying ground water to the river.

The minimum stream flows provide a balance of protection for the cold freshwater habitat, warm and cold spawning, and wildlife beneficial uses in the Pit River. Temperatures in the Pit 3 Reach will be closer to optimal conditions for hardhead while still providing temperatures that protect trout. Temperatures in the Pit 4 and 5 Reaches will decrease, enhancing trout habitat while remaining in a range suitable for hardhead. The flows will also increase fish habitat, while continuing to provide wading-based angling opportunities. The improved habitat conditions should result in increased trout populations and improved fishing. Wading may become more difficult in certain locations, however, angling opportunities will generally improve with higher trout populations, and there are options to use new fishing methods such as float tubes or kayaks. Finally, minimum stream flows in the Pit 4 Reach are designed to protect populations of FYLF.

### Fish

To develop a minimum stream flow regime, the PRCT considered the relationship of flow and habitat for several species and life stages of fish. PG&E conducted extensive instream flow modeling including both 1-dimensional and 2-dimensional Physical Habitat Simulation Models, and habitat mapping for multiple fish species and FYLF. These habitat models are described in detail in the FERC Final Environmental Impact Statement (FEIS) and the results are summarized in Tables 28-30 (FERC FEIS pages 126-128). In general, the models show that as flow increases fish habitat increases, and that juvenile life stages need less water than adult life stages. Because the adult life stage is the most limiting, more consideration was given to the flows needed for the adult life stage. Emphasis was placed on flows that will enhance trout and sensitive native fish species. The models show that the increased minimum flows will result in a significant increase in fish habitat.

### Water Temperature

Water temperature modeling shows that the Minimum Stream Flows condition will increase daily minimum and average temperatures in the Pit 3 Reach and decrease the maximum and average daily temperatures in the Pit 4 and 5 Reaches. All three reaches will have temperatures

that fall within or on the borderline of optimal conditions for rainbow trout and for hardhead. Optimal water temperatures for growth and survival of rainbow trout are 59–64°F (15–18°C) and mortality occurs at 73–81°F (23–27°C). Hardhead prefer temperatures exceeding 20°C (68°F) during warm summer months, with optimal temperatures ranging from 24–28°C (75–82°F). Though hardhead are known to prefer warmer waters, 2002 snorkel surveys of the Pit 3 and Pit 4 Reaches found hardhead in abundance where temperatures were between 15 and 17°C (59 and 63°F). Slight increases in temperature in the Pit 3 Reach improve conditions for hardhead while maintaining temperatures suitable for rainbow trout. Decreased water temperature in the Pit 5 Reach should improve conditions for rainbow trout while remaining in a range suitable for hardhead.

### Bald Eagles

In the FEIS, FERC staff analyzed the impact of increased instream flows and whitewater boating flows on bald eagles. Three nesting pairs of bald eagles utilize the river reaches. Bald eagles prefer shallow and slow moving water when foraging, and are often found on the reservoirs. During the test flows in 2002, foraging increased in the river reaches and the pair in the Pit 5 Reach was observed feeding at a nearby trout pond. The habitat mapping study showed that the amount of shallow/slow habitat will increase up to about 1,800 cfs. The 2-dimensional modeling showed the habitat for bald eagles is similar to that for fry and juveniles life stages of most fish. Because the Minimum Stream Flows will increase the amount of adult fish habitat, and increase the amount of pool habitat, bald eagle foraging opportunities should increase.

### Angling

The Pit River is recognized as one of California's best fly fishing rivers, and the Pit 3 Reach is designated as a wild trout fishery by the California Department of Fish and Game (DFG). Wadeability is an important consideration in assessing the acceptability of flow conditions for recreational fishing in the Project area. PG&E conducted a study during the test flows in 2002 to analyze the relationship between flow level and experience quality for both spin and fly anglers. The study found that the flows in the Minimum Stream Flows condition are sometimes over the maximum "acceptable range" for fly fishing in all the reaches, specifically in the Pit 3 Reach, where the proposed flow of 280 cfs is higher than the maximum acceptable flow of 250 cfs, and the Pit 4 Reach, where the proposed base flow of 350 cfs is higher than the upper acceptable flow of 300 cfs. A change in river stage from 250 cfs to 280 cfs, and 300 cfs to 350 cfs will not impact wading significantly because the study used a limited number of anglers, and was conducted at flows of 165, 395, 610, and 800 cfs. Tests flows in the 250 to 300 cfs range were found acceptable and were not provided during the study. Moreover, the study did not consider changes in the fish populations and the ease of catching fish under the proposed flows, reduced riparian plants on stream margins that will make fishing easier, and other methods of fishing, such as float tubes or kayaks, that could be used.

At the current instream flows, optimum trout habitat tends to be located in the thalweg (area of highest flow in the channel) near the center of the river. The 2-dimensional modeling shows that as flow increases, optimum trout habitat moves from the thalweg toward the edges of the river where the habitat is better and more accessible to anglers. While wading may be more challenging in higher flows, the access to fish habitat and improved fish populations should

improve overall fishing conditions. In addition, different types of fishing opportunities may occur using float tubes or kayaks.

#### Foothill Yellow Legged Frog and Winter/Spring Spill Flow

The Minimum Stream Flows in the Pit 4 Reach during the spring season are relatively higher and extend for a longer period of time to protect identified populations of FYLF. These frogs generally deposit their eggs on the river substrate during the spring season as the flow in the river recedes (although the cues for initiation of breeding and egg deposition may include water temperature, air temperature, daylight length, and/or hydrology). Following deposition, the eggs are vulnerable to increases and directional changes in stream flow that can cause the egg masses to shear from the substrate. The higher spring season flows for longer periods will minimize the effects of uncontrollable stream flow increases by reducing changes in velocity and direction.

Although the Project does not have sufficient storage to substantially control flow in excess of the Project's diversion capacities, it is capable of controlling the bottom end of the receding hydrograph and small runoff events. The bottom end of the receding hydrograph is important for the maintenance of the stream channel for fish and aquatic organisms and the riparian community for wildlife and terrestrial resources. Therefore, Minimum Stream Flows during the winter spill cessation are adjusted to provide a more gradual down ramping of the receding hydrograph to avoid abrupt termination of spill flows. In the Pit 3 and Pit 5 Reaches, this is accomplished by providing higher required minimum stream flows for a specified number of days as the winter spill recedes. If spill is reinitiated, these ramp-down requirements will be applied again. In the Pit 4 Reach, the ramp-down is achieved by providing higher required minimum stream flows between specific calendar dates. The difference in approaches is based on the presence of the breeding population of FYLF in the Pit 4 Reach, and the need to avoid changes in stream flow direction that could be caused by the reinitiating of spills. This condition also recognizes that even under unimpaired conditions, there are certain years in which Lake Britton will not spill, and the stream flow in the Pit River will remain relatively constant. Therefore, in non-spill years, the Minimum Stream Flows remain relatively constant throughout the year and a winter minimum stream flow is not required.

#### **Freshet Flows**

The intent of the Freshet Flow condition is to insure that flows of sufficient magnitude to cleanse the stream channel and recharge the riparian ground water will occur at least every other year. These flows are termed "freshet flows" since they are significantly less than flood flows and are of a relatively short duration. Successive low flow years in which no spill occurs may result in accumulation of fine sediments and organic materials in the river substrate, increased encroachment of vegetation into the river channel, and reduced germination and recruitment of riparian vegetation. Freshet flows are intended to perform this function by providing a stream flow equivalent to a modest spill at a time of year when spills typically occur. The timing of these freshet flows is such that they will avoid interrupting FYLF breeding and egg deposition, and recharge the riparian water table prior to seed germination and the plant-growing season.

The total duration of a freshet flow, including ramp-up, peak, and ramp-down, is intended to simulate a natural spill event and receding hydrograph. This amount of stream flow will move

the substrate sufficiently to cleanse it of accumulated fine sediments and organic debris, and move, sort, and redistribute spawning gravels for fish and aquatic organisms. The freshet flows also ensure that the riparian ground water will be recharged, minimizing stress on the riparian plant community caused by successive dry years. Freshet flows will reduce vegetation encroachment into the stream channel, provide access to diverse habitat on the channel floor for aquatic species, prevent, reduce, or remove bullfrog populations, and provide recreational boating opportunities.

The condition allows the Licensee to take advantage of naturally occurring spill events that may not be of sufficient magnitude or duration to qualify as a freshet flow. The requirement for a freshet flow may be met by supplementing these natural events with additional stream flow by reducing electric power generation. The condition also allows spills resulting from maintenance outages to qualify as freshet flows if they are of sufficient magnitude and duration.

The Freshet Flow condition measure includes a provision that freshet flows shall not be initiated if mean daily water temperature at gage PH30 exceeds 11° C for two consecutive days in the two-week period prior to the scheduled initiation. This condition should protect FYLF eggs from the out-of-season flows.

### **Reduction of Out-of-Season Spill Events**

The intent of the Out-Of-Season Spill Flows condition is to avoid and minimize the affects of discretionary spill flows during the time of year when stream flow is otherwise at a low, constant level. Changes in electric power demand over the past few years have lead to increased occurrence of discretionary out-of-season spills into Project-affected reaches of the Pit River. Under certain power demand conditions, water is spilled to bypass an off-line generating unit in order to transport water to downstream generation facilities. The result has been occasional large, short duration increases in stream flow followed by rapid declines during the summer season when the stream flow would normally be at low, constant levels.

Spikes in stream flow can interrupt reproductive cycles of aquatic organisms or cause displacement of young-of-the-year fish, resulting in long-term population affects. Additionally, aquatic vegetation can be dislodged and scoured from the streambed and macroinvertebrates can be dislodged, reducing this source of food for fish. Other detrimental effects on the aquatic ecosystem are not so easily detected, but can be significant in terms of species survival. The ecosystem would likely recover quickly from occasional, infrequent occurrence of out-of-season spills, but repeated occurrences could impair long-term water quality.

This condition seeks to avoid utilizing the river channel as a means of bypassing an out-of-service generation unit in order to keep downstream units on-line. Additionally, the condition requires the utilization of all available upstream Project water storage capacity in the event of a powerhouse outage. Once all storage is utilized, spills cannot be avoided if the off-line generating unit remains off-line.

## **Ramping Rates**

Sudden increases or decreases in stream flows can be disruptive to an aquatic ecosystem. Disruptions vary with the season of occurrence and can, for example, result in flushing or relocating individual organisms to less desirable habitat or locations, scouring of eggs or nests, and stranding, trapping, loss to predation, and desiccation of eggs as water levels recede. Under some circumstances the Project has the ability to control the rate of change in stream flow and avoid these disruptions. The goal of the Ramping Rates condition is to minimize disruptions to aquatic ecosystems caused by rapid changes in regulated stream flow magnitude.

In general, ramping rates are applied in times when there are regulated changes in stream flow. The condition specifies a ramping rate of 0.5 foot/hour, similar to the natural rate of stream flow recession. One exception is the specified ramping rate for returning an off-line generating unit to service when spill is occurring. When returning a unit to service during a spill, the Project has the ability to abruptly change the rate of stream flow resulting from the spill. The condition provides for a generating unit to return to service over time, without creating a sudden change in stream flow rate. The specified ramping rate for this circumstance is 50 percent of the stream flow in excess of the required minimum stream flow, during a 24-hour period. This special ramping rate is less than a rate of 0.5 foot/hour.

## **Recreation Stream Flow Releases**

Historically the unimpaired flow of the Pit River would have provided year round boating opportunities, however, Project operations eliminate stream flows in the boatable range during the warm summer months. The Recreation Stream Flow Releases condition is intended to provide whitewater boating opportunities in the Pit 5 Reach during warm months preferred by boaters. Recreation Stream Flow Releases are limited to the Pit 5 Reach in order to protect the trout fishing in the Pit 3 Reach during the summer, and to avoid flow fluctuations, which might adversely impact the population of FYLF located in the Pit 4 Reach.

Due to uncertainty regarding the affects of recreation stream flow releases in the Pit 5 Reach ecosystem, the condition provides for a maximum of five years of baseline studies prior to the first flow release. This condition calls for the Licensee to develop a recreation stream flow release plan consisting of four elements.

First, baseline data is to be collected to identify conditions in the Pit 5 reach following the implementation of new Minimum Stream Flows. The establishment of a baseline is necessary in order to ascertain if recreation stream flow releases during the late summer and early fall seasons have an effect on the aquatic biota. Because of the amount of baseline information already collected, the State Water Board will limit the collection of baseline data to two years before initiating boating events, unless the Chief of the Division of Water Rights finds that new information provides a compelling reason to initiate another year of baseline data collection.

Second, the recreation stream flow release plan establishes a schedule for recreation stream flow events to provide boating opportunities during the warmer months with consideration of sensitive life stages and the timing of reproductive cycles of aquatic organisms. The late

summer/early fall period would be the least damaging to aquatic organisms. The initial number of recreation stream flow release days is based on providing a reasonable level of boating opportunity while limiting the impact of providing such flows on power generation. The initial three-year period for monitoring boater participation during the recreation stream flow releases was selected to allow assessment of the level of boater use while allowing sufficient time to conduct environmental studies.

Third, the plan includes both ecological and boater-use monitoring. In this way the affects of the recreation stream flows on each of these beneficial uses can be determined. The condition establishes limits on the scope of the monitoring to assure the monitoring is adequate, but limited to essential information. Fourth, the plan includes an adaptive management element to allow for adjusting scheduling, magnitude and frequency of recreation stream flow releases based on the information gathered through the baseline and monitoring studies.

### **Stream Flow Information**

The intent of the Stream Flow Information condition is to provide the public with information on stream flow conditions in Project-affected reaches of the Pit River. Many of the public recreation and river use activities in the Project area are affected by the magnitude of stream flow in the Pit River. Project operations affect stream flows in the Pit River. Presently, the public has limited ability to obtain stream flow information in advance of arriving at the river.

Whitewater boaters need information on stream flows in order to know where and when adequate stream flow is available for their particular craft and skill level. While recreation stream flow releases are planned for the Pit 5 Reach during August and September of each year, boaters can also find opportunities for boating at other times of the year and in other reaches if they have access to flow information. Anglers need stream flow information to determine if they will likely be able to safely fish a particular reach or have stream flow levels that they find suitable for enjoyable fishing. By providing current day and the previous seven days of flow information, users can assess if flows are trending up or down as they plan their trips to the Pit River.

Boater and angler groups currently have electronic bulletin boards capable of posting stream flow information. By utilizing these third party organizations, the public will be able to access the information through familiar channels and it will be up to the individual to assess the suitability of a particular stream flow for their desired activity. The stream flow information system will also make information available regarding planned changes in stream flows such as maintenance outages or freshet flow releases.

In addition to making stream flow information available through phone and internet, the condition provides for direct notice to the communities of Big Bend and the Big Bend Rancheria of planned freshet flow releases and recreation stream flow releases. These communities are located near the river, and residents routinely use the river. Additionally, members of the Pit River Tribe gather food such as fish and mussels from the river. Providing direct notification of planned significant stream flow releases to these communities will provide information that may be essential to their river-oriented activities.

## WATER QUALITY CERTIFICATION FOR FEDERAL PERMIT OR LICENSE

BY THE EXECUTIVE DIRECTOR:

1. 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 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 requirement of state law. Section 401 further provides that state certification conditions shall become conditions of any federal license or permit for the project.
2. The California Regional Water Quality Control Boards have adopted, and the State Water Board has approved, water quality control plans (basin plans) for each watershed basin in the State. The basin plans designate the beneficial uses of waters within each watershed basin and water quality objectives designed to protect those uses. Section 303 of the Clean Water Act requires the states to develop and adopt water quality standards. (33 U.S.C. § 1313.) The beneficial uses together with the water quality objectives that are contained in the basin plans constitute state water quality standards under section 303.
3. The basin plan for the Central Valley-Sacramento/San Joaquin River Basins identifies municipal and domestic supply, irrigation, stock watering, power, contact recreation, canoeing and rafting, non-contact recreation, cold freshwater habitat, warm and cold spawning, and wildlife habitat as existing beneficial uses, and warm freshwater habitat as a potential beneficial use, of the Pit River (mouth of Hat Creek to Shasta Lake). Protection of the instream beneficial uses identified in the basin plan requires maintenance of adequate instream flows as well as effluent limitations and other limitations on discharges of pollutants from point and non-point sources to the Pit River and its tributaries.
4. The authority to issue or deny water quality certification is delegated to the Executive Director of the State Water Board. (Cal. Code Regs., tit. 23, § 3838, subd. (a).)
5. On June 9, 2004, FERC issued the final environmental impact statement (FEIS) for the Project, pursuant to the requirements of the National Environmental Policy Act (NEPA). That document presents an evaluation of the Project, including PG&E’s proposal to operate the Project in accordance with the PM&E measures for reservoir operations, minimum streamflows, freshet flow releases, out-of-season spill flows, recreation streamflow releases, ramping rates, and streamflow information developed by the Pit River Collaborative Team (PRCT) Agreement. In addition, the FEIS analyzes effects of the U.S. Forest Service (FS) conditions issued under section 4(e) of the Federal Power Act and other agency

recommendations, and adds FERC staff measures that clarify, coordinate and make more specific, measures already proposed.

6. Reserved for CEQA procedure.

7. Reserved for CEQA findings.

ACCORDINGLY, BASED ON ITS INDEPENDENT REVIEW OF THE RECORD, THE STATE WATER BOARD CERTIFIES THAT THE OPERATION OF THE PIT 3, 4, AND 5 HYDROELECTRIC PROJECT BY PACIFIC GAS AND ELECTRIC COMPANY UNDER A NEW LICENSE ISSUED BY FERC will comply with sections 301, 302, 303, 306 and 307 of the Clean Water Act, and with applicable provisions of state law, provided that Pacific Gas and Electric Company complies with the following terms and conditions:

1. Pit 3 Reach Required Minimum Stream Flows

A. Summer/Fall Required Minimum Stream Flow:

1. Summer is defined as the period extending from April 21 through August 31.
2. Fall is defined as the period extending from September 1 until the first spill, as defined above, after November 1 or through November 30, whichever is earlier.
3. The required minimum stream flow during summer shall be 300 cfs.
4. The required minimum stream flow during fall shall be 280 cfs.
5. Following any spill, as defined above, between March 16 and June 15, the required minimum stream flow shall follow the flow regimen described in section B. 4. below.

B. Winter Required Minimum Stream Flow:

1. The winter period begins with the first spill after November 1 and extends through April 20.
2. If no spill occurs between November 1 and April 20, the required minimum stream flow shall be at the summer value throughout the winter.
3. If a spill, as defined above, occurs after November 1, the required minimum stream flow following the cessation of the spill shall be 350 cfs. The required minimum stream flow shall remain at this rate through April 20 unless a spill occurs after March 15.
4. If a spill, as defined above, occurs between March 16 and June 15, the required minimum stream flow following the cessation of the spill shall be 450 cfs for at least 14 days. The required minimum stream flow shall then be 400 cfs for at least the

next 10 days and 350 cfs for at least 10 more days. Thereafter, the required minimum stream flow shall be the required summer minimum stream flow.

Pit 3 Reach - Summary of Required Minimum Stream Flows described in detail above:

Season	Start Date	End Date	Required Minimum Stream Flow
Summer	April 21	August 31	300 cfs
Fall	September 1	Between November 1 and November 30	280 cfs
Winter (with spill)	Between November 1 and April 20	April 20	350 cfs
Winter (without spill)	December 1	April 20	300 cfs
Winter Spill Cessation	Between March 16 and June 15	June 15	Following cessation of spill: 450 cfs for 14 days then 400 cfs for 10 days then 350 cfs for 10 days then 300 cfs

For the Pit 3 Reach, the spill event that triggers a change from fall to winter required minimum stream flow is defined as a stream flow period in the reach that lasts at least three consecutive days and has a three-day mean of more than 300 cfs (and a volume of at least 1,800 acre feet) above the required minimum stream flow for the Pit 3 Reach. Stream flow in the Pit 3 Reach shall be measured as the sum of spillway flow calculated from hourly reservoir elevation to account for spill volume and the hourly mean release from a calibrated release valve at the dam or by other means acceptable to the USGS. The Pit 3 Dam spillway bladder gates and low-level outlets shall be operated as described in the Reservoir Operations condition.

The Licensee shall, beginning as early as reasonably practicable and within 3 months after license issuance, maintain minimum stream flows in the Pit 3 Reach as specified in this condition. Where facility modification is required to fully implement the requirements of this certification, the Licensee shall complete such modifications as soon as reasonably practicable and no later than three years after license issuance. Prior to completion of such required facility modifications, the Licensee shall meet the requirements of the condition within the capabilities of the existing facilities. Licensee shall notify the Chief of the Division of Water Rights (Chief of the Division) if any facility modification is necessary to meet the flow conditions, and submit a plan showing the compliance schedule and interim flows to be met.

2. Pit 4 Reach Required Minimum Stream Flows

A. Summer/Fall Required Minimum Stream Flow:

1. Summer is defined as the period extending from June 16 through August 31.
2. Fall is defined as the period extending from September 1 until the first spill, as defined above, after November 1 or through November 30, whichever is earlier.
3. The required minimum stream flow during summer shall be 375 cfs.
4. The required minimum stream flow during fall shall be 350 cfs.
5. Following any spill, as defined above, between March 16 and June 15 the required minimum stream flow shall follow the flow regimen described in section B. 4. below.

**B. Winter Required Minimum Stream Flow:**

1. The winter period begins with the first spill after November 1 and extends through June 15.
2. If no spill occurs between November 1 and June 15, the required minimum stream flow shall be at the summer value throughout the winter.
3. If a spill, as defined above, occurs after November 1, the required minimum stream flow following the cessation of the spill shall be 450 cfs. The required minimum stream flow shall remain at this value through June 15 unless a spill occurs after March 15.
4. If a spill, as defined above, occurs after March 15, the required minimum stream flow after cessation of the spill shall decline in three steps, as specified below, once the mean daily stream flow at USGS gage 11362500 (Licensee gage PH30) reaches approximately 700 cfs. After completion of the specified flow schedule, the required minimum stream flow shall be the summer required minimum stream flow.
  - a) From March 16 through April 30, the required minimum stream flow is 600 cfs;
  - b) From May 1 through May 31, the required minimum stream flow is 550 cfs; and
  - c) From June 1 through June 15, the required minimum stream flow is 500 cfs.

**Pit 4 Reach - Summary of Required Minimum Stream Flows described in detail above:**

Season	Start Date	End Date	Required Minimum Stream Flow
Summer	June 16	August 31	375 cfs
Fall	September 1	Between November 1 and November 30	350 cfs
Winter (with spill)	Between November 1 and June 15	June 15	450 cfs

Winter (without spill)	December 1	June 15	375 cfs
Winter Spill Cessation	March 16	April 30	600 cfs
	May 1	May 31	550 cfs
	June 1	June 15	500 cfs

For the Pit 4 Reach, the spill event that triggers a change from fall to winter required minimum stream flow is defined as a stream flow period in the reach that lasts at least three consecutive days and has a three-day mean of more than 300 cfs (and a volume of at least 1,800 acre feet) above the required minimum stream flow for the Pit 4 Reach. Stream flow in the Pit 4 Reach shall be measured at USGS gage 11362500 (Licensee gage PH30). The Pit 4 Dam spillway drum gates and low-level outlets shall be operated as described in the Reservoir Operations condition.

### 3. Pit 5 Reach Required Minimum Stream Flows

#### A. Summer/Fall Required Minimum Stream Flow:

1. Summer is defined as the period extending from April 21 through August 31.
2. Fall is defined as the period extending from September 1 until the first spill, as defined above, after November 1 or through November 30, whichever is earlier.
3. The required minimum stream flow during summer shall be 400 cfs.
4. The required minimum stream flow during fall shall be 350 cfs.
5. Following any spill, as defined above, between March 16 and June 15, the required minimum stream flow shall follow the flow regimen described in section B. 4. below.

#### B. Winter Required Minimum Stream Flow:

1. The winter period begins with the first spill after November 1 and extends through April 20.
2. If no spill occurs between November 1 and April 20, the required minimum stream flow shall be at the summer value throughout the winter.
3. If a spill, as defined above, occurs after November 1, the required minimum stream flow following the cessation of the spill shall be 450 cfs. The required minimum stream flow shall remain at this level until April 20 unless a spill occurs after March 15.
4. If a spill, as defined above, occurs between March 16 and June 15, the required minimum stream flow following the cessation of the spill shall be 550 cfs for at least 14 days. The required minimum stream flow shall be 500 cfs for at least the next

10 days and 450 cfs for at least 10 more days. The required minimum stream flow shall then be the required summer minimum stream flow.

Pit 5 Reach – Summary of Required Minimum Stream Flows described in detail above:

Season	Start Date	End Date	Required Minimum Stream Flow
Summer	April 21	August 31	400 cfs
Fall	September 1	Between November 1 and November 30	350 cfs
Winter (with spill)	Between November 1 and April 20	April 20	450 cfs
Winter (without spill)	December 1	April 20	400 cfs
Winter Spill Cessation	Between March 16 and June 15	June 15	Following cessation of spill: 550 cfs for 14 days then 500 cfs for 10 days then 450 cfs for 10 days then 400 cfs

For the Pit 5 Reach, the spill event that triggers a change from fall to winter required minimum stream flow is defined as a stream flow period in the reach that lasts at least three consecutive days and has a three-day mean of more than 300 cfs (and a volume of at least 1,800 acre feet) above the required minimum stream flow for the Pit 5 Reach. Stream flow in the Pit 5 Reach shall be measured at USGS gage 11363000 (Licensee gage PH27). The Pit 5 Dam spillway gates shall be operated as described in the Reservoir Operations condition.

#### 4. Reservoir Level and Operation Protocols

The Licensee shall, beginning as early as reasonably practicable and within six months after license issuance, operate Project dams, reservoirs, and powerhouses according to the operation protocols specified below.

For the purposes of this condition, a spill event is defined as a flow period that lasts at least three consecutive days and has a three-day mean of more than 300 cfs (and a volume of at least 1,800 acre-feet) above the required minimum stream flow.

##### A. Operation Protocols for Pit 3 Dam, Lake Britton, and Pit 3 Powerhouse

1. The year-round minimum water surface elevation of Lake Britton shall be 2,731.5 feet (NGVD) (2,751 feet, PG&E datum).

2. Each year, within 24 hours following the cessation of the first spill event after November 1, but no later than December 1, at least one of the Pit 3 Dam spillway bladder gates shall be kept in the fully deflated position.
3. The Licensee shall take reasonable care to prevent a sudden release of flow when deflating the bladder gates if the bladder gates must be deflated as per item 2 above and Lake Britton surface elevation is at 2,732.5 feet (NGVD) (2,752 feet, PG&E datum) or higher with the bladder gates inflated.
4. During the period from December 1 through at least April 20 of each year, Lake Britton elevations shall be maintained between 2,731.5 and 2,733.5 feet (NGVD) (2,751 and 2,753 feet, PG&E datum) by regulating flow through Pit 3 Powerhouse.
5. At least one of the Pit 3 Dam spillway bladder gates shall remain deflated until April 20 or until there is no flow passing the Pit 3 Dam in excess of the required minimum stream flow for the Pit 3 Reach, whichever is later.
6. The maximum allowable Lake Britton water surface elevation shall be 2,735.5 feet (NGVD) (2,755 feet, PG&E datum) between April 21 and the Saturday preceding Memorial Day weekend.
7. The maximum normal water surface elevation of Lake Britton shall increase to 2,737.5 feet (NGVD) (2,757 feet, PG&E datum) on the Saturday preceding Memorial Day weekend or once there is no stream flow passing the Pit 3 Dam in excess of the required minimum stream flow for the Pit 3 reach, whichever is later.
8. If after April 20, and after the stream flow in the Pit 3 reach has receded to the minimum required stream flow, the inflow to Lake Britton increases to a magnitude that requires deflation of a bladder gate to keep the elevation of Lake Britton within the levels specified above, the bladder gate shall remain deflated until stream flow in the Pit 3 Reach recedes to the required minimum stream flow.
9. If the Pit 3 Powerhouse is operating at less than full flow during a spill event, and is able to return to full flow, the Licensee shall utilize the following protocol to not cause a rapid cessation of spill when increasing powerhouse flow:
  - a) Powerhouse flow shall be increased in steps;
  - b) Each step shall not exceed 50 percent of the stream flow passing Pit 3 Dam in excess of the required minimum stream flow for the Pit 3 Reach, based on the midnight stream flow measurements; and
  - c) There shall be at least a 24-hour interval between steps.
  - d) This protocol applies until the Pit 3 Powerhouse reaches full flow or the rate of stream flow passing Pit 3 Dam is less than 200 cfs above the required minimum

stream flow for the Pit 3 Reach. If the powerhouse is not at full flow at this point, the stream flow passing the Pit 3 Dam may be reduced to the required minimum stream flow.

B. Operation Protocols for Pit 4 Dam, Pit 4 Reservoir, and Pit 4 Powerhouse

1. The normal operating elevation for Pit 4 Reservoir shall be between 2,415.5 feet and 2,422.5 feet (NGVD) (2,435 feet and 2,442 feet, PG&E datum).
2. During periods of increasing inflow to Pit 4 Reservoir, Licensee shall take the following steps in the sequence indicated, until inflow ceases to increase:
  - a) As inflow to Pit 4 Reservoir increases, Pit 4 Powerhouse flows shall be ramped up to match inflow, up to full powerhouse flow.
  - b) If inflow to Pit 4 Reservoir continues to increase, and the reservoir water surface elevation reaches approximately 2,424.2 feet (NGVD) (2,443.7 feet, PG&E datum), the #1 low-level outlet gate shall be fully opened. As the #1 low-level outlet gate is opened, stream flow shall be transferred smoothly from spill to release. The minimum stream flow release valve shall be closed to prevent plugging with sediment or debris.
  - c) Step b) above shall be repeated for low level outlet gates #2 and #3 until all three low level outlets are opened or inflow ceases to increase.
  - d) If inflow continues to increase, and the reservoir water surface elevation again reaches approximately 2,424.2 feet (NGVD) (2,443.7 feet, PG&E datum), all three low-level outlets shall be closed and the #2 spillway drum gate shall be lowered, smoothly transferring the release from the low-level outlets to the open spillway.
  - e) If inflow continues to increase, and the reservoir water surface elevation again reaches approximately 2,424.2 feet (NGVD) (2,443.7 feet, PG&E datum), step b) and c) above shall be repeated until all three low level outlets are opened or inflow ceases to increase.
  - f) If inflow continues to increase, and the reservoir water surface elevation again reaches approximately 2,424.2 (NGVD) feet (2,443.7 feet, PG&E datum), step d) shall be repeated for the #1 spillway drum gate.
  - g) If inflow continues to increase, and the reservoir water surface elevation again reaches approximately 2,424.2 feet (NGVD) (2,443.7 feet, PG&E datum), step b) and c) above shall be repeated until all three low level outlets are opened or inflow ceases to increase.

- h) Further inflow increases shall be allowed to pass through the open spillway and open low-level outlets.
3. In order to minimize flow pulses during the recession of spill flow, after inflow has reached a peak and inflow to Pit 4 Reservoir is decreasing, the Licensee shall take the following actions in the sequence listed, beginning with the action corresponding to the actual peak inflow:
- a) As inflow to the reservoir declines, and the water surface elevation drops to approximately 2,422.5 feet (NGVD) (2,442.0 feet, PG&E datum), the #3 low-level outlet shall be closed. This step shall be repeated until all three low-level outlets are closed.
  - b) As inflow to the reservoir continues to decline, and the water surface elevation drops to approximately 2,415.5 feet (NGVD) (2,443.0 feet, PG&E datum), the #2 spillway drum gate shall be raised and all three low-level outlets shall be opened, smoothly transferring a portion of the spill flow to release flow.
  - c) As inflow to the reservoir continues to decline, and the water surface elevation again drops to approximately 2,422.5 feet (NGVD) (2,442.0 feet, PG&E datum), the #3 low-level outlet shall be closed. This step shall be repeated until all three low-level outlets are closed.
  - d) As inflow to the reservoir continues to decline, and the water surface drops to approximately 2,415.5 feet (NGVD) (2,435.0 feet, PG&E datum), the #1 spillway drum gate shall be raised and all low-level outlets shall again be opened, smoothly transferring spill flow to release flow.
  - e) As inflow to the reservoir continues to decline, and the water surface elevation drops to approximately 2,422.5 feet (NGVD) (2,442.0 feet, PG&E datum), the #3 low-level outlet shall be closed. This step shall be repeated until all three low-level outlets are closed.
  - f) As the #1 low-level outlet is closed, the minimum stream flow release valve shall be opened to the appropriate required minimum stream flow release setting.
4. If the Pit 4 Powerhouse is operating at less than full flow during a spill event, and is able to return to full flow, the Licensee shall utilize the following protocol to not cause a rapid cessation of spill when increasing powerhouse flow:
- a) Powerhouse flow shall be increased in steps;
  - b) Each step shall not exceed 50 percent of the flow passing Pit 4 Dam in excess of the required minimum stream flow for the Pit 4 Reach, based on the midnight stream flow measurements; and

- c) There shall be at least a 24-hour interval between steps.

This protocol applies until the powerhouse reaches full flow or the rate of stream flow passing Pit 4 Dam is less than 200 cfs above the required minimum stream flow for the Pit 4 Reach. If the powerhouse is not at full flow at this point, the stream flow passing the Pit 4 Dam may be reduced to the required minimum stream flow.

### C. Operation Protocols for Pit 5 Dam, Pit 5 Reservoir, and Pit 5 Powerhouse

1. As inflow to Pit 5 Reservoir increases, Pit 5 Powerhouse flows shall be ramped up to match inflow up to the full powerhouse flow.
2. As inflow to Pit 5 Reservoir exceeds the full flow of Pit 5 Powerhouse, the Pit 5 Dam spillway gates shall be operated to maintain an approximately constant water surface elevation of 2,040.5 feet (NGVD) (2,060 feet PG&E datum) at Pit 5 Reservoir.
3. If the Pit 5 Powerhouse is operating at less than full flow during a spill event, and is able to return to full flow, the Licensee shall utilize the following protocol to not cause a rapid cessation of spill when increasing powerhouse flow:
  - a) Powerhouse flow shall be increased in steps;
  - b) Each step shall not exceed 50 percent of the flow passing Pit 5 Dam in excess of required minimum stream flow for the Pit 5 Reach, based on the midnight stream flow measurements; and
  - c) There shall be at least a 24-hour interval between steps.

This protocol applies until the powerhouse reaches full flow or the rate of stream flow passing Pit 5 Dam is less than 200 cfs above the required minimum stream flow for the Pit 5 Reach and the powerhouse is not at full flow, at which point the stream flow passing the Pit 5 Dam may be reduced to the required minimum stream flow.

### 5. Freshet Flows

The Licensee shall make freshet flow releases into each of the three Project-affected reaches of the Pit River as described below. Project reaches shall be considered separately and independently when determining if a freshet flow is required. The Licensee shall not initiate a freshet flow if mean daily water temperature at Licensee gage PH30 exceeds 11° C for two consecutive days in the two-week period prior to the scheduled initiation of the freshet flow. The temperature criteria for not initiating a freshet flow may be modified after consultation with the Chief of the Division and other appropriate agencies, and with approval of the Chief of the Division and the US Forest Service, based on available information and monitoring of foothill yellow-legged frog breeding and egg deposition in the Pit River.

Licensee shall implement the following planning events and actions each year:

- A. If, as of January 1 of each year, there has been no spill, as defined in item D below, in the previous 15 months into a given Project-affected river reach, the Licensee shall notify the State Water Board, other appropriate agencies, and interested parties that there is a potential need for a freshet flow release for that reach during the upcoming March.
- B. If no spill has occurred as per item A, the Licensee shall post, following the provisions in the Recreation Stream Flow Information condition, a notice prior to February 15 of a planned freshet flow for that reach beginning between March 1 and March 7, scheduled so that the peak flow occurs over a weekend to facilitate whitewater boating opportunities.
- C. A freshet flow shall have the following characteristics: the duration of the event, including the flow increase, decrease and the peak, must be at least 21 days in length; the instantaneous peak flow magnitude must be at least 1,500 cfs; and there must be a two-day average flow of at least 1,500 cfs. After the peak, stream flow shall decrease in five steps of approximately equal magnitude and duration over the remaining days of the freshet period, ending at the winter required minimum stream flow for the reach. Ramping between each flow step shall be 0.5 foot/hour or less, as defined by the Ramping Rates condition.
- D. For the purposes of this condition, spill is defined as a stream flow event at a Project dam during the 17 months prior to the March 1 freshet flow implementation date that meets all of the following characteristics: occurs between December 1 and May 31; has a cumulative volume of at least 25,000 ac-ft; has a duration of at least 21 days; and has at least two average daily flows exceeding 1,500 cfs. Spill may be made up of natural and released flows.

## 6. Out-Of-Season Spill Reduction

The Licensee shall operate the Project in a manner that does not cause discretionary, out-of-season spill flows in excess of twice the required minimum stream flow at Pit 3 Dam, Pit 4 Dam, and Pit 5 Dam. An out-of-season spill is defined as a spill that occurs during the normally non-spill summer and fall period. The Licensee shall take all reasonable controllable actions necessary to control out-of-season spill flows, which shall include, as a first priority, utilization of Project storage.

In the event an out-of-season spill occurs, the Licensee shall take reasonable controllable actions to minimize the magnitude, duration, and potential adverse ecological impacts of such spill. Such actions shall include, ramping the spill flow up and down as described in the Ramping Rates condition. The Licensee shall develop and implement, within one year of license issuance, reasonable actions to mitigate for adverse ecological impacts in the event a discretionary out-of-season spill occurs. Licensee shall submit proposed mitigations for review and approval by the Chief of the Division. The Licensee shall prepare, maintain, and on an annual basis provide to the Chief of the Division a record of any out-of-season spills,

identifying the affected reach, hourly discharge, the maximum flow magnitude, dates and duration, cause of spill, and mitigation provided.

## 7. Ramping Rates

To prevent adverse effects of rapid changes in regulated stream flow that are inconsistent with the natural rate of change in stream flow, the Licensee shall follow the ramping rates specified below when making stream flow releases from Pit 3, Pit 4, and Pit 5 Dams unless a different ramping rate is specified in another condition.

A ramping rate is defined as the rate of change in stream stage height, up or down, over a time period, such as 0.5 foot/hour. The Licensee shall be deemed in compliance with the specified up and down ramping rate if at least 75 percent of the actual incremental changes in flow are less than or equal to the specified ramping rate, and all of the actual incremental changes in flow are less than 150 percent of the specified ramping rate.

Ramping Rate for Freshet Flow Releases: A freshet flow may be released in March of some years, and will consist of a 21-day flow event that is described in detail in the Freshet Flow Release condition. The ramping rate to reach the daily target values for freshet flows shall be 0.5 foot/hour or less, up and down.

Ramping Rate after Spills Influenced by Powerhouse Outages: As described in the Reservoir Operations condition, some spills may include, or be composed entirely of, flow that would otherwise be going through a powerhouse but is instead released as spill due to a powerhouse outage. The Reservoir Operations condition specifies that when returning the powerhouse to full load, the 24-hour increase of powerhouse flow shall not exceed 50 percent of the flow passing the associated dam in excess of the required minimum stream flow for the affected reach, based on the midnight stream flow measurements. The ramping rate shall be 0.5 foot/hour or less. The final step to the required minimum stream flow is allowed when the difference between the flow passing the dam is less than 200 cfs above the required minimum stream flow for the affected reach. If the powerhouse is not at full load at this point, the stream flow passing the dam may be reduced to the minimum required stream flow.

Ramping Rate Before and After Out-of-Season Spills: If the Licensee anticipates that an out-of-season spill is imminent because the storage capacity of the affected reservoir will be exceeded, the Licensee shall make a good faith effort to initiate stream flow releases that ramp up to the expected spill flow in at least three steps. An out-of-season spill is defined as a spill that occurs at Pit 3 Dam, Pit 4 Dam, or Pit 5 Dam during the normally non-spill summer and fall period. The out-of-season spill shall be ramped down at a rate of 0.5 foot/hour or less.

Ramping Rate for Recreation Stream Flow Releases: The ramping rate up and down for recreation stream flow releases shall be 0.5 foot/hour or less. Both up and down ramping steps shall be implemented every other hour until the specified recreation stream flow release (ramp up) or the required minimum stream flow (ramp down) is reached.

Ramping Rate for Changes in Required Minimum Stream Flow: Because the magnitude of changes in required minimum stream flow is less than the change in stream flow associated with a 0.5-foot change in stage height, no ramping is required for these changes in stream flow.

The Licensee shall, beginning as early as reasonably practicable and within three months after license issuance, meet the ramping rates specified in this condition. Where facility modification is required to fully implement the requirements of this certification, the Licensee shall complete such modifications as soon as reasonably practicable and no later than three years after license issuance. Prior to completion of such required facility modifications, the Licensee shall meet the requirements of the condition within the capabilities of the existing facilities. Licensee shall notify the Chief of the Division if any facility modification is necessary to meet the flow conditions, and submit a plan showing the compliance schedule and interim flows to be met.

#### 8. Recreation Stream Flow Releases

The Licensee shall, within six months after license issuance and in consultation with Chief of the Division, appropriate agencies, Pit River Tribe, American Whitewater, and other parties who request involvement, develop a plan for providing annual recreation stream flow releases in the Pit 5 Reach suitable for whitewater boating. The Licensee shall submit a draft plan for 30-day review and comment by the entities consulted, and shall within 30 days thereafter submit a final plan, addressing comments received on the draft plan, to the Chief of the Division for approval. Within 10 days following approval by the Chief of the Division, the Licensee shall file the plan with FERC for final approval. Upon approval by FERC, the Licensee shall implement the plan.

The plan shall consist of the following key elements: Baseline Data; Recreation Stream Flow Schedule; Monitoring; and Adjustment of Stream Flow Events, with each element providing the information specified below.

Baseline Data: This element shall identify essential baseline data necessary for effective evaluation of possible ecological effects of the recreation stream flow releases. The element shall identify existing data and data to be developed, shall include a study plan and schedule for obtaining such data, and shall describe how data will be used. Additionally, the element shall specify the timing relationship between data acquisition, initiation of recreation stream flow releases, and potential adjustment of recreation stream flow releases in response to data gathered. The period for acquisition of baseline data shall not exceed two years unless the Chief of the Division finds that new information provides a compelling reason to initiate another year of baseline data collection.

Recreation Stream Flow Schedule: The initial recreation stream flow release schedule shall be four recreation release flow days per year consisting of two consecutive weekend days in August with flows of 1,500 cfs from 10 AM to 4 PM at Pit 5 Dam and two consecutive weekend days in September with flows of 1,200 cfs from 10 AM to 4 PM at Pit 5 Dam. All flow magnitudes shall be 1,200 cfs in years that Pit 3 Dam does not spill, as defined in the

Required Minimum Stream Flow condition. The initial recreation stream flow release schedule shall be maintained for a minimum of three consecutive years, unless the Chief of the Division determines that the stream flow releases are or will have a significant effect on the environment, in which case, Licensee shall immediately cease releasing recreation flows. Thereafter, it may be modified as described in the Adaptive Management element below.

Monitoring: The Monitoring element shall consist of two subsections: environmental monitoring and boater-use monitoring. (1) The environmental monitoring subsection shall describe the environmental monitoring to be performed to assess and evaluate potential environmental effects of the recreation stream flow releases. At a minimum, the environmental monitoring program shall include monitoring of impacts to aquatic biota, other river users, other recreation users, special status species, and cultural sites and uses. The environmental monitoring program shall commence upon implementation of the recreation stream flow releases. The monitoring period shall not exceed three years and the total cost of monitoring shall not exceed \$150,000. The monitoring shall be adjusted, as appropriate, to not exceed these limits. (2) The boater-use monitoring subsection shall describe the monitoring to be performed to assess the adequacy of the number of recreation stream flow release days in a year. The boater-use monitoring program shall provide for monitoring actual boater use of recreation stream flow releases. For the first three years of recreation stream flow releases, the Licensee shall, on each recreation stream flow release day, count observed boater use in "boater days." One boater day is defined as boating use of the Pit 5 Reach by one person for any part of a given day. After the first three years of recreation stream flow releases, boater-use monitoring shall be performed in any year that the number of recreation stream flow release days is increased or decreased and at least once every three years over the term of the license. Boater-use monitoring may be discontinued by mutual agreement between the Licensee and Chief of the Division after consultation with American Whitewater, U.S. Fish and Wildlife Service and other interested members of the public, and with the concurrence of FERC.

Adjustment of Stream Flow Events: This element shall describe the program for potential adjustment of the recreation stream flow releases in response to the results of the boater-use and environmental monitoring programs specified in the Monitoring element. Adjustment of the magnitude of recreation stream flow releases and schedule may occur in response to the results of the environmental monitoring program. Such adjustments shall be objective and based on sound scientific study. The Licensee shall consult with the Chief of the Division, other appropriate agencies, Pit River Tribe, American Whitewater, and other parties who request involvement regarding any such adjustments, and shall obtain approval by the Chief of the Division and notify FERC before implementing such adjustments. Adjustment of the recreation stream flow release schedule in response to the results of the boater-use monitoring shall consist of adding or subtracting recreation stream flow release days based on actual use. One weekend day of recreation stream flow releases shall be added to the recreation stream flow release schedule for the next year if actual use exceeds 80 boater days for each recreation stream flow release day in a given month. One weekend day of recreation stream flow releases shall be subtracted from the recreation stream flow release schedule for the next year if actual boater use is less than 25 boater days for each recreation stream flow release day in a given month. The number of recreation stream flow release days shall be

adjusted for the same month in which the adjustment triggers were met. Based on boater use monitoring, the number of recreation stream flow release days shall not be reduced to less than one weekend day in August and two consecutive weekend days in September, and shall not be increased to more than four weekend days in August and four weekend days in September. If the maximum number of recreation stream flow release days is being provided, and actual use exceeds 80 boater days on all days, one additional weekend day of recreation stream flow release with flows of 1,200 cfs from 10 AM to 4 PM at Pit 5 Dam shall be provided in October of the next year. The October recreation stream flow release day is subject to the same future adjustment as the August and September recreation stream flow release days, with a maximum number of two consecutive weekend days, and a minimum number of no days. Recreation stream flow release days shall not be added during the three-year environmental monitoring period.

## 9. Streamflow Information

The Licensee shall, beginning as soon as reasonably practicable and no later than one year after license issuance, each year make available to the public the recreation stream flow information listed below. Unless otherwise noted, the stream flow information shall be available to the public via toll-free phone and internet, which may be accomplished through a third party. The stream flow information protocols may be modified upon mutual agreement of the Licensee, U.S. Forest Service and other responsive parties who request involvement, and acceptance by FERC. Licensee shall make the following information available:

- A. The hourly average stream flow in the Pit River below each of the Pit 3, Pit 4 and Pit 5 Dams for the current day and the past seven days. The stream flow information may be measured, calculated or a combination of the two. The stream flow information shall be posted within four hours of collection. Stream flows shall be rounded up to the nearest 50 cfs, and all plots and tables showing these data shall be labeled: "These provisional data have not been reviewed or edited, and may be subject to significant change."
- B. By January 5, the proposed dates and magnitude for any freshet flow, if applicable, planned to be provided by the Licensee, with updates by February 15 and within two days of any changes in plans.
- C. By July 1, the proposed dates for any recreation stream flow releases, with updates at least two weeks and one week in advance of each proposed date.

In addition, the Licensee shall:

- D. As soon as reasonably practicable and no later than two years after license issuance, install and maintain one simple staff gage/depth indicator at the following locations: Licensee gage PH30 below Pit 4 Dam, Licensee gage PH27 at Big Bend Bridge, and provided a suitable location is identified in consultation with FS, FWS, and American Whitewater, below Pit 3 Dam. The Licensee shall make a good faith effort to locate the staff gages/depth indicators near public access locations so they are easily accessible for

public reference. The Licensee shall provide a means at each staff gage/depth indicator to reasonably correlate staff gage/depth indicator readings to cfs.

- E. Notify the community of Big Bend and the Big Bend Rancheria in advance of planned freshet flow releases and recreation stream flow releases by posting bulletins on public bulletin boards located in those communities.

- 10. All Minimum Stream Flows are the average of seven days of the mean daily flow. Individual mean daily flows may be less than the required minimum stream flow. The instantaneous, 15-minute stream flow shall be at least 90 percent of the required minimum stream flow. No ramping is required when changing between seasonal required minimum streamflow rates.

All flow requirements of this certification are subject to temporary modification if required by equipment malfunction, emergency conditions or law enforcement activity, or critical electric system emergency beyond the control of the Licensee. The Licensee shall provide advance notification to the State Water Board, Chief of the Division, prior to any temporary modification if possible. If advance notification is not possible because an event is unforeseeable, Licensee shall notify the Chief of the Division immediately but no later than 48 hours from the time that any temporary modification has occurred.

- 11. The Licensee shall install water temperature monitors (i.e. telemetered, real time, year-round) at stream gage PH 30 in the Pit 4 Reach and at stream gage PH 27 in the Pit 5 Reach. Licensee shall immediately notify the Chief of the Division if average daily water temperature at either of these locations exceeds 20° C. Licensee shall provide yearly reports of water temperature recorded at these locations by December 30 of each year with data from the previous water year (September to October) to the Chief of the Division. The report shall include raw temperature data, mean daily temperatures, and daily maximum and minimum temperatures.
- 12. The conditions and monitoring and reporting requirements detailed above in the CEQA findings section are hereby incorporated by reference and are conditions of approval of this certification. Notwithstanding any more specific conditions in this certification, Licensee shall comply with all other mitigation measures identified in the CEQA findings and the mitigation monitoring and reporting plan listed above.
- 13. This certification is contingent on compliance with all applicable requirements of the Water Quality Control Plan for the Sacramento and San Joaquin River Basins, except as may be modified by the specific conditions of the certification.
- 14. Licensee must submit any change to the Pit 3, 4, and 5 Hydroelectric Project, including project operation that would have a significant or material effect on the findings, conclusions, or conditions of this certification, to the Chief of the Division for prior review and written approval.
- 15. 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 shall take all reasonable measures to protect the beneficial uses of water of the Pit River.

16. The authorization to operate the Project pursuant to this certification is conditioned upon payment of all applicable fees for review and processing of the application for water quality certification and administering the State's water quality certification program, including but not limited to: timely payment of any annual fees or similar charges that may be imposed by future statutes or regulations for the State's reasonable costs of a program to monitor and oversee compliance with conditions of water quality certification.
17. This certification is not intended and shall not be construed to apply to issuance of any FERC license or FERC license amendment other than the FERC license specifically identified in the Licensee's application for certification described above.
18. This certification does not authorize any act which results in the "taking" of a threatened or endangered species or any act which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code §§ 2050 - 2097) or the federal Endangered Species Act (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 shall obtain authorization for the take prior to any construction or operation of the Project. The Licensee shall be responsible for meeting all requirements of the applicable Endangered Species Act for the Project authorized under this certification.
19. In the event of any violation or threatened violation of the conditions of this certification, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under applicable State or federal law. For the purposes of section 401(d) of the Clean Water Act, the applicability of any State law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification. In response to a suspected violation of any condition of this certification, the State 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. 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.
20. Any change to the operation of the Project that would have a significant or material effect on the findings, conclusions, or conditions of this certification must be submitted to the Chief of the Division for prior review and written approval.
21. This certification is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Water Code section 13330 and

California Code of Regulations, title 23, division 3, chapter 28, article 6 (commencing with § 3867).

22. The State Water Board reserves authority to modify or revoke this certification if monitoring results indicate that continued operation of the Project would violate water quality objectives or impair the beneficial uses of the Pit River.
23. The State Water Board may add to or modify the conditions of this certification, as appropriate, 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.
24. The State Water Board may add to or modify the conditions of this certification as appropriate to coordinate the operations of this Project and other water development projects, where coordination of operations is reasonably necessary to achieve water quality standards or protect beneficial uses of water.