

Appendix A

**Memorandum of Understanding  
by and among  
National Marine Fisheries Service,  
U.S. Bureau of Reclamation,  
U.S. Fish and Wildlife Service,  
California Department of Fish and Game, and  
Pacific Gas and Electric Company**

**MEMORANDUM OF UNDERSTANDING**

**by and among**

**NATIONAL MARINE FISHERIES SERVICE**

**U.S. BUREAU OF RECLAMATION**

**U.S. FISH AND WILDLIFE SERVICE**

**CALIFORNIA DEPARTMENT OF FISH AND GAME and**

**PACIFIC GAS AND ELECTRIC COMPANY**

**TO MEMORIALIZE THE AGREEMENT REGARDING THE PROPOSED BATTLE CREEK CHINOOK SALMON AND STEELHEAD RESTORATION PROJECT, LOCATED IN THE BATTLE CREEK WATERSHED IN TEHAMA AND SHASTA COUNTIES, CALIFORNIA.**

This Memorandum of Understanding (MOU), by and among the NATIONAL MARINE FISHERIES SERVICE (NMFS), UNITED STATES BUREAU OF RECLAMATION (USBR), UNITED STATES FISH AND WILDLIFE SERVICE (USFWS), CALIFORNIA DEPARTMENT OF FISH AND GAME (CDFG), and PACIFIC GAS AND ELECTRIC COMPANY (PG&E), hereinafter collectively called the “Parties,” defines the Parties’ roles and responsibilities regarding actions that will be undertaken as part of the proposed Battle Creek Chinook Salmon and Steelhead Restoration Project (Restoration Project) and commitments regarding costs for and implementation of the Restoration Project.

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## **1.0 RECITALS**

This MOU is entered into with the following understandings:

- 1.1** Battle Creek is a tributary of the Sacramento River located in Tehama and Shasta Counties. This cold, spring-fed stream has exceptionally high flows during the dry season, making it important habitat for anadromous fish. Battle Creek may be the only remaining stream other than the main stem of the Sacramento River that can successfully sustain breeding populations of steelhead and all four runs of chinook salmon. Battle Creek is also unique and biologically important because it provides habitat opportunities during drought years for winter-run chinook salmon.
- 1.2** PG&E owns and operates several diversion facilities on the North and South Forks of Battle Creek, including Coleman Diversion Dam, Inskip Diversion Dam, South Diversion Dam, Wildcat Diversion Dam, Eagle Canyon Diversion Dam, and North Battle Creek Feeder Diversion Dam, and dams on Ripley Creek, Soap Creek and Baldwin Creek, and controls the majority of the flows in the anadromous fish reaches of the Battle Creek watershed.
- 1.3** In 1997, in response to opportunities to apply for federal and state fish and wildlife resource restoration funds, the Battle Creek Working Group (BCWG), made up of representatives from the state and federal resource agencies and fishery, environmental, local, agricultural, power, and urban stakeholder communities, was formed to accelerate chinook salmon and steelhead restoration in the Battle Creek watershed. The BCWG provided technical advice for a plan developed under a CALFED Category III grant.
- 1.4** By participating in a cooperative process to restore Battle Creek, which avoids the conventional, adversarial, regulatory process, the Parties expect to realize the following benefits:
  - A.** Restoration of self-sustaining populations of chinook salmon and steelhead and their habitat in the Battle Creek watershed through a voluntary partnership with state and federal agencies, a third party donor(s), and PG&E;

- B.** Up-front certainty regarding specific restoration components, including Resource Agency prescribed instream flow releases, selected decommissioning of dams at key locations in the watershed, dedication of water diversion rights for instream purposes at decommissioned sites, construction of tailrace connectors, and installation of Fail-Safe Fish Screens and Fish Ladders;
  - C.** Timely implementation and completion of restoration activities; and
  - D.** Joint development and implementation of a long-term Adaptive Management Plan with dedicated funding sources to ensure the continued success of restoration efforts under this partnership.
- 1.5** A negotiating team comprised of management representatives from CDFG, NMFS, PG&E, USBR, and USFWS, met in the fall of 1998 and in early 1999 to pursue an agreement regarding a proposal for Battle Creek restoration actions. An Agreement in Principle among the Parties was entered into in February, 1999 (see Attachment 1).
- 1.6** Other actions to restore and enhance fish habitat are being implemented in the Battle Creek watershed that are not directly related to hydroelectric project operations (e.g., Coleman National Fish Hatchery actions and meadow restoration upstream of the natural barrier falls which preclude anadromous passage). These actions are outside the scope of the Restoration Project, but are considered important to the overall success of restoring anadromous fishery resources in the Battle Creek watershed.
- 1.7** Implementation of the Restoration Project will be consistent with the following restoration directives and programs:
  - Central Valley Project Improvement Act (Public Law 102-575 Section 3401 et seq. (CVPIA)) Anadromous Fish Restoration Program;

- State Salmon, Steelhead Trout, and Anadromous Fisheries Program Act (State Senate Bill 2261, 1990) Central Valley Salmon and Steelhead Restoration and Enhancement Plan;
- National Marine Fisheries Service Recovery Plan for Sacramento River Winter-run Chinook Salmon;
- CALFED Ecosystem Restoration Program;
- Upper Sacramento River Fisheries and Riparian Habitat Management Plan (State Senate Bill 1086, 1989);
- Restoring Central Valley Streams – A Plan for Action (1993); and
- Steelhead Restoration and Management Plan for California (1996).

One specific goal of both the CVPIA and State Senate Bill 2261 is doubling natural production of anadromous fish. Battle Creek has been identified as one of the Sacramento River tributaries where restoration activities have the potential to contribute materially to these goals.

**1.8** The Parties are proposing a series of measures, described in this MOU as the Restoration Project, to establish a restoration program for chinook salmon and steelhead habitat in the reaches of Battle Creek below the natural water falls on the forks of Battle Creek that act as absolute barriers to fish passage (see Section 2.19). The Total Project Cost of the Restoration Project is estimated to be \$50,709,000. Individual restoration actions under the Restoration Project will be based upon the best scientific and commercial information available. The Parties intend to implement the Restoration Project in the most efficient and cost effective manner consistent with achieving the benefits and goals articulated in Sections 1.4 and 1.7.

**1.9** The Parties recognize the unique characteristics of Battle Creek regarding its importance in the restoration of chinook salmon and steelhead in the Sacramento River watershed. The Parties also acknowledge the current availability of public funding for anadromous fish restoration projects in

the Central Valley, which funding has not been readily available in the past and may not be in the future. Based on this unique set of circumstances, the Parties recognize that all actions cooperatively pursued under the Restoration Project, including dam removal and public funding, will not set a precedent for future restoration actions in other watersheds.

- 1.10** USFWS is participating in the Restoration Project pursuant to the CVPIA, the Endangered Species Act (16 U.S.C. Sections 1531-1544, as amended (ESA)), Fish and Wildlife Coordination Act, Federal Power Act and the Fishery Conservation and Management Act (16 U.S.C. Sections 1801-1882).
- 1.11** NMFS is participating in the Restoration Project pursuant to the ESA.
- 1.12** USBR is participating in the Restoration Project pursuant to the CVPIA and the California Bay-Delta Environmental Enhancement Act (P.L. 104-333).
- 1.13** CDFG is participating in the Restoration Project based on its responsibilities as trustee agency for the fish and wildlife resources of California (Fish and Game Code Section 711.7(a)) and its jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (Fish and Game Code Section 1802), and other applicable state and federal laws.
- 1.14** PG&E is participating in the Restoration Project as owner and operator of the Battle Creek Hydroelectric Project (Federal Energy Regulatory Commission (FERC) Project No. 1121).

**THEREFORE**, the Parties hereby understand and agree as follows:

## **2.0 DEFINITIONS**

The terms “CDFG”, “CVPIA”, “ESA”, “MOU”, “NMFS”, “Parties”, “Restoration Project”, “USBR”, and “USFWS” have the meanings set forth above.

For the purposes of this MOU, the following terms have the meanings set forth below:

- 2.1** "Adaptive Management" means an approach, as more specifically described in Section 9.0, that allows for changes to the Restoration Project that may be necessary in light of new scientific information regarding the biological effectiveness of the restoration measures.
- 2.2** "Adaptive Management Fund" means the Fund described in Section 9.2 B.
- 2.3** "Agencies" means CDFG, NMFS, USBR, and USFWS.
- 2.4** "Battle Creek Hydroelectric Project, FERC Project No. 1121" or "FERC Project No. 1121" means the hydroelectric development as described in the license issued by FERC on August 13, 1976 and as subsequently amended.
- 2.5** "CALFED" means the entity formed in 1995 by the cooperative effort among state and federal agencies and California's environmental, urban, and agricultural communities to address environmental and water management problems associated with an intricate web of waterways created at the junction of the San Francisco Bay and the Sacramento and San Joaquin rivers and the watersheds that feed them and comprise CALFED's solution area for the Bay-Delta system.
- 2.6** "CAMP" means the Comprehensive Assessment and Monitoring Program which has been established pursuant to Section 3406(b)(16) of the CVPIA.
- 2.7** "Consensus" means the unanimous agreement among the Parties.
- 2.8** "CPUC" means the California Public Utilities Commission.
- 2.9** "Decommission" means to fully remove all applicable facilities and return a site to an approximation of pre-existing conditions, subject to FERC approval. Decommissioning activities include, but are not limited to, developing a decommissioning plan, performing pre- and post-removal environmental studies, facility removal, environmental mitigation and restoration, erosion control, re-vegetation, environmental monitoring, and reporting.



- 2.10** “Fail-Safe Fish Ladder” means features inherent in the design of the ladder that ensure the structure will continue to operate to facilitate the safe passage of fish under the same performance criteria as designed under anticipated possible sources of failure.
- 2.11** “Fail-Safe Fish Screen” means a fish screen that is designed to automatically shut off the water diversion whenever the fish screen fails to meet design or performance criteria until the fish screen is functioning again.
- 2.12** “FERC” means the Federal Energy Regulatory Commission, the entity charged with implementing the Federal Power Act (16 U.S.C. 791 (a) et seq.) and the licensing of non-federal hydropower projects in jurisdictional waters of the United States.
- 2.13** “Final FERC Order” means a final order issued by FERC pursuant to an application filed by PG&E to amend the license for FERC Project No. 1121 to implement the applicable measures of this Restoration Project, after exhaustion of any administrative or judicial remedy.
- 2.14** “PG&E” means the Pacific Gas and Electric Company, and any lessee or successor owner of the Battle Creek Hydroelectric Project (FERC Project No. 1121).
- 2.15** “Purchased Water Cost” means the identified financial value of the prescribed instream flow releases provided by the Restoration Project in excess of the required flows stated in the license for FERC Project No. 1121 as of March 1, 1999.
- 2.16** "Ramping Rates" means moderating the rate of change of stream stage decrease in Battle Creek resulting from the operation of FERC Project No. 1121.
- 2.17** “Resource Agencies” means CDFG, NMFS, and USFWS.
- 2.18** "Restoration Project" means all measures set forth in the underlying Agreement in Principle (Attachment 1) as further developed in this MOU and having the purpose of restoring chinook salmon and steelhead habitat

associated with FERC Project No. 1121, within the Restoration Project Area.

**2.19** “Restoration Project Area” means the areas in and around the following PG&E facilities: Coleman Diversion Dam, Inskip Diversion Dam, South Diversion Dam, Wildcat Diversion Dam, Eagle Canyon Diversion Dam, North Battle Creek Feeder Diversion Dam, and Asbury Pump Diversion Dam; Battle Creek, North Fork Battle Creek and South Fork Battle Creek, up to the natural barriers at 14 miles and 19 miles above the confluence, respectively; and Eagle Canyon Springs, Soap Creek (and Bluff Springs), Baldwin Creek, and Lower Ripley Creek and each of their adjacent water bodies.

**2.20** "Total Project Cost" means all costs necessary to implement the Restoration Project, including but not limited to: planning; permitting; performing environmental and decommissioning studies; preparing a FERC license amendment application; designing, constructing, operating, maintaining and making periodic replacements for various facility additions (i.e., fish screens, fish ladders, connectors and appurtenant facilities) to FERC Project No. 1121; facility decommissioning, removal, and environmental restoration; facility and biological and environmental monitoring and reporting; Purchased Water Cost; and Adaptive Management planning, monitoring, and implementation costs.

**2.21** "Water Acquisition Fund" means the Fund described in Section 9.2 A.

### **3.0 PURPOSES**

The purposes of this MOU are:

**3.1** To identify the series of measures comprising the proposed Restoration Project to be addressed in the NEPA/CEQA/ESA and other applicable environmental compliance and permitting processes;

**3.2** To identify the roles and responsibilities of each of the Parties;

**3.3** To identify contingencies and limitations of the Parties; and

- 3.4** To identify the scope of proposed FERC license terms and conditions for preparation of a separate license amendment application to be subsequently submitted to FERC to implement the proposed Restoration Project.

#### **4.0 PROPOSED BATTLE CREEK CHINOOK SALMON AND STEELHEAD RESTORATION PROJECT**

The Parties understand and agree that all engineering and design work for facility modifications described in Section 4.1 below, including installation of fish screens and fish ladders, decommissioning dams and associated facilities, and installation of any connections between powerhouses and water conveyance facilities on the South Fork of Battle Creek, shall meet applicable CDFG, FERC, NMFS, PG&E, USBR, and USFWS standards.

The proposed Restoration Project includes the following:

##### **4.1 Facility Modifications**

###### **A. Coleman Diversion Dam:**

- Install a tailrace connector from Inskip Powerhouse to Coleman Canal and a water bypass facility around Inskip Powerhouse to Coleman Canal. The Inskip Powerhouse bypass facility will be the most economical alternative that still provides the functional equivalent of the existing Inskip Powerhouse bypass system and will deliver that system's design flow of water to the Coleman Canal.
- Decommission the dam and appurtenant facilities.

###### **B. Inskip Diversion Dam:**

- Install a NMFS/CDFG approved Fail-Safe Fish Screen.
- Install a NMFS/CDFG approved Fail-Safe Fish Ladder.
- Install a tailrace connector from South Powerhouse to Inskip Canal concurrent with, or prior to, the Inskip Diversion Dam fish screen.

- C.** South Diversion Dam:
- Decommission the dam, related water conveyance and appurtenant facilities.
- D.** Wildcat Diversion Dam:
- Decommission the dam, related water conveyance and appurtenant facilities.
- E.** Eagle Canyon Diversion Dam:
- Install a NMFS/CDFG approved Fail-Safe Fish Screen.
  - Install a NMFS/CDFG approved Fail-Safe Fish Ladder.
  - Decommission spring collection facilities as identified in Table 1 of Attachment 1.
- F.** North Battle Creek Feeder Diversion Dam:
- Install a NMFS/CDFG approved Fail-Safe Fish Screen.
  - Retrofit the existing fish ladder or install a new ladder, either which meet NMFS/CDFG approved design for Fail-Safe operation.
- G.** Soap Creek:
- Decommission the dam, related water conveyance and appurtenant facilities.
- H.** Lower Ripley Creek:
- Decommission the dam, related water conveyance and appurtenant facilities.

**I.** Baldwin Creek:

- Provide a means for releasing a maximum instream flow of 5 cfs from Asbury Pump Diversion.

**J.** Various Locations:

- Install/modify gauges at appropriate locations required to monitor implementation of the Restoration Project.

While the above list of facilities to be decommissioned shall not be reduced, the Parties may reach Consensus on less than full removal of any specific facility or appurtenant feature in order to reduce overall Restoration Project costs, where objectives of the Restoration Project, including unimpeded fish passage, will be met while at the same time minimizing PG&E liability.

**4.2 Prescribed Instream Flow Releases**

The Parties agree that another component of the Restoration Project is an increase of prescribed instream flow releases which will benefit fish and wildlife resources. PG&E will provide the prescribed instream flow releases specified in Tables 1 and 2 of Attachment 1 or the natural flow, whichever is less, and the Ramping Rates specified in Attachment 2. For those dams that are being decommissioned, PG&E will transfer the associated water diversion rights to CDFG, as more fully described in Section 6.1 E.

At the discretion of the Resource Agencies, the prescribed instream flow releases will be initiated and maintained commencing January 1, 2001, or upon issuance of the Final FERC Order, whichever occurs later. Should any such prescribed instream flow releases not commence on January 1, 2001, the associated foregone power generation payment specified in Section 10.2 shall be reduced in proportion to the time at which power generation is actually foregone.

### **4.3 Water Acquisition Fund**

This component of the proposed Restoration Project is described in Section 9.2 A.

### **4.4 Adaptive Management Plan**

This component of the proposed Restoration Project is described in Section 9.1.

### **4.5 Adaptive Management Fund**

This component of the proposed Restoration Project is described in Section 9.2 B.

## **5.0 CONTINGENCIES AND LIMITATIONS**

This MOU does not commit the Parties to activities beyond the scope of their respective missions, funding and authorities. Except for the federal portion of the Restoration Project funding provided for in Section 10.1, it is recognized that any federal funding needed to carry out any federal agency responsibilities under this MOU shall be subject to the availability of appropriated funds pursuant to the Anti-Deficiency Act (31 U.S.C. Section 1341). A lack of funding to meet the Agencies' respective responsibilities shall not result in the transfer of such responsibilities or funding obligations to PG&E. In recognition that final designs and detailed cost estimates will be further refined through the process described in Section 8.0, the Parties agree that if sufficient funding is not available to accommodate the final estimates, they will jointly pursue additional funding.

**5.1** The Agencies recognize that USBR will be the Agency that will receive the federal funding for the construction component of the Restoration Project. Thus, USBR, and not the Resource Agencies, will be responsible for any construction and decommissioning cost overruns, as provided in Section 10.2.

**5.2** This MOU is of no force and effect until signed by all Parties. Any work initiated prior to the approval date is done at each Party's own risk.

- 5.3** The Parties understand and agree that the implementation of any and all activities by CDFG, NMFS, USBR, and USFWS, pursuant to this MOU, with the exception of initial consultations and planning activities, are contingent upon compliance with NEPA and CEQA. The Parties anticipate that activities described in this MOU will be identified in any NEPA/CEQA document as an alternative, but also acknowledge that other alternatives will be considered in the NEPA/CEQA process prior to the time that a final decision or an irreversible commitment of resources or funds is made toward any one alternative.
- 5.4** The Parties understand and agree that certain undertakings of PG&E pursuant to this MOU are subject to approval by FERC and CPUC. In the event that the Final FERC Order amending the license for FERC Project No. 1121 and/or any necessary CPUC approval is materially different from the terms and conditions of the license amendment application, then this MOU may be amended as provided in Section 13.0 or terminated as provided in Section 16.0.
- 5.5** The Parties understand and agree that no permanent changes to facilities or operations are required pursuant to this MOU prior to issuance of a Final FERC Order, as defined in Section 2.13 above. The Parties also understand and agree that certain preliminary tasks must be performed to support the proposed license amendment application to FERC prior to the Final FERC Order, in order to assist in accomplishing the Restoration Project. Within sixty (60) days of the effective date of this MOU, PG&E and CDFG will begin consultations and develop a process with the State Water Resources Control Board (SWRCB) with respect to the petition specified in Section 6.1 E. CDFG and PG&E will work diligently with the Resource Agencies and SWRCB to finalize the dedication process after issuance of the Final FERC Order.
- 5.6** Nothing in this MOU, whether or not incorporated into the terms of the license for FERC Project No. 1121, is intended or shall be construed as a precedent or other basis for any argument that the Parties have waived or compromised any rights which may be available under state or federal law. In addition, nothing in this MOU shall establish a precedent regarding hydroelectric jurisdictional issues.

**5.7** The Resource Agencies assert that the current and proposed facilities of FERC Project No. 1121, including those outlined in this MOU, are operating, and will continue to operate, in habitat occupied by Sacramento River winter-run chinook salmon, spring-run chinook salmon, Central Valley steelhead and other species listed under the ESA and the California Endangered Species Act. Nothing in this MOU is intended to bind or prejudice the Resource Agencies, or otherwise limit their respective authorities, in the performance of their responsibilities under these Acts and other applicable federal and state laws.

**5.8** If there is any dispute regarding provisions of this MOU and the Agreement in Principle included as Attachment 1, the provisions of this MOU shall govern.

## **6.0 ROLES AND RESPONSIBILITIES**

### **6.1 PG&E**

**A.** As more fully described below, PG&E has agreed to a number of physical and operational changes and additions to FERC Project No. 1121, as well as the assumption of a number of future costs, which cumulatively are estimated to have a value of approximately \$20,550,900 of the Total Project Cost during the term of this MOU. PG&E, however, recognizes that these costs may exceed those estimates and agrees it is responsible for all cost overruns for Restoration Project components which are identified as funded by PG&E in Table 3 of Attachment 1. This amount includes PG&E's participation in a portion of the biological and environmental monitoring more fully described in Section 7.3. PG&E's financial participation in this Restoration Project will consist of: (a) providing 90% of the prescribed instream flow releases listed in Attachment 1 without monetary compensation; (b) assumption of 100% of any increased operation and maintenance costs due to facility and operational changes resulting from the Restoration Project; (c) absorption of the loss of foregone power as a consequence of Ramping Rate requirements described in Attachment 2; and (d) assumption of the cost of screen and ladder repairs and replacements due to normal wear and tear, catastrophic



damage, and any other damage. In the event of exhaustion of the Water Acquisition Fund and Adaptive Management Fund, PG&E acknowledges and agrees that it will pay for authorized modifications to FERC Project No. 1121 facilities or operations which are determined to be necessary under Adaptive Management or pursuant to applicable state or federal law.

- B.** PG&E will pay all of its internal costs associated with the FERC license amendment required to implement the Restoration Project. PG&E will engage in a collaborative license amendment process to develop the license amendment application for submittal to FERC. PG&E will include in its amendment application pertinent environmental compliance documents prepared by USBR as described in Section 6.2. PG&E will also participate in and provide limited internal technical and fishery expertise, at its expense, to assist with the biological and environmental monitoring efforts described in Section 7.3 and will cooperate/work with the Resource Agencies conducting analyses, reviewing results, and identifying potential Adaptive Management actions for the Restoration Project.
- C.** The Parties will work in concert to develop a license amendment application for FERC Project No. 1121. PG&E will file an amendment to its license for FERC Project No. 1121 to implement those actions under FERC's authority, consistent with the pertinent provisions of this MOU, necessary to implement the Restoration Project. Unless otherwise provided in this MOU, PG&E will fund preparation of the license amendment application, including preparation of the application sections which describe the current and proposed facilities and operation, FERC Project No. 1121 economics, and also modify the existing License Exhibit drawings to reflect the proposed changes to FERC Project No. 1121. PG&E will also be responsible for preparing responses to any additional information requests issued by FERC regarding the responsibilities enumerated in this Section.

- D.** PG&E will provide the prescribed instream flow releases and Ramping Rates identified in Attachments 1 and 2, and any agreed-upon future changes to these prescribed instream flow releases or Ramping Rates resulting from the Adaptive Management Plan described in Section 9.1, until the end of the current FERC license and any subsequent annual licenses. The Parties acknowledge that this commitment to provide the prescribed instream flow releases and Ramping Rates is subject to change by FERC in the license amendment process and at the expiration of the current license term in 2026. PG&E and the Resource Agencies (subject to applicable state and federal laws) agree to support the continuation of such prescribed instream flow releases and Ramping Rates, and any agreed upon future changes, in the next relicensing proceeding for FERC Project No. 1121.
- E.** PG&E's water diversion rights associated with all dams to be decommissioned (see Section 4.1) in the Restoration Project Area shall be transferred to CDFG. For example, when the rights for Soap Creek Diversion are transferred, all rights associated with that diversion will be transferred, including but not limited to, PG&E's Bluff Springs rights, which are subject to an agreement regarding senior water rights for Hazen Ditch, (Bluff Springs - Hazen Ditch Water Users Agreement, dated May 31, 1988). PG&E shall execute deeds or other mutually agreed upon documents to transfer these water diversion rights. PG&E will execute and deliver such deeds or other mutually agreed upon documents at the time of PG&E's receipt of those associated portions of the \$2,137,100 specified in Section 10.2. CDFG agrees that the water rights transferred by PG&E to CDFG shall not be used by CDFG or any successor in interest, assignee, or designee to increase prescribed instream flow releases above the amounts specified in Attachment 1, or developed pursuant to the Adaptive Management Plan, nor shall they be used adversely against remaining FERC Project No. 1121 upstream or downstream diversions, until such time as the FERC license is abandoned, whereupon the limitation regarding transferred water rights will no longer apply.

PG&E agrees that its riparian rights associated with lands within the Restoration Project Area shall not be used by PG&E or any successor in interest, assignee, or designee to decrease prescribed instream flow releases below the amounts specified in Attachment 1, or developed pursuant to the Adaptive Management Plan. PG&E agrees that any deed transferring such riparian land or rights shall contain the above restriction in use of the riparian rights.

PG&E and CDFG shall jointly file a petition with the State Water Resources Control Board (SWRCB) pursuant to Water Code Section 1707 to dedicate the water diversion rights associated with all decommissioned dam sites in the Restoration Project Area to instream uses. The Agencies agree to support the petition.

- F.** The prescribed instream flow releases described in Attachment 1 for all those dams remaining in FERC Project No. 1121 will be included in the FERC license amendment application to be filed by PG&E.
- G.** PG&E is responsible for the operation, maintenance, and replacement of all physical modifications to its facilities under this MOU on Battle Creek due to normal wear and tear, catastrophic damage, and any other type of damage, and will ensure that the new fish screen and ladder facilities meet the Fail-Safe criteria. Installation costs of facilities installed under the Adaptive Management Fund protocols are excepted. PG&E's responsibilities under this section begin once the facility start-up and acceptance testing is successfully completed by USBR and PG&E. At that point PG&E shall accept and take over the facilities.
- H.** PG&E is responsible for assisting in design data collection activities for all facilities, as determined under the cooperative design processes established through the Project Management Team and Technical Team, as described in Section 8.2.

- I.** PG&E, as a member of the Project Management Team established under Section 8.2, is jointly responsible along with the other Parties for review of and concurrence in all designs, engineering, specifications, facility modifications, decommissioning procedures, facility removal, and other activities associated with planning, permitting, and construction. PG&E will have lead responsibility for real estate requirements and transactions, including access authorization for Agency personnel to accomplish their responsibilities under this MOU. Real estate actions will be subject to review and carried out in a cooperative process through the Project Management Team and Technical Team as established in Section 8.2. PG&E shall also be responsible along with the other Parties for the development, review, and concurrence of site restoration plans and designs subject to any requirements established through the permitting process. While USBR will be responsible for obtaining permits as described in Section 6.2, such permitting actions will be done in full cooperation with the Parties to ensure input from PG&E related to the content and conditions established in the permitting process. The technical efforts associated with the activities described in this paragraph will be performed on a reimbursable basis from federal funding provided through USBR as described in Section 10.2.
- J.** While USBR retains lead responsibility for all design, procurement, and construction associated with the Restoration Project, situations may arise in which it would be safer and more efficient for PG&E construction crews to perform the construction or removal of some facilities. PG&E may perform construction work associated with the Restoration Project as coordinated through the framework of the Project Management Team as described in Section 8.2. Such cooperative decisions related to construction responsibilities will be completed by the end of the conceptual design phase. Such construction work will be performed on a reimbursable basis from federal funding provided through USBR as described in Section 10.2.

- K.** Contracts will be awarded in accordance with applicable state and federal laws. For contracts awarded by USBR, USBR will confer with PG&E regarding the selection of contractors or other entities for any portion of the work to be performed as part of the Restoration Project. For any contract awarded by USBR that is not a conventional sealed bid, a representative from PG&E will be a member of the team reviewing and recommending the award of these contracts to the USBR Contracting Officer. The final decision on contract award will be made by USBR's Contracting Officer. If USBR decides that it does not intend to follow PG&E recommendations regarding contractor selection, USBR will provide a written statement to PG&E explaining why USBR chose not to follow the PG&E recommendations.
- L.** PG&E may elect to conduct its own inspection of construction work performed by others as part of the Restoration Project. Any findings or deficiencies identified by PG&E will be immediately reported to the USBR Construction Engineer. USBR will review and respond to PG&E on any findings of deficiencies including how they will be addressed. Any disagreements will be subject to a dispute resolution process developed by USBR and PG&E. Such inspection services will be performed on a reimbursable basis from federal funding provided through USBR as described in Section 10.2.
- M.** PG&E shall be responsible for all monitoring required by FERC through the FERC license amendment for FERC Project No. 1121. PG&E will also participate in and provide limited internal technical and fishery expertise, at its expense, to assist with the biological and environmental monitoring efforts described in Section 7.3, which are the responsibility of the Resource Agencies. PG&E shall be responsible for all of the facility monitoring more particularly described in Section 7.2.
- N.** PG&E shall assume the role of applicant for hydropower project operation compliance with Section 404 of the Clean Water Act, certification under Section 401 of the Clean Water Act, and other applicable state and federal laws.

- O. To the extent permissible under the provisions of its existing easements with private property owners, PG&E will provide access to Agency representatives engaged in the performance of their respective responsibilities under this Restoration Project. Protocols for Agency exercise of this access permission will be developed and will address: (1) property owner concerns; (2) PG&E notification; (3) liability issues and any other pertinent matters associated with the specific locations; and (4) property owner notification.

## **6.2 USBR**

- A. USBR, along with the Resource Agencies, has applied to CALFED for public funding for the Restoration Project and will continue to support that application, consistent with the terms of this MOU.
- B. USBR shall assume the role of lead agency for purposes of regulatory compliance for construction activities associated with the Restoration Project, including the National Environmental Policy Act (42 U.S.C. 4321 et seq. (NEPA)), Section 106 of the National Historic Preservation Act, and the Fish and Wildlife Coordination Act (16 U.S.C. 661-666(c)). USBR shall also act as the federal action agency under Section 7 of the ESA for the construction aspects of the Restoration Project in a joint consultation with FERC acting as lead agency for operation of FERC Project No. 1121. In addition, USBR shall assume the role of applicant for purposes of construction compliance of the Restoration Project with Section 404 of the Clean Water Act, certification under Section 401 of the Clean Water Act and other applicable regulatory permitting required by state and federal laws.
- C. USBR shall assume the role of lead agency, and in consultation with PG&E, arrange for all final engineering design documents and specifications, construction, start-up and acceptance testing, and implementation of mitigation and monitoring for the construction activities associated with the Restoration Project, as defined in Section 4.1. USBR shall be responsible for the production of the required environmental documents and the

detailed decommissioning plan, with all the supporting engineering, biological, and other technical studies, and preparation of the design drawings needed for the license amendment. Funding for responses to any subsequent additional information requests issued by FERC regarding the responsibilities enumerated in this Section will be borne by USBR.

- D.** USBR will participate in the construction monitoring for the Restoration Project as described in Section 7.1.

### **6.3 NMFS**

- A.** The Parties acknowledge and agree that NMFS has made no determination, and is giving the Parties no assurances, regarding compliance of the Restoration Project or PG&E's operation of its FERC Project No. 1121 with the ESA.
- B.** NMFS agrees to do the following, to the extent NMFS determines that these provisions are consistent with the biological opinion rendered for the proposed Restoration Project and its responsibilities under the ESA to conserve threatened and endangered species and their habitats:
  - 1.** Support a petition to the SWRCB for the instream dedication of that amount of water diversion rights transferred by PG&E to CDFG as more fully described in Section 6.1 E;
  - 2.** Support the amendment of the license of FERC Project No. 1121, described in Section 6.1 C, that incorporates the facility modifications described in Section 4.1, the prescribed instream flow increases described in Tables 1 and 2 of Attachment 1, the Ramping Rates described in Attachment 2, and further support the position that FERC focus the license amendment on the fishery restoration actions described in this MOU in order to facilitate the process for a FERC decision allowing the Restoration Project to go forward in a timely manner; and

- 3.** In the next relicensing proceeding for FERC Project No. 1121, support the continuation of the prescribed instream flow releases described in Attachment 1 and Ramping Rates described in Attachment 2, and any changes to those prescribed instream flow releases or Ramping Rates resulting from Adaptive Management, subject to applicable law.
- C.** Regarding the biological and environmental monitoring described in Section 7.3, NMFS agrees to support incorporating Battle Creek monitoring needs into appropriate CVPIA, CALFED, and other monitoring programs.
- D.** As approving and implementing various activities described in the MOU will result in a major federal construction activity affecting listed salmonids under NMFS' jurisdiction, NMFS will conduct the requisite Section 7 consultation for species under its authority. The above measures will require FERC to exercise its federal discretionary authority in approving an amendment of the license for FERC Project No. 1121 prior to implementation. This action, as well as FERC's continuing oversight over FERC Project No. 1121 operations, constitutes a Federal Action for the purposes of Section 7 of the ESA. Therefore, FERC will be designated Lead Federal Agency. The referenced Section 7 consultation will also encompass various planning and construction-related activities to be undertaken by USBR and therefore, will be conducted jointly with FERC and USBR. NMFS will consult with FERC and USBR under Section 7 of the ESA to ensure the proposed changes to the facilities and operation of FERC Project No. 1121 comply with the ESA.

#### **6.4 USFWS**

- A.** The Parties acknowledge and agree that USFWS has made no determination, and is giving the Parties no assurances, regarding compliance of the Restoration Project or PG&E's operation of its FERC Project No. 1121 with the ESA.



- B.** USFWS agrees to do the following:
- 1.** Support a petition to the SWRCB for the instream dedication of that amount of water diversion rights transferred by PG&E to CDFG as more fully described in Section 6.1 E;
  - 2.** Support the amendment of the license of FERC Project No. 1121, described in Section 6.1 C, that incorporates the facility modifications described in Section 4.1, the prescribed instream flow releases described in Tables 1 and 2 of Attachment 1, the Ramping Rates described in Attachment 2, and further support the position that FERC focus the license amendment on the fishery restoration actions described in this MOU in order to facilitate the process for a FERC decision allowing the Restoration Project to go forward in a timely manner; and
  - 3.** In the next relicensing proceeding for FERC Project No. 1121, support the continuation of the prescribed instream flow releases described in Attachment 1 and Ramping Rates described in Attachment 2, and any changes to those prescribed instream flow releases or Ramping Rates resulting from Adaptive Management, subject to applicable law.
- C.** Regarding the biological and environmental monitoring described in Section 7.3, USFWS agrees to support incorporating Battle Creek monitoring needs into appropriate CVPIA, CALFED, and other monitoring programs.
- D.** As approving and implementing various activities described in the MOU will result in a major federal construction activity that may affect species under USFWS jurisdiction, USFWS will conduct the requisite Section 7 consultation for species under its authority. The above measures will require FERC to exercise its federal discretionary authority in approving an amendment of the license for FERC Project No. 1121 prior to implementation. This action,

as well as FERC's continuing oversight over FERC Project No. 1121 operations, constitutes a Federal Action for the purposes of Section 7 of the ESA. Therefore, FERC will be designated Lead Federal Agency. The referenced Section 7 consultation will also encompass various planning and construction related activities to be undertaken by USBR and therefore, will be conducted jointly with FERC and USBR. USFWS will consult with FERC and USBR under Section 7 of the ESA to ensure the proposed changes to the facilities and operation of FERC Project No. 1121 comply with the ESA.

## **6.5 CDFG**

- A.** The Parties acknowledge and agree that CDFG has made no determination, and is giving the Parties no assurances, regarding compliance of the Restoration Project or PG&E's operation of its FERC Project No. 1121 with applicable state law.
- B.** The Parties acknowledge and agree that CDFG is not responsible for funding any component of the Restoration Project, including any cost overruns.
- C.** CDFG agrees to do the following:
  - 1.** CDFG and PG&E shall jointly file a petition with the State Water Resources Control Board (SWRCB) pursuant to Water Code Section 1707 to dedicate the water diversion rights associated with the decommissioned dam sites in the Restoration Project Area to instream uses;
  - 2.** Support the amendment of the license of FERC Project No. 1121, described in Section 6.1 C, that incorporates the facility modifications described in Section 4.1, the prescribed instream flow releases described in Tables 1 and 2 of Attachment 1, the Ramping Rates described in Attachment 2, and further support the position that FERC focus the license amendment on the fishery restoration actions described in this MOU in order to facilitate the

process for a FERC decision allowing the Restoration Project to go forward in a timely manner; and

3. In the next relicensing proceeding for FERC Project No. 1121, support the continuation of the prescribed instream flow releases described in Attachment 1 and Ramping Rates described in Attachment 2, and any changes to those prescribed instream flow releases or Ramping Rates resulting from Adaptive Management, subject to applicable law.
- D. Regarding the biological and environmental monitoring described in Section 7.3, CDFG agrees to support incorporating Battle Creek monitoring needs into appropriate CVPIA, CALFED, and other monitoring programs.

## **7.0 MONITORING AND REPORTING**

### **7.1 Construction Monitoring, Start-up, and Acceptance Testing**

- A. USBR agrees to perform all construction monitoring and reporting required as part of construction of the Restoration Project as described in Sections 6.2 and 8.4. Funding for the construction monitoring will be derived only from the federal funding as identified in Section 10.2, and USBR does not agree to spend any additional, federal money to perform such construction monitoring. Construction monitoring includes those parameters required by the permits developed pursuant to the Clean Water Act, and mitigation actions adopted pursuant to CEQA, NEPA, ESA, and related FERC requirements.
- B. USBR agrees to perform all start-up and acceptance testing, and prepare the necessary documents and reports, up to and until PG&E and USBR jointly determine that the constructed facilities' operation meets the design criteria. Completion inspections for each construction contract will be performed by both USBR and PG&E and certifications of approval will be issued jointly by USBR and PG&E. If construction of a particular Restoration

Project feature does not meet with the satisfaction of either party, a checklist of needed work prior to the certification of completion will be prepared and agreed to by both parties. Upon mutual agreement of the parties, a completed portion of the construction contract or a Restoration Project feature may be turned over to PG&E for operation and maintenance.

Start-up and acceptance testing for both screens and ladders will include, but is not limited to, measurements of velocity and flow collected from each component of the structure at several stage heights to evaluate actual hydraulic performance and reliability over the full range of operating conditions as compared to the design specifications.

## **7.2 Facility Monitoring**

PG&E, in consultation with the Agencies, shall prepare a detailed facility monitoring plan to be submitted to FERC as part of the license amendment application. PG&E shall perform and assume the costs for the following facility monitoring:

- A.** At the various outlet and spillway works for North Battle Creek Feeder, Eagle Canyon, Inskip, and Asbury Pump (Baldwin Creek) Diversion Dams, operate properly calibrated remote sensing devices that continuously measure and record total flow and the fluctuation of stage immediately below each dam during all operations for the purpose of verification of FERC license compliance. All flow and stage recording methodologies shall be approved by FERC;
- B.** At the fish ladders at North Battle Creek Feeder, Eagle Canyon, and Inskip Diversion Dams, operate properly calibrated remote sensing devices that continuously monitor water surface elevations at the top and bottom of the ladder to identify debris problems. In addition, continuously operate a calibrated automated fish counter or an underwater video camera to document fish movement through the ladder during the initial three-year period of operation, or as otherwise agreed upon by the Parties; and

- C. At the fish screens at North Battle Creek Feeder, Eagle Canyon, and Inskip Diversion Dams, operate properly calibrated remote sensing devices that continuously monitor water surface elevation differences on the inlet and outlet side of screens to identify plugging.

### **7.3 Biological and Environmental Monitoring**

The biological and environmental monitoring described below will address the overall status of anadromous fish populations and related ecosystem health in the Battle Creek watershed which includes the Restoration Project Area. The Parties understand and agree that biological and environmental monitoring in the watershed and Restoration Project Area will be performed by USFWS and/or CDFG, or their designated representatives, using available funding from Central Valley fishery restoration funding sources, including but not limited to, the \$1,000,000 federal funding allocation for the Restoration Project described in Section 10.2; and CALFED's Comprehensive Monitoring Assessment Research Program; and CVPIA's CAMP. The Parties understand and agree that if sufficient funding is not available through the above sources they will jointly pursue other appropriate funding sources.

The Parties will jointly prepare the Agencies' detailed biological and environmental monitoring component of the Adaptive Management Plan described in Section 9.1 A 2 (b). The biological and environmental monitoring will include, but is not limited to:

- A. Estimates of the number and species of upstream migrant salmonids entering upper Battle Creek via the fish ladder at Coleman National Fish Hatchery Barrier Weir, using underwater video or automated fish counters and intermittent use of a fish trapping facility to sample individual fish for species/run identification;
- B. Estimates of the relative abundance and distribution and immigration timing of adults in the Battle Creek watershed, using the most efficient and safe method for the particular stream reach, including underwater observation, carcass, redd and/or aerial

surveys;

- C. Estimates of the relative abundance, distribution, and out-migration timing of juveniles, using downstream migrant trap installations in the Battle Creek watershed;
- D. Characterization of the temperature regime in the Battle Creek watershed by continuously measuring and recording water temperatures and meteorological conditions during the appropriate periods; and
- E. Examination of fish passage conditions at natural obstacles that change in the stream canyon areas over time, such as clusters of debris and boulders, by observing these areas during other fish survey activities and more detailed analysis at sites that undergo major reconfiguration.

The biological and environmental monitoring described above is beyond the scope of PG&E's facility monitoring described in Section 7.2.

#### **7.4 Other Monitoring**

The Parties agree that any monitoring of Restoration Project actions, other than the monitoring described in Sections 7.1 and 7.3 which may be required pursuant to the license for FERC Project No. 1121 will be done by PG&E at its sole cost.

#### **7.5 Reporting and Notice Requirements**

PG&E will make available all facility monitoring reports to the Resources Agencies and CALFED upon specific request. The fish use records at the fish ladders shall be made available on a monthly basis to the Resource Agencies during the initial three-year period of operation, or as otherwise agreed upon by the Parties. Upon discovery of any occurrence of operation of a screen, ladder, or water release mechanism outside of the requisite specifications, notification will be made by PG&E to NMFS and CDFG as soon as possible, but no later than the next day of operation. The notification shall include a description of the deviation, any necessary

corrective measures taken or proposed, and an implementation schedule if the situation has not been corrected.

All biological and environmental monitoring results and analyses described in Section 7.3 will be presented by the Resource Agency performing the monitoring in annual reports to the Parties and FERC and will be made available to CALFED and other interested persons upon request.

## **8.0 PLANNING, PERMITTING, AND CONSTRUCTION ACTIVITIES**

### **8.1 Schedule**

The Parties agree to use their best efforts to implement the Restoration Project according to the schedule in Attachment 3. The Parties shall use their best efforts to complete the planning and construction activities on the South Fork on a priority basis, related to biological criteria.

### **8.2 Organizational Structure and Responsibilities**

Planning, permitting and construction of the Restoration Project will be implemented through a cooperative effort of the Project Management Team (PMT), Project Manager, and Technical Team (TT).

#### **A. Project Management Team**

The PMT is a management level group that will make all final decisions regarding planning, permitting, and construction activities of the Restoration Project through the Consensus process. Members of the PMT include representative(s) from each of the Parties, California Department of Water Resources (DWR) and SWRCB. For purposes of determining Consensus, each of Parties to this MOU as well as DWR and SWRCB will be afforded one vote. If Consensus is not achieved, disputes will be resolved through the dispute resolution process described in Section 14.0. The PMT shall address, but shall not be limited to, issues related to the planning, permitting, and construction of the Restoration Project, including issues related to: policy; design; plans and

specifications; scheduling; real property and relocation requirements; real property acquisition; contract awards and modifications; contract costs; cost projections; final inspection of the entire Restoration Project or functional portions of the Restoration Project; preparation of the proposed operation, maintenance, repair, replacement, and rehabilitation manual; anticipated requirements and needed capabilities for performance of operation, maintenance, repair, replacement, and rehabilitation of the Restoration Project; and any other related matters. The PMT shall direct and manage the TT and resolve any disputes that have been elevated to the PMT by the TT. In addition, the PMT may make recommendations to the TT through the Project Manager that it deems warranted on matters that the PMT generally oversees, including suggestions to avoid potential sources of dispute.

Funding for the administrative, clerical, and support facilities for the PMT will be provided by federal funding described in Section 10.2. The Chair of the PMT will be a USBR representative.

#### **B. Project Manager**

The Project Manager is an employee of USBR and will be responsible for coordinating the implementation of activities among the Parties, with other appropriate interested persons, and with all state and federal agencies with jurisdiction over some aspect of the Restoration Project. The Project Manager is a member of the PMT and, after the effective date of this MOU, will meet at appropriate frequency with the TT to assess Restoration Project status and to facilitate coordination.

#### **C. Technical Team**

The TT is a cooperative group established to address technical issues arising as a result of implementing the Restoration Project. The TT will be responsible for the necessary day-to-day actions required to implement the planning, design, and construction decisions of the PMT. Members of the TT include representative(s) from each of the Parties, DWR and the SWRCB



with appropriate training and experience to effectively address the technical aspects of implementing the Restoration Project. Disciplines within the responsibility of the TT include, but are not limited to, environmental compliance, construction monitoring, planning activities, engineering and design, permitting, real estate actions, public involvement, and construction. All unresolved technical issues will be referred to Project Manager for resolution or elevation to the PMT.

Funding for the administrative, clerical, and support facilities for the TT will be provided by federal funding described in Section 10.2. The Chair of the TT will be the Project Manager.

### **8.3 Planning Activities**

Planning includes all activities associated with NEPA/CEQA compliance, permitting actions, design data collection, conceptual designs, final designs, specification preparation, real estate acquisition, public involvement, quality control, and procurement processes leading to construction.

### **8.4 Construction Activities**

**A.** Construction implementation will be carried out by USBR unless otherwise determined cooperatively between USBR and PG&E. The following schedules will be submitted by the responsible construction agency to the Parties upon request:

- 1.** A master work schedule showing the construction work to be performed or caused to be performed by USBR under this MOU, including total estimated costs for work accomplishments each Fiscal Year (October 1 to September 30);
- 2.** A detailed schedule for the initial construction quarter consistent with the master work schedule specifying the work to be performed during the construction quarter, including the amount of funds required during that quarter

for the work scheduled and including sums expended for the preparation of designs and specifications, engineer's estimates, other pre-construction activities required to initiate construction and construction activities; and

3. Subsequent detailed quarterly work schedules consistent with the master work schedule specifying the work proposed to be performed or initiated during each quarter of the construction period other than the initial quarter, including the amount of funds required during each quarter.
- B.** The party responsible for construction at a particular site, whether it be USBR or PG&E, will provide each other written progress reports on a weekly basis or such other time period as mutually agreed to by the PMT. Construction activities undertaken by a party pursuant to this MOU shall be open and subject to inspection by the other party or their representative at all times during the progress thereof and upon completion. Should either party determine that any such construction work is not being performed, or has not been completed, in accordance with applicable schedules, plans, designs and specifications, or any other requirement of this MOU, then that party shall give written notice thereof to the other party within 30 days after inspection. This notice shall specify the corrective actions which must be taken and the schedule for their completion. USBR and PG&E agree to provide each other with copies of claims, change orders, and correspondence involving major cost or design changes between themselves and third party contractors performing any of the construction or decommissioning activities.
- C.** USBR and PG&E also agree to provide each other with a summary of costs incurred in the performance of this MOU on a quarterly basis. At the conclusion of construction of the improvements, USBR and PG&E shall furnish each other with an accounting of the final costs of their respective contributions to the completed improvements.

- D. All work shall be performed in accordance with USBR Safety and Health Standards, any applicable PG&E standards, and OSHA and Cal-OSHA regulations. In the event of any conflicts, the most stringent requirements shall apply.

## **8.5 Public Participation**

All PMT and TT meetings will be open to any interested persons. Additional opportunities for public participation will be afforded in the NEPA/CEQA and FERC license amendment processes.

## **9.0 ADAPTIVE MANAGEMENT**

The Parties agree that Adaptive Management is an integral component of the Restoration Project. Adaptive Management is a process that: (1) uses monitoring and research to identify and define problems; (2) examines various alternative strategies and actions for meeting measurable biological goals and objectives; and (3) if necessary, makes timely adjustments to strategies and actions based upon best scientific and commercial information available.

The primary reason for using an Adaptive Management process is to allow for changes in the restoration strategies or actions that may be necessary to achieve the long-term goals and/or biological objectives of the Restoration Project and to ensure the likelihood of the survival and recovery of naturally-spawning chinook salmon and steelhead. Using Adaptive Management, restoration activities conducted under the Restoration Project will be monitored and analyzed to determine if they are producing the desired results (i.e., properly functioning habitats).

As implementation of the Restoration Project proceeds, results will be monitored and assessed. If the anticipated goals and objectives are not being achieved, then adjustments in the restoration strategy or actions will be considered through the Adaptive Management Plan, which will be developed consistent with the relevant CALFED guidelines. The Water Acquisition Fund and Adaptive Management Fund are elements of Adaptive Management which will provide funding for potential changes to Restoration Project actions that result from application of the Adaptive Management Plan (AMP).

## **9.1 Adaptive Management Plan**

The AMP will be submitted by PG&E to FERC at the time that PG&E files its license amendment application pursuant to this MOU. The Parties acknowledge that implementation of the AMP could later involve proposals for changes in operations, project facilities, and possible decommissioning of some additional FERC Project No. 1121 facilities to improve biological effectiveness and habitat values for chinook salmon or steelhead.

Subject to Section 6.1 D, the Parties agree that for the term of the existing FERC license, and any subsequent annual licenses, the instream flows developed by the AMP will not be lower than the prescribed instream flow releases specified in Attachment 1, unless agreed to by the Resource Agencies, and submitted to FERC for approval. The Parties acknowledge that the Resource Agencies cannot waive their responsibilities under federal and state law, and specifically reserve their jurisdiction under the ESA and other federal and state laws.

If prescribed instream flow releases are reduced below those specified in Attachment 1, and later determined to be insufficient, any later increase of prescribed instream flow releases up to the amounts described in Attachment 1 shall not be compensated by funds provided in Sections 9.2 A and 9.2 B. However, any increase of prescribed instream flow releases above those set forth in Attachment 1 shall be compensated through the AMP.

In order to ensure timely implementation of Adaptive Management measures, the AMP will identify the range of possible Restoration Project adjustments that may be implemented due to new information, risk, uncertainty, or opportunity. The intent of this provision is to enable FERC to approve the range of future adjustments that may be undertaken pursuant to this license amendment.

### **A. AMP Development**

The AMP will include: a statement of the Restoration Project goals and objectives; a monitoring component; protocols for

assessing information and formulation of recommended changes; general procedures for prioritizing expenditures from the Adaptive Management Fund (see Section 9.2 B) and Water Acquisition Fund (see Section 9.2 A); procedures for modifying management approaches using best scientific and commercial information available; public participation; and an outline of the agreed-upon scope of adjustments to the Restoration Project. The AMP will be developed by the Resource Agencies and PG&E through the Consensus process prior to filing the license amendment application with FERC. The AMP will include milestones, timelines, and trigger points for consideration of changes.

The term of the AMP will coincide with the duration of this MOU and will include milestones that are reviewed at scheduled intervals.

## **1. Participants**

The AMP will be developed through the Consensus process by the Resource Agencies and PG&E. Interested persons may attend any meeting, contribute to discussions, and provide suggestions regarding development of the AMP. Specific notice, in addition to any general notice, of any such meetings will be sent to: (1) the Battle Creek Watershed Conservancy; (2) CALFED; and (3) any person requesting such notification.

## **2. Elements**

### **(a) Goals and Objectives**

Biological goals are the broad guiding principles for the AMP and are the rationale behind the minimization and mitigation strategies and/or actions. Specific biological objectives are the measurable targets for achieving the biological goals. The goal of the AMP is to implement specific actions to protect, restore, enhance, and

monitor salmonid habitat at FERC Project No. 1121 to guard against false attraction of adult migrants and ensure that chinook salmon and steelhead are able to fully access and utilize available habitat in a manner that benefits all life stages and thereby maximizes natural production, fully utilizing ecosystem carrying capacity.

The provisions of the AMP will include measurable biological objectives. Those biological goals and objectives must be based on the best scientific and commercial data available and reflect the realistic potential of the Restoration Project to restore anadromous fish in Battle Creek. The biological goals and objectives of the AMP will integrate habitat and multispecies-specific needs.

**(b) Monitoring**

The monitoring component of the AMP will be designed to ensure proper data collection and analysis in order to guide appropriate adjustments to the Restoration Project. The monitoring component also will provide the information necessary to assess compliance, achievement of Restoration Project results, and verification of progress toward the established biological goals and objectives. Specific reporting requirements will be an integral part of the monitoring component to assure appropriate dissemination of data collected. The frequency, organization, and content of reports that differ from Section 7.5 will be determined through Consensus in the development of the AMP.

The monitoring component will be flexible to allow modification, as necessary, based on the need for additional information or to assess unanticipated outcomes. The monitored parameters will reflect

the biological objective's measurable units (e.g., if the biological objective is stated in terms number of chinook salmon, the monitoring component should describe the procedures for measuring the estimated number of chinook salmon). The monitoring component will be based on the best scientific and commercial information available and use established surveying methods and techniques, and other protocols. The monitoring component will also clearly designate responsibility for the various aspects of monitoring based on the provisions of Sections 7.2 and 7.3, and will identify the measures the Resource Agencies and PG&E will take to ensure adequate funding for their respective future monitoring responsibilities.

**(c) Assessment**

The information obtained through monitoring will be analyzed and evaluated according to protocols identified in Section 9.1 B to assess the results of restoration actions relative to established goals and objectives. Information acquired will be used to determine the need for adjusting goals, altering the monitoring program to obtain additional data, or developing recommended modifications to restoration actions already in place. For instance, the Ramping Rates and threshold flow levels will be monitored to ascertain their effectiveness to avoid stranding and/or isolating anadromous fish. If the monitoring results indicate adjustment to the Ramping Rates or threshold flow values are warranted, then recommendations will be formulated and submitted to the Adaptive Management Policy Team for consideration.

## **B. Implementation**

Adaptive Management is an integral part of the post-construction implementation of the Restoration Project. The basic organizational structure of the Adaptive Management effort will consist of an Adaptive Management Policy Team (AMPT), and Adaptive Management Technical Team (AMTT).

### **1. Adaptive Management Policy Team**

The AMPT is a management level cooperative group that will make all final decisions regarding the implementation of the Adaptive Management component of the Restoration Project. The AMPT will have a representative from each of the Resource Agencies and PG&E. The members of the AMPT will be familiar with Adaptive Management methodologies adopted by CALFED. Interested persons may attend any AMPT meeting and contribute to discussions. Specific notice, in addition to any general notice, of any such meetings will be sent to: (1) the Battle Creek Watershed Conservancy; (2) CALFED; and (3) any person requesting such notification.

The AMPT shall provide policy direction and resolve any disputes forwarded by the AMTT by Consensus. In the event that the AMPT is unable to reach Consensus within thirty (30) days, dispute resolution procedures, described in Section 14.0, shall be followed.

The Chair of the AMPT will rotate regularly as agreed upon by the AMPT.

### **2. Adaptive Management Technical Team**

The members of the AMTT will include a representative from each of the Resource Agencies and PG&E with appropriate training and experience to effectively address the technical aspects of implementing the AMP. Interested



persons may attend any AMTT meeting and contribute to discussions. Specific notice, in addition to any general notice, of AMTT meetings will be sent to: (1) the Battle Creek Watershed Conservancy and (2) any interested person requesting such notification.

The AMTT will develop the AMP for approval by the AMPT and implement the Adaptive Management component of the Restoration Project upon approval by FERC. The Chair of the AMTT will rotate regularly as agreed upon by the AMTT.

## **9.2 Adaptive Management Implementation Means**

### **A. Water Acquisition Fund (WAF)**

#### **1. Purpose of WAF**

An important component of the Restoration Project will be a WAF. The purpose of the WAF is to establish a ready source of money which may be needed for future purchases of additional instream flow releases in Battle Creek which may be recommended under the AMP during the ten (10) year period following the initiation of prescribed instream flow releases listed in Attachment 1. The WAF shall be used solely for purposes of purchasing additional environmentally-beneficial instream flow releases pursuant to the protocols developed by the Resource Agencies and PG&E. The Parties acknowledge that if additional instream flow releases are determined by the Resource Agencies to be required pursuant to the protocols described in Section 9.2 A 3, the ESA, or other applicable law, and (1) the ten (10) year period described above has elapsed and/or (2) there are not sufficient funds in the WAF or the Adaptive Management Fund to pay for such additional instream flow releases, then PG&E shall be responsible for the cost of such instream flow releases.

## **2. Independent WAF Account**

The WAF account will be funded with federal funds described in Section 10.2 and administered by the Resource Agencies following consultation with appropriate interested parties. USBR shall commit \$3,000,000 of such funds to an account or subaccount for the WAF within four months of CALFED approval of federal funds described in Section 10.2. Account disbursement instructions will be developed jointly by the Agencies and PG&E. USFWS shall request disbursements from the WAF in writing, based on the account disbursement instructions.

## **3. WAF Administrative Protocols**

Protocols will be developed by the AMTT to identify environmentally beneficial flow changes for anadromous fish under the AMP to be funded from the WAF.

If Consensus regarding flow changes is not achieved by the AMTT or AMPT, PG&E and the Resource Agencies (collectively), each will choose a person, and together those two persons will choose a single third party who will act as mediator. Each Party shall make its choice within fourteen (14) days from the date of any determination that Consensus has not been achieved, and the third party mediator shall be chosen by those parties no later than forty-five (45) days from such date of determination that Consensus has not been achieved. These times may be extended by mutual agreement of the Resources Agencies and PG&E. If Consensus through mediation is still not achieved, the Resource Agencies and PG&E reserve their right to petition FERC to resolve the subject action. Resource Agencies and PG&E will be responsible for assuming their respective costs for any FERC process.

However, in the interim, instream flow releases determined to be necessary by the Resource Agencies through the

aforementioned protocols will be provided by PG&E until there is either Consensus or FERC approval of the additional instream flow releases. WAF moneys shall be used to implement consensually agreed to or FERC approved actions, and interim actions which have been taken pending FERC action.

#### **4. Payment of WAF Moneys**

During the ten-year effective period of the WAF, payment to PG&E for consensually agreed to or FERC approved increased flow releases, and interim instream flow releases which have been taken pending FERC action, will be made in arrears annually. After January 1 following the expiration of the WAF, all uncommitted funds will revert to CALFED, or as otherwise provided by law. During the last year of the WAF, and to the extent that adequate moneys remain in the WAF, funds for agreed to prescribed instream flow releases which will be delivered after expiration of the WAF will be paid to PG&E in one lump-sum based on the net present value of foregone energy for the period inclusive of the realized increased prescribed instream flow releases and expiration date of the current FERC license.

The method of valuation of any additional environmentally beneficial prescribed instream flow releases for the purpose of compensation from the WAF shall be similar to that used for estimating the net present value of foregone power in Attachment 1. The annual in arrears payments described above will be calculated by computing the additional energy foregone on a daily basis over the prior year due to increased prescribed instream flow releases multiplied by the weighted daily energy price published by the California Power Exchange. The lump-sum payment described above will be determined based on the average annual additional foregone energy associated with increased prescribed instream flow releases for a typical water year (e.g. water year 1989). The net present value payment will be based

on the appropriate power values, escalation factor, and discount rate.

## **B. Adaptive Management Fund (AMF)**

### **1. Purpose of AMF**

Another component of the Restoration Project will be an Adaptive Management Fund (AMF) to implement actions developed under the AMP. The Parties agree that the purpose of the AMF is to provide a readily available source of money to be used for possible future changes in the Restoration Project. The AMF shall be used only for Restoration Project purposes directly associated with FERC Project No. 1121 including compensation for prescribed instream flow release increases after the exhaustion or termination of the WAF. The AMF shall be administered pursuant to the AMF protocols. The AMF shall be used to fund unforeseen changes, including changes in the design of the fish screen and/or ladders built as a part of the Restoration Project to improve biological effectiveness and which meet NMFS' adopted criteria. The AMF shall not be used to fund monitoring or construction cost overruns.

### **2. Independent AMF Account**

The AMF, in the amount of \$3,000,000, will be made available to PG&E and the Resource Agencies by a third party donor(s), to fund those actions developed pursuant to the AMP. The third party donor(s) shall deposit the \$3,000,000 in an interest-bearing account pursuant to a separate agreement to be developed jointly by the Resource Agencies, PG&E, and a third party donor(s) after execution of this MOU. This interest-bearing account shall be established no later than six (6) months after execution of this MOU unless otherwise agreed to by the Parties. Account disbursement instructions will be developed

jointly by the Resource Agencies, the third party donor(s) and PG&E.

The Parties agree that: (1) interest on the moneys in the AMF will accrue to the account at a rate to be determined in the agreement and shall be applied to changes in the Restoration Project adopted pursuant to the Adaptive Management protocols; and (2) all uncommitted funds in the AMF will revert to the third party donor(s) or its designee at the end of the current term of the license for FERC Project No. 1121. USFWS shall request disbursements from the AMF in writing, based on the protocols identified below.

### **3. AMF Administrative Protocols**

Protocols will be developed by the AMTT to designate environmentally beneficial Adaptive Management actions to be funded from the AMF pursuant to the AMP.

For funding prescribed instream flow increases, the protocols will be the same as for the WAF described in Section 9.2 A 3. For funding facility modifications, the protocols will be the same as that described in Section 9.2 A 3, with two exceptions: (1) no interim action will be implemented prior to any required FERC approval of a license amendment or other necessary action by FERC; and (2) for all actions resolved by FERC, in which PG&E is in the minority opinion (opposing a proposed action expenditure), the AMF will contribute sixty percent (60%) of any resulting facility modification cost; in the case of PG&E being in the majority opinion (in support of a proposed action expenditure), the AMF will contribute one hundred percent (100%) of any resulting facility modification cost.

## 10.0 FUNDING

**10.1** The total cost of the Restoration Project is currently estimated to be \$50,709,000. USBR has applied to CALFED for the allocation of federal funding in the amount of \$27,158,100. To date, CALFED has tentatively agreed to fund the Restoration Project in that amount, pending execution of this MOU. The balance of \$23,550,900 will include PG&E commitments estimated to be \$20,550,900 and a third party donor(s) contribution of \$3,000,000.

Federal	\$27,158,100
PG&E	\$20,550,900
Third Party Donor(s)	<u>\$3,000,000</u>
	\$50,709,000

### 10.2 Federal Cost Sharing

The federal portion of the Restoration Project funding will be derived from appropriations authorized under the California Bay-Delta Environmental Enhancement Act (P.L. 104-333). The federal funding is appropriated as “no-year” funds that can be carried forward from one federal fiscal year to the next until it is expended. From the appropriated amount, the Department of the Interior, through USBR, will authorize disbursements for full financing of the federal portion of the Restoration Project as approved in the CALFED process.

Subject to the provisions of Section 5.0, federal cost sharing includes: (1) funding for the construction of all fish screens and fish ladders described in Section 4.1; (2) payment for the construction of connectors and bypasses at South and Inskip Powerhouses; (3) payment for decommissioning studies for Wildcat, Coleman, Soap Creek, Lower Ripley Creek and South Diversion Dams, and Eagle Canyon spring collection facilities as identified in Table 1 of Attachment 1; (4) payment of all costs associated with decommissioning Wildcat, Coleman, Soap Creek, Lower Ripley Creek, and South Diversion Dams, and Eagle Canyon spring collection facilities as identified in Table 1 of Attachment 1, and affected related water conveyance facilities; (5) start-up and acceptance testing of new facilities prior to transfer of operation and

maintenance responsibilities to PG&E; (6) any construction and decommissioning cost overruns; (7) any environmental permitting and documentation necessary for the Restoration Project, including any additional decommissioning studies that might be required by FERC; (8) \$1,000,000 toward payment for the biological and environmental monitoring described in Section 7.3, except that PG&E will participate in such monitoring by contributing limited internal technical and fishery expertise; (9) all required new or modified monitoring and record keeping equipment and facilities and stream gauging facilities needed to demonstrate compliance of the Restoration Project with FERC license conditions or needed for Adaptive Management purposes; (10) assistance in developing the AMP more particularly described in Section 9.1; (11) deposit of \$3,000,000 into the WAF more particularly described in Section 9.2 A; and (12) deposits to an escrow account solely administered by PG&E in a total amount of \$2,137,100 as compensation for 10% of the prescribed instream flow releases listed in Attachment 1 and estimated cost of foregone power during construction. Instructions will be developed by the Parties identifying the timing of such deposits of funds based upon loss of generation due to scheduling for construction outages, decommissioning of facilities, commencement of prescribed instream flow releases, or execution of deeds or other mutually agreed upon documents for transfer of water rights pursuant to Section 6.1 E. PG&E will withdraw funds from this escrow account after the CPUC determines the market valuation for the FERC Project No. 1121.

### **10.3 PG&E Cost Sharing**

PG&E's participation in the Restoration Project is an estimated \$20,550,900 toward the Total Project Cost. This amount includes: (1) assumption of ninety percent (90%) of the foregone energy production resulting from the prescribed instream flow releases listed in Attachment 1; (2) assumption of all costs due to increased operation and maintenance at remaining hydropower facilities; (3) assumption of all incremental losses due to Ramping Rate requirements listed in Attachment 2; (4) assumption of all costs for screen and ladder repairs and replacements due to normal wear and tear, catastrophic damage, and any other damage; (5) assumption of costs for facility monitoring described in Section 7.2; (6) assumption of all internal costs associated with any FERC license

amendment necessary to implement the Restoration Project; (7) assumption of internal costs associated with providing limited technical and fishery expertise in developing and implementing the biological and environmental monitoring described in Section 7.3; and (8) assumption of all internal costs associated with the joint petition described in Section 6.1 E.

#### **10.4 Third Party Donor(s) Funding**

A third party donor(s) will provide a one-time lump sum payment of \$3,000,000 to establish the AMF. As described in Section 9.2 B, the third party donor(s) will place these funds in an interest-bearing account and make provision for payments from the account for recommended actions based on the AMP and the AMF protocols, referenced herein, in a separate agreement to be developed by the Parties and the third party donor(s).

#### **11.0 LEASES OR SALE OF FERC PROJECT NO. 1121**

PG&E agrees that any legal instrument conveying some or all of its interest in FERC Project No. 1121 to a successor in interest will include an obligation to assume PG&E's responsibilities and obligations under this MOU. PG&E further agrees that such obligations will run with the FERC Project No. 1121 and be binding on all subsequent owners.

#### **12.0 ENVIRONMENTAL LIABILITIES**

Investigations conducted during the design phase will include such surveys as determined necessary and appropriate by the TT (described in Section 8.2 C) to identify any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (hereinafter "CERCLA"), 42 U.S.C. Sections 9601-9675, that may exist in, on, or under lands, easements, and rights-of-way that are determined to be required for the construction, operation, and maintenance of the Restoration Project. In the event it is discovered through any investigation, construction activity, or other means that hazardous substances regulated under CERCLA exist at levels designated as hazardous waste in, on, or under any lands, easements, or rights-of-way to be required for the construction, operation, or maintenance of FERC Project No.



1121, PG&E and USBR shall notify each other and the other Parties, and work shall not proceed until all Parties agree that activities should continue.

If a structure, system, or component of FERC Project No. 1121 does not currently constitute a hazardous waste, but becomes one as a result of Restoration Project decommissioning activities, the costs associated with that liability will be considered included in the federal share of the Total Project Cost. For example, piping in service not considered a hazardous liability under CERCLA may become a liability under CERCLA upon removal. Consequently, such costs for proper disposal shall be included in the federal portion of the Total Project Cost. Conversely, a concrete pad which has been previously contaminated by a hazardous waste requiring special handling or disposal resulting in increased costs shall not be included in the federal share of the Total Project Cost.

Notwithstanding any potential liability of PG&E, or any other potentially responsible party, for hazardous wastes regulated under CERCLA, the PMT may agree to include certain costs related to such hazardous wastes in the Total Project Cost.

The Parties, through the PMT (described in Section 8.2 A), shall determine whether to initiate construction of that Restoration Project feature, or if already in construction, whether to continue with such work, suspend future performance under this MOU, or terminate this MOU, in any case where hazardous substances regulated under CERCLA are found to exist. Should the Parties determine to initiate or continue with construction after considering any liability that may arise under CERCLA, PG&E, the landowner, or any other potentially responsible party shall be responsible for the costs of any studies and investigations necessary to determine an appropriate response to the contamination. Such costs shall not be considered a part of Total Project Costs.

PG&E and the Parties shall consult with each other in accordance with other provisions of this MOU in an effort to ensure that responsible parties bear any necessary cleanup and response costs as defined in CERCLA. Any decision made pursuant to this Section shall not relieve any third party from any liability that may arise under CERCLA. PG&E shall be considered the operator of this Restoration Project for purposes of CERCLA liability. To the maximum extent practicable, PG&E shall operate, maintain, repair, replace, and rehabilitate the

Restoration Project in a manner that will not cause liability to arise under CERCLA.

### **13.0 AMENDMENT PROCESS**

No amendment or modification of this MOU, nor waiver of any provision of this MOU, shall be effective unless set forth in a written instrument or instruments executed by duly designated and authorized representatives of the Parties with the same formality of this MOU.

### **14.0 DISPUTE RESOLUTION**

In the event any one of the Parties to this MOU believes there is an issue regarding the interpretation of, or compliance with, any provision of this MOU, other than an issue involving determining protocols for funding prescribed instream flow release increases utilizing the Water Acquisition Fund or the Adaptive Management Fund, that Party shall provide written notice of that issue to each of the other Parties. The Parties will then meet within thirty (30) days of the written notice, or at a later date by mutual agreement, in an effort to resolve the issue. If resolution is not achieved, PG&E and the Agencies (collectively) will each choose a person, and together those two persons will choose a single third party who will act as mediator. PG&E and the Agencies shall make their respective choice within fourteen (14) days from the date of any determination that resolution has not been achieved, and the third party mediator shall be chosen no later than forty-five (45) days from such date of determination that resolution has not been achieved. These times may be extended by mutual agreement of the Agencies and PG&E. If resolution through non-binding mediation is still not achieved, the Agencies and PG&E shall petition FERC to resolve the subject dispute for those actions within FERC's jurisdiction. Any such petition shall include the administrative record of the mediation process. Agencies and PG&E will be responsible for assuming their respective costs for any such FERC process. For those issues falling outside the scope of FERC's jurisdiction, where any one of the Parties fails to achieve resolution through the dispute resolution process described above, then any one of the Parties may seek any available appropriate administrative and/or judicial remedies.

## **15.0 TERM**

This MOU shall be effective upon the last date of execution indicated in Section 17.0 and will continue in effect until the expiration of the license for FERC Project No. 1121, or July 31, 2026, whichever is earlier except as otherwise provided in the MOU.

## **16.0 TERMINATION**

**16.1** Except as provided in Section 16.2, no Party may withdraw from or terminate its participation in this MOU prior to the issuance of a Final FERC Order except by Consensus.

**16.2** PG&E or the Agencies may elect to withdraw from the MOU, after providing written notice to the other Parties and making a good faith effort to resolve concerns related to the following occurrences:

- Public and third party donor(s) funding, either from CALFED, CVPIA, CAMP, or other sources, is not adequate to fund all Agencies' commitments;
- Third party donor(s) fund is not established pursuant to Sections 9.2 B and 10.4;
- The Agencies do not support the FERC license amendment application developed from the terms of this MOU;
- FERC approval of the license amendment application is not granted;
- The Final FERC Order, as defined in Section 2.13, is materially different from the terms and conditions of the MOU;
- Any necessary CPUC approval is not granted;
- Any necessary CPUC action contains terms that are materially different from the terms and conditions of this MOU; or
- PG&E abandons the license for FERC Project No. 1121.

**17.0 SIGNATURES**

This MOU may be executed in counterparts. A copy with all original executed signatures attached will be retained by USBR. USBR will distribute copies of the MOU with executed signature pages to all Parties to this MOU. Each Party hereby represents and warrants that the person executing this MOU on behalf of such Party has been duly authorized to do so.

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed as of the last date written below:

<b>Signatory</b>	<b>Date</b>
_____ Kirk C. Rodgers, Acting Regional Director U.S. Bureau of Reclamation	_____
_____ Wayne S. White, Field Supervisor U.S. Fish and Wildlife Service	_____
_____ Rodney R. McInnis, Acting Regional Administrator, Southwest Region National Marine Fisheries Service	_____
_____ Robert Hight, Director California Department of Fish and Game	_____
_____ E. James Macias, Senior Vice President Pacific Gas and Electric Company	_____

# FINAL AGREEMENT IN PRINCIPLE:

## BATTLE CREEK SALMON AND STEELHEAD RESTORATION PROJECT

The signatories below agree that the following table entitled, FINAL AGREEMENT IN PRINCIPLE: BATTLE CREEK SALMON AND STEELHEAD RESTORATION PROJECT, accurately describes the consensus proposal negotiated on January 26, 1999.

Negotiator

Date

Mark Stopher  
Mark Stopher,  
California Department of Fish and Game

2/9/99

Jim Bybee  
Jim Bybee,  
National Marine Fisheries Service

2-9-99

Terry Morford  
Terry Morford,  
Pacific Gas and Electric Company

2-16-99

Brent Walthall  
Brent Walthall,  
US Bureau of Reclamation

2/9/99

Wayne White  
Wayne White,  
US Fish and Wildlife Service

2/11/99

**FINAL AGREEMENT IN PRINCIPLE**

**BATTLE CREEK SALMON AND STEELHEAD RESTORATION PROJECT**

**Feature**      **1/26/99 Consensus Proposal, subject to PG&E Management Approval, FERC license amendment, and Resource Agency/PG&E MOU Supporting All Facility and Instream Flow Changes Outlined Below**

<p><b>Facilities</b></p>	<p>Decommission Wildcat, Coleman, Soap Creek, Lower Ripley and South Diversion Dams and associated water conveyance facilities that will no longer be in service; screen and ladder N. Battle Creek Feeder, Inskip and Eagle Canyon Diversion Dams; install tailrace connectors and water bypass facilities at Inskip and South Powerhouses. PG&amp;E, or its successor(s) (Project Owner) agrees to support installation of the connector at South Powerhouse concurrent with, or prior to, the Inskip Diversion Dam Fish Screen.</p>
<p><b>Flows</b></p>	<p>See attached Tables 1 and 2 which list "Prescribed Instream Flow Releases." The Resource Agencies will meet and confer with Project Owner before determining flow ramping provisions for returning facilities to service following shutdowns.</p>
<p><b>Economic Variables</b></p>	<p>Adopt 12/98 CEC energy forecast &amp; revise discount rate to 9.17%. Include all costs of proposal: O&amp;M impacts, license amendment, all study costs associated with decommissioning, Facility Monitoring<sup>1</sup> and Biological/Environmental Monitoring<sup>2</sup>, a \$3 million Water Acquisition Fund, and a \$3 million Adaptive Management Fund (See Table 3 "Total Project Cost" and Table 4 "Summary of Assumptions").</p>
<p><b>Water Acquisition Fund Protocol</b></p>	<p>Water Acquisition Fund administered by Resource Agencies following consultation with appropriate interested parties. Water Acquisition Fund shall be placed in an escrow account and used solely for purposes of purchasing additional flows if the Resource Agencies determine such flows are necessary during the first 10 years of initiation of instream flow changes listed in Tables 1 and 2. During this first ten year period, payment to the Project Owner for agreed-upon instream flow changes will be made annually. After the first January 1<sup>st</sup> following the expiration of the first 10 years of instream flow changes listed in Tables 1 and 2, all uncommitted funds would revert to CALFED; funds for instream flow changes agreed upon before the subject January 1<sup>st</sup> which remain in effect after the subject January 1<sup>st</sup> will be paid to the Project Owner in one lump-sum payment based on the net present value of foregone energy for the period inclusive of the realized increased flows and expiration date of the current FERC license. Protocols to determine appropriate flow changes for anadromous fish to be funded with the \$3 million Water Acquisition Fund will be developed in which both Resource Agencies and Project Owner make the determination through a consensus process. If consensus is not achieved, Project Owner and Resource Agencies (collectively) will each choose a person, and together those two persons will choose a single third party who will act as mediator. Each party shall make its choice within 14 days from the date of any determination that consensus has not been achieved, and the third party mediator shall be chosen by those parties no later than 45 days from such date of determination that consensus has not been achieved. These times may be extended by mutual agreement of the Resource Agencies and Project Owner. If consensus through mediation is still not achieved, the Resource Agencies and Project Owner reserve their right to petition FERC to resolve the subject action. Resource Agencies and Project Owner will be responsible for assuming their respective costs for FERC process. Interim flows will be provided by Project Owner until there is either consensus or FERC approval of the additional flows determined to be necessary by Resource Agencies. Water Acquisition Funds shall be used to implement consensually-agreed to or the FERC-approved actions, and interim actions which have been taken pending FERC action.</p>

<sup>1</sup> FACILITY MONITORING includes verification that agreed-upon instream flows including ramping limitations are met, verify and document fish screen and ladder facilities continue to function as designed, i.e., report to FERC of screen and ladder outages, alarms, reasons for operational deviations, verify no gaps exceeding design criteria exist in the fish screen structure, perform periodic inspections to verify screen is being properly maintained and site conditions have not significantly changed, having the Owner's operator note any fish stacking below the fish ladders and fish passing up the ladder.

<sup>2</sup> BIOLOGICAL/ENVIRONMENTAL MONITORING includes anadromous fish survey (i.e., abundance, distribution and timing of adult and juvenile fish), water quality/meteorology, barrier formation, long-term fish passage at fish passage facilities.

**FINAL AGREEMENT IN PRINCIPLE  
BATTLE CREEK SALMON AND STEELHEAD RESTORATION PROJECT**

**1/26/99 Consensus Proposal, subject to PG&E Management Approval, FERC license amendment, and Resource Agency/PG&E MOU Supporting All Facility and Instream Flow Changes Outlined Below**

<p><b>Adaptive Management Fund Protocol</b></p>	<p>Adaptive Management Fund administered by Resource Agencies following consultation with appropriate interested parties<sup>3</sup>. Adaptive Management Fund shall be placed in an escrow account and used solely for Battle Creek salmon and steelhead restoration purposes directly associated with the facilities and operations of FERC Project No. 1121, i.e., instream flow changes (after exhaustion or termination of the Water Acquisition Fund), and facility modifications; all uncommitted funds will revert to the third party at the end of the current FERC license term.</p> <p>Protocols to determine appropriate actions that benefit anadromous fish to be funded with the \$3 million Adaptive Management Fund will be developed in which both Agencies and Project Owner make the determination through a consensus process. For funding instream flow changes, the protocol would be the same as for the Water Acquisition Fund discussed above. For funding facility modifications, the protocol would be the same as for the Water Acquisition Fund discussed above with 2 exceptions: 1) no interim actions would be implemented prior to FERC action; and 2) for all FERC resolved actions, the Adaptive Management Fund would contribute a maximum of 60 percent of any resulting facility modification cost. In other words, for actions related to facility modifications, funds from the Adaptive Management Fund shall be used to implement 100% of the costs of consensually-agreed to actions but only 60% of the costs of actions submitted to FERC for resolution, the remaining 40% to be borne by the Project Owner in the latter case.</p>
<p><b>Total Cost Payment to Project Owner</b></p>	<p>\$50.7 million (includes \$1 million CALFED-funded monitoring; additional monitoring funding to be provided by others i.e., CVPIA, CAMP, etc.) \$2.1 million</p>
<p><b>Resource Agency Cost Sharing</b></p>	<p>Public funding for: all screens, ladders, connectors, decommissioning, decommissioning studies, start-up and acceptance testing prior to transferring ownership and operations and maintenance responsibilities to Project Owner, construction and decommissioning over-runs, environmental permitting (i.e., all necessary environmental permitting (e.g., NEPA/CEQA), including additional FERC-required decommissioning studies), all Biological/environmental monitoring (except for Owner's limited participation and use of internal technical and fishery expertise to jointly develop Agencies' monitoring plan, assist in analyses, review results and identify potential adaptive management measures), and Water Acquisition Fund; 10% of Purchased Water Costs.</p>
<p><b>Resource Agency Contribution</b></p>	<p>\$27.2 million = 54%. Includes portion of Biological/Environmental Monitoring<sup>3</sup>; other governmental funding sources (CVPIA, CAMP) will be used for monitoring.</p>
<p><b>Third Party Cost Sharing</b></p>	<p>Third Party funding for \$3 million Adaptive Management Fund</p>
<p><b>Third Party</b></p>	<p>\$3 million = 6%</p>

<sup>3</sup> An Adaptive Management Plan will be developed to contribute to the sustainability of naturally spawned anadromous salmonids and the associated ecosystem of Battle Creek affected by FERC Project No. 1121 facilities or operations. The Adaptive Management Plan will be developed by consensus. The Adaptive Management Plan will develop a broadly applicable and flexible framework for an adaptive management program specific to impacts resulting from FERC Project No. 1121 facilities or operations and will include: establishing objectives; planning for unanticipated outcomes; recognizing appropriate time frames for resource management and recovery; defining the role of assessment monitoring; developing general procedures for prioritizing expenditures of Adaptive Management Funds; and developing general procedures for modifying management approaches using new scientific data. The Adaptive Management Plan will implement specific actions to protect, restore, enhance, and monitor salmonids and salmonid habitat, at FERC Project No. 1121, to guard against straying and to ensure that salmon and steelhead fully access and utilize available habitat in a manner that benefits all life stages and thereby maximizes natural production, fully utilizing ecosystem carrying capacity. The Adaptive Management Plan may also include measures to minimize impacts of Project operations upon life stages of salmon and steelhead.

**FINAL AGREEMENT IN PRINCIPLE**

**BATTLE CREEK SALMON AND STEELHEAD RESTORATION PROJECT**

**1/26/99 Consensus Proposal, subject to PG&E Management Approval, FERC license amendment, and Resource Agency/PG&E MOU Supporting All Facility and Instream Flow Changes Outlined Below**

<p><b>Contribution</b></p>	
<p><b>Project Owner Cost Sharing</b></p>	<p>Project Owner funding for: 90% of Purchased Water Costs; 100% of increased O&amp;M, foregone power due to ramping rate requirements and periodic screen and ladder repairs, and replacements due to normal wear-and-tear and catastrophic damage. Screen and ladder modifications and replacements due to changes in design to improve biological effectiveness which meet NMFS adopted criteria will be paid from the Adaptive Management Fund; Facility Monitoring<sup>1</sup> to verify flows are provided as agreed, and screens and ladders continue to function as designed. Project Owner pays all internal costs associated with FERC license amendment and Facility Monitoring<sup>1</sup> (Biological/Environmental Monitoring<sup>2</sup> including overall effectiveness of modifications, fish population and distribution monitoring which is beyond Project Owner Facility Monitoring<sup>1</sup> requirements will be paid by CALFED. Owner shall participate in and provide limited internal technical and fishery expertise to the Agencies' Biological/Environmental Monitoring<sup>2</sup> program at its own cost.)</p>
<p><b>Project Owner Contribution</b></p>	<p>\$20.6 million = 40% includes limited portion of Biological/Environmental Monitoring<sup>2</sup></p>
<p><b>Assurances and Requirements (to be stipulated in MOU and provided through ESA permits and FERC license)</b></p>	<p>Project Owner will voluntarily reopen its FERC license through the license amendment process to enhance the Battle Creek fishery as described in the MOU and related agreements. The Resource Agencies agree to: 1) support project owner's FERC license amendment to incorporate the restoration actions described herein into FERC License No. 1121, and 2) support the position that FERC focus this license amendment on the restoration actions described herein in order to streamline the process for a FERC decision to allow Battle Creek restoration to go forward in a timely manner.</p> <p>No ESA assurances.</p> <p>Water Acquisition Fund provided by CALFED and administered by Agencies to pay for any additional future flow changes for salmon and steelhead restoration purposes directly associated with the facilities and operations of FERC Project No. 1121 pursuant to the above-mentioned protocols.</p> <p>Adaptive Management Fund provided by Third Party and administered by Agencies to pay for any additional future salmon and steelhead restoration purposes directly associated with the facilities and operations of FERC Project No. 1121 pursuant to the above-mentioned protocols.</p> <p>Water diversion rights associated with all dams to be decommissioned will be transferred to the appropriate party (CDFG, NMFS, USFWS). Based on the assumption that all PG&amp;E water rights on the South Fork of Battle Creek have an equal priority, water rights transferred to Agencies will not be used by the Agencies to increase bypass flows above the amounts specified in the MOU, or developed pursuant to the Adaptive Management Program. If FERC License No 1121 is abandoned, then the limitation regarding transferred water rights would no longer apply. Project Owner and the Resource Agencies, or their designee, will file a Petition with the SWRCB pursuant to Water Code 1707 to preserve and enhance instream flows.</p> <p>Project Owner and the Resource Agencies, or their designee, agrees to support such a petition.</p> <p>Water associated with meeting the prescribed flow schedules below all dams screened and laddered plus Baldwin Creek will be included in the FERC license amendment in order to maintain fish and wildlife resources. Additionally, Project Owner and the Resource Agencies will execute an agreement ensuring that the currently agreed-upon bypass and ramping flows at each remaining dam, and any agreed-upon future changes to those flows, resulting from the adaptive management program developed in the MOU, will be provided by Project Owner until the end of the current FERC license and any subsequent annual licenses. This commitment to provide bypass and ramping flows may be subject to change by FERC at the expiration of the current license term in 2026. Project Owner and Resource Agencies (subject to State and Federal laws) agree to support the continuation of such bypass and ramping flows, resulting from the adaptive management program developed in the MOU, and any agreed upon future changes to those flows, in any relicensing proceeding for FERC License No. 1121.</p> <p>The Parties agree that for the term of the license, and any subsequent annual licenses, the flows developed by the Adaptive Management Program will not be lower than those flows specified in attached Tables 1 and 2 (to be incorporated in MOU) unless agreed to by the Resource Agencies.</p>



**FINAL AGREEMENT IN PRINCIPLE**

**BATTLE CREEK SALMON AND STEELHEAD RESTORATION PROJECT**

**1/26/99 Consensus Proposal, subject to PG&E Management Approval, FERC license amendment, and Resource Agency/PG&E MOU Supporting All Facility and Instream Flow Changes Outlined Below**

**Feature**

**Screening and Laddering Requirements for N. Battle Creek Feeder, Inskip and Eagle Canyon diversions.**

Diversion dams would need to be equipped with NMFS/CDFG approved "fail-safe" fish screens and ladders. The diversions would require full closure during screen failure and year-round remote sensing and inspection to monitor performance.

**FINAL AGREEMENT IN PRINCIPLE**

**BATTLE CREEK SALMON AND STEELHEAD RESTORATION PROJECT**

**Feature**      **1/26/99 Consensus Proposal, subject to PG&E Management Approval, FERC license amendment, and Resource Agency/PG&E MOU Supporting All Facility and Instream Flow Changes Outlined Below**

Table 1. Summary of prescribed instream flow releases from dams in the anadromous reaches of the North and South forks of Battle Creek based on modeled biological optimums determined by the Battle Creek Working Group Biological Team

Dam	Fork	Monthly Minimum Flow (cfs) To Be Released From Dam													
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Keswick	North	3 <sup>A</sup>	3 <sup>A</sup>	3 <sup>A</sup>	3 <sup>A</sup>	3 <sup>A</sup>	3 <sup>A</sup>	3 <sup>A</sup>	3 <sup>A</sup>	3 <sup>A</sup>	3 <sup>A</sup>	3 <sup>A</sup>	3 <sup>A</sup>	3 <sup>A</sup>	3 <sup>A</sup>
NBCF	North	88 <sup>F</sup>	88 <sup>F</sup>	88 <sup>F</sup>	67 <sup>F</sup>	47 <sup>F</sup>	47 <sup>F</sup>	47 <sup>F</sup>	47 <sup>F</sup>	47 <sup>F</sup>	47 <sup>F</sup>	47 <sup>F</sup>	47 <sup>F</sup>	47 <sup>F</sup>	88 <sup>F</sup>
Eagle	North	46 <sup>S</sup>	46 <sup>S</sup>	46 <sup>S</sup>	46 <sup>S</sup>	35 <sup>S</sup>	35 <sup>S</sup>	35 <sup>S</sup>	35 <sup>S</sup>	35 <sup>S</sup>	35 <sup>S</sup>	35 <sup>S</sup>	35 <sup>S</sup>	35 <sup>S</sup>	46 <sup>S</sup>
Wildcat	North	(Facility decommissioned; no instream flow requirement)													
South	South	(Facility decommissioned; no instream flow requirement)													
Inskip	South	86 <sup>P1</sup>	86 <sup>P1</sup>	86 <sup>P1</sup>	61 <sup>P1</sup>	40 <sup>P1</sup>	40 <sup>P1</sup>	40 <sup>P1</sup>	40 <sup>P1</sup>	40 <sup>P1</sup>	40 <sup>P1</sup>	40 <sup>P1</sup>	40 <sup>P1</sup>	40 <sup>P1</sup>	86 <sup>P1</sup>
Coleman	South	(Facility decommissioned; no instream flow requirement)													

A = Accretion flows downstream of the Keswick Dam can exceed 100% of maximum WUA for steelhead spawning in the portion of the Keswick reach available to anadromous fish and can exceed the predictive capability of the IFIM model. Accretion flows downstream of the Keswick Dam provide >90% of maximum WUA for steelhead rearing in the portion of the Keswick reach available to anadromous fish.

F = On occasion the release is not attainable due to the quantity of inflow reaching North Battle Creek Feeder Diversion. Additional inflows to the North Battle Creek Feeder reach are occasionally received from the junction box of the Volta 2 Powerhouse tailrace and Cross-County Canal a short distance downstream.

S = Eagle Canyon Dam releases reported in this table include releases from Eagle Canyon Springs (those springs located downstream of Eagle Canyon Dam that were included in the "interim flow agreement" between PG&E and USBR; USBR 1998a).

P1 = The prescribed instream flow will be the total available inflow in the South Fork upstream of the South Powerhouse at times when the available inflow is less than the prescribed flow.

**FINAL AGREEMENT IN PRINCIPLE**

**BATTLE CREEK SALMON AND STEELHEAD RESTORATION PROJECT**

**Feature**      **1/26/99 Consensus Proposal, subject to PG&E Management Approval, FERC license amendment, and Resource Agency/PG&E MOU Supporting All Facility and Instream Flow Changes Outlined Below**

**Table 2.** Summary of prescribed instream flow releases from diversions in tributaries affecting the anadromous reaches of Battle Creek and tributaries based on best available information by the Battle Creek Working Group Biological Team.

Diversion	Monthly Minimum Flow (cfs) To Be Released From Tributary Diversions											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Eagle Canyon Spring	AIIP	AIIP	AIIP	AIIP	AIIP	AIIP	AIIP	AIIP	AIIP	AIIP	AIIP	AIIP
Soap Creek	(Facility decommissioned; no instream flow requirement)											
Lower Ripley Creek	(Facility decommissioned; no instream flow requirement)											
Baldwin Creek	5 <sup>c</sup>	5 <sup>c</sup>	5 <sup>c</sup>	5 <sup>c</sup>	5 <sup>c</sup>	5 <sup>c</sup>	5 <sup>c</sup>	5 <sup>c</sup>	5 <sup>c</sup>	5 <sup>c</sup>	5 <sup>c</sup>	5 <sup>c</sup>

D = Flow from Eagle Canyon Springs enters Battle Creek in the vicinity of Eagle Canyon Dam and is included in Eagle Canyon Dam releases shown on Table 1. These Springs are limited to those that were included in the "interim flow agreement" between PG&E and USBR will be released to maximize cooling of Battle Creek.

C = The flow value reported for Baldwin Creek represents the maximum instream flow release.

**BATTLE CREEK SALMON AND STEELHEAD RESTORATION PROJECT**  
**1/26/99 Consensus Proposal**

**Table 3 - Total Project Cost**

	Total Cost	CALFED/ Agencies Share	PG&E Share	Third Party Share
<b>Capital Costs</b>				
North Battle Creek Feeder Diversion Dam				
Fish Screen (55 cfs)	\$585,000	\$585,000	\$0	\$0
Fish Ladder	\$630,000	\$630,000	\$0	\$0
Eagle Canyon Diversion Dam				
Fish Screen (70 cfs)	\$1,098,000	\$1,098,000	\$0	\$0
Fish Ladder	\$1,028,000	\$1,028,000	\$0	\$0
Wildcat Diversion Dam				
Decommission	\$3,000,000	\$3,000,000	\$0	\$0
Soap Creek Feeder				
Decommission	\$200,000	\$200,000	\$0	\$0
Lower Ripley Creek Feeder				
Decommission	\$100,000	\$100,000	\$0	\$0
South Diversion Dam				
Decommission	\$3,300,000	\$3,300,000	\$0	\$0
Inskip Diversion Dam				
Fish Screen (220 cfs)	\$1,500,000	\$1,500,000	\$0	\$0
New Fish Ladder	\$1,050,000	\$1,050,000	\$0	\$0
Tailrace Connector from South PH to Inskip Canal (Includes South PH Bypass)	\$4,000,000	\$4,000,000	\$0	\$0
Coleman Diversion Dam				
Tailrace Connector from Inskip PH to Coleman Canal (300 cfs)	\$2,600,000	\$2,600,000	\$0	\$0
Inskip PH Bypass (Preliminary estimate, value engineering analysis required.)	\$1,000,000	\$1,000,000	\$0	\$0
Decommission	\$930,000	\$930,000	\$0	\$0
<b>Total Capital Costs<sup>1</sup></b>	<b>\$21,021,000</b>	<b>\$21,021,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Environmental Permitting and Monitoring Costs<sup>2</sup></b>	<b>\$1,500,000</b>	<b>\$1,000,000</b>	<b>\$500,000</b>	<b>\$0</b>
<b>Water Acquisition Fund<sup>3</sup></b>	<b>\$3,000,000</b>	<b>\$3,000,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Adaptive Management Fund<sup>4</sup></b>	<b>\$3,000,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$3,000,000</b>
<b>Net Present Value of O&amp;M Impacts<sup>5</sup></b>	<b>\$817,000</b>	<b>\$0</b>	<b>\$817,000</b>	<b>\$0</b>
<b>Cost of Foregone Power During Construction<sup>6</sup></b>	<b>\$544,000</b>	<b>\$54,400</b>	<b>\$489,600</b>	<b>\$0</b>
<b>Net Present Value of Annual Foregone Power<sup>7</sup></b>	<b>\$20,827,000</b>	<b>\$2,082,700</b>	<b>\$18,744,300</b>	<b>\$0</b>
<b>TOTAL PROJECT COST<sup>8</sup></b>	<b>\$50,709,000</b>	<b>\$27,158,100</b>	<b>\$20,550,900</b>	<b>\$3,000,000</b>
<b>Cost Share</b>		<b>54%</b>	<b>40%</b>	<b>6%</b>

<sup>1</sup> The Resource Agencies are responsible for the costs of all screens, ladders, connectors and decommissioning. The Resource Agencies are responsible for any construction costs in excess of those noted in this budget. Any funds budgeted for capital costs that are not expended will be returned to CALFED at the completion of all construction.

<sup>2</sup> The Resource Agencies assume responsibility for completion of environmental permitting (e.g., NEPA/CEQA), including additional decommissioning studies, and for continued environmental monitoring. PG&E will maintain responsibility for Facility monitoring and internal FERC license amendment costs. Additional costs associated with this ongoing activity will be borne by the Resource Agencies through other funding sources (CVPIA, CAMP, etc...)

<sup>3</sup> The Resource Agencies will place \$3 million in an escrow fund that can be used for the purchase of additional stream flows, in the event that an adaptive management review determines that additional flows are required for anadromous fish recovery. These funds may also be used to fund any necessary studies that determine the adequacy of flows. They may not be used for any capital costs (i.e., facility repair). The escrow fund will remain in place through 2011, at which time any uncommitted funds will be returned to CALFED.

<sup>4</sup> A \$3 million Adaptive Management Fund will be established by a third party. This money will be held in an escrow account that will remain in place until the expiration of the current FERC license (2026), at which time any unused funds will be returned to the third party benefactor.

<sup>5</sup> PG&E is responsible for all future O&M and periodic screen and ladder repair and replacement.

<sup>6</sup> Responsibility for the cost of foregone power during construction are split with PG&E (90%) and the Resource Agencies (10%).

<sup>7</sup> Responsibility for the cost of foregone power are split with PG&E (90%) and the Resource Agencies (10%).

<sup>8</sup> The Resource Agencies' share of the total project cost is \$27.2 million (54%). PG&E's share of the total project cost is \$20.6 million (40%). Third party share of the total project cost is \$3.0 million (6%).

### Flow Ramping Criteria

When returning the water conveyance facilities listed below to service, following forced or scheduled outages where the available diversion flow has been released to the natural stream channel, the following criteria will govern the maximum rate at which water is diverted from the stream channel back into the conveyance system:

Season	Ramping Rate*
Year Round	0.10 ft./hour

- \* Modification of method described in “Hydropower Flow Fluctuations and Salmonids: A Review of the Biological Effects, Mechanical Causes, and Options for Mitigation” by Mark A. Hunter, State of Washington Department of Fisheries, September 1992.”

It may be feasible to establish a threshold criteria of flow and stage above which ramping will not be required. An analysis of existing instream flow methodology data, stream cross-section information, and field observations will be conducted and recommendations made for initial threshold criteria within 90 days of the effective date of this MOU.

Monitoring of stream stage for ramping purposes will be at a confined, (i.e., narrow) stream transect immediately below the diversion point for the conveyance facility being returned to service, or at another appropriate location at the facility if a suitable transect is not available immediately below the diversion point.

Water conveyance facilities covered by these provisions are:

North Battle Creek Feeder  
 Cross-Country Canal  
 Eagle Canyon Canal  
 Inskip Canal  
 Coleman Canal

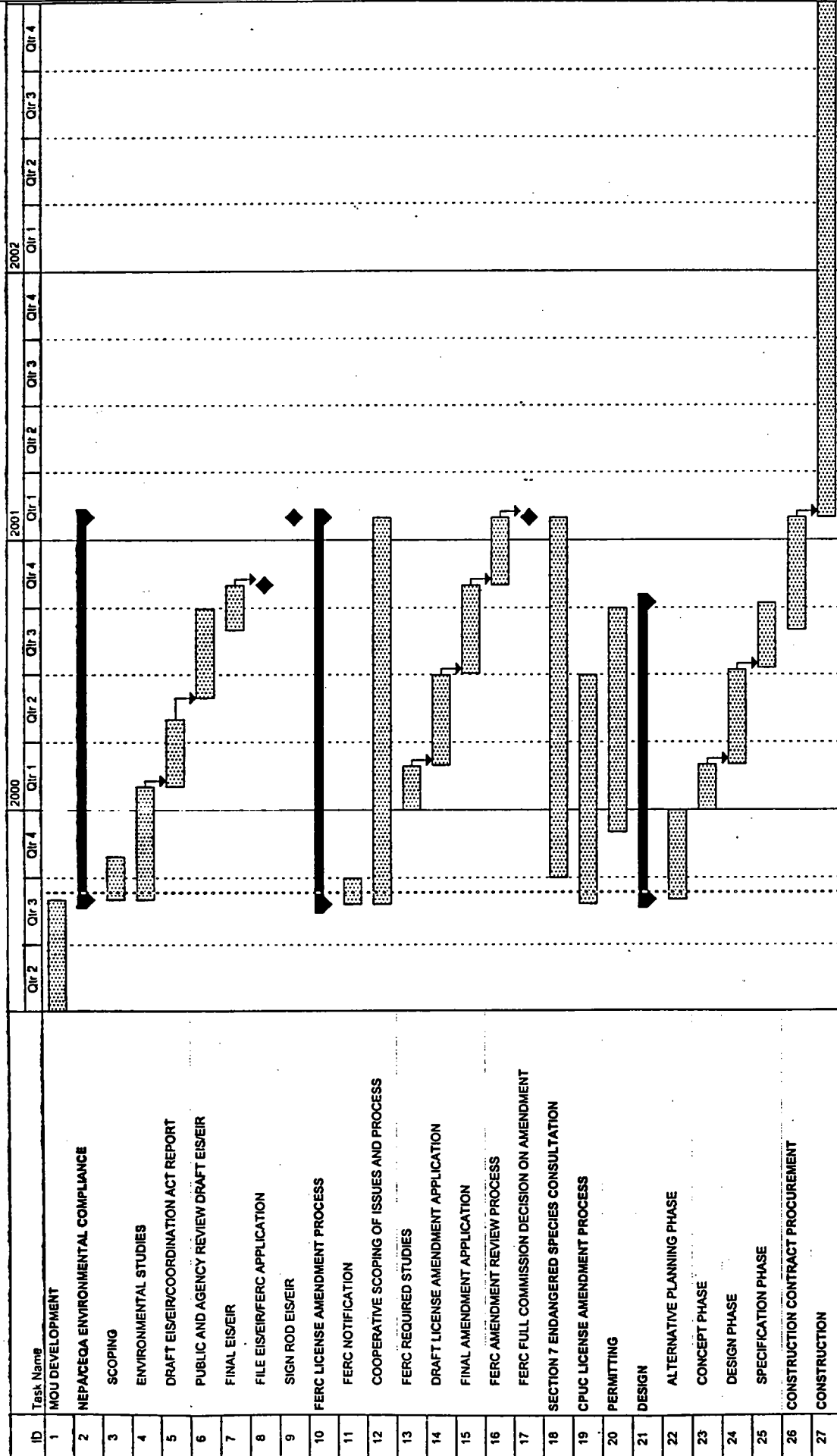
Planned maintenance requiring dewatering of these conveyance facilities will be scheduled during the period of February 1 through April 30 in order to minimize potential effects on anticipated anadromous fishery life stages that may be present in the affected stream reaches. Duration of the actual outages will be that necessary to complete the work associated with the conveyance facility itself.

**BATTLE CREEK SALMON AND STEELHEAD RESTORATION PROJECT**  
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**Table 4 - Summary of Assumptions**

1	"Prescribed Instream Flow Releases" are used (See Attached Tables 1 and 2)
2	Soap Creek Feeder is decommissioned.
3	Lower Ripley Creek Feeder is decommissioned.
4	Wildcat Diversion and Canal are decommissioned.
5	Eagle Canyon Diversion is screened and laddered.
6	South Diversion and Canal are decommissioned.
7	Coleman Diversion is decommissioned with a tailrace connector from Inskip PH and water bypass facility.
8	A tailrace connector and water bypass are constructed between South PH and Inskip Canal that also allows up to 220 cfs intake from the South Fork, when such flows are available (see "Prescribed Instream Flow Releases" listed on Attached Tables 1 and 2).
9	Generation foregone due to construction is estimated based on PG&E estimates.
10	Capital costs are assumed to be borne at the time of occurrence. Thus, those costs are shown in 1999 dollars, but may increase due to inflation at the time of construction.
11	The current 10-year market clearing price forecast developed by the CEC in December 1998 was used to estimate foregone power costs. Annual escalation of 2.8% was assumed starting in 2009.
12	Transmission delivery losses are estimated at 2.0% of generation.
13	Maintenance and forced outage losses are estimated at 3.0% of full generation potential.
14	It is assumed that 100% of generation (adjusted for losses) is dispatched into the market.
15	Annual operation and maintenance (O&M) costs are currently estimated by PG&E.
16	The period of analysis is from 1/1/01 through 12/31/26.
17	A 2.5% inflation rate is assumed for O&M costs.
18	The discount rate used is 9.17%, and is intended to reflect a rate consistent with PG&E's weighted average cost of capital.

BATTLE CREEK SALMON AND STEELHEAD RESTORATION PROJECT ESTIMATED SCHEDULE



**Task** [Pattern] **Milestone** [Diamond] **External Tasks** [Pattern] **Project Summary** [Pattern]  
**Split** [Arrow] **Summary** [Pattern] **Rolled Up Split** [Pattern] **Rolled Up Milestone** [Diamond] **Rolled Up Progress** [Pattern]  
**Progress** [Pattern]