Habitat Expansion Agreement

for

Central Valley Spring-Run Chinook Salmon and California Central Valley Steelhead

Questionnaire Instructions

The attached questionnaire is intended to solicit information needed by the Steering Committee to review projects relative to the criteria established in the Habitat Expansion Agreement. For each proposed action (project), please complete the questionnaire to the fullest extent possible. Please provide citations where applicable and provide a full reference for each citation at the end of this questionnaire (Section X. Supporting Documents). Specific instructions follow.

I. Contact Information

Provide the name of the agency or group making the proposal as well as a contact person for the project. Include contact information such as mailing address, phone number, and email address.

II. Project Description

Provide a descriptive name for the action (project). If the action is listed in the *Working List of Potential Habitat Expansion Actions* (provided during the January 2009 meetings of HEA parties), please include the reference number associated with the action. The project location should specify the watershed or subwatershed (e.g., Deer Creek, Beegum Creek) as well as specific areas within the watershed where the project will be located and what portions of the watershed will benefit from the project. Please include geographic coordinates of the project location(s), if applicable. The project description should be a narrative that provides as much detail as possible about the project.

III. Species Limiting Factors

In this section, indicate the factors that currently limit production of spring-run Chinook salmon and/or steelhead in your watershed. The intent is that the environmental and biological objectives of your project address these limiting factors in some way. Please check one or more of the limiting factors that apply to your watershed. In the second column, describe how and where the factor limits spring-run Chinook salmon and/or steelhead. For each factor that you check, please rank its effect on spring-run Chinook salmon and/or steelhead using the drop-down box in the last column. Finally, we also ask that you describe the source of your conclusions, such as a watershed assessment or other document. Please provide enough information that we can find the document if we need it.

IV. Project Objectives—Environmental

Environmental objectives describe how the project is intended to address the limiting factors to achieve the biological objective described in the next section. Environmental objectives should be as specific and quantitative as possible (e.g., reduce gravel embeddedness in the watershed from 75% to 25% by fencing riparian areas to exclude cattle and allow riparian forest to reestablish). Describe how you think environmental objectives relate specifically to the biological objectives. In the last column, we ask you to describe the environmental objectives as either the primary or secondary focus of the project. For example, a project to plant trees might have a primary focus on riparian/floodplain function with a secondary focus on temperature or water quality.

V. Project Objectives—Biological

Biological objectives describe the anticipated biological response from the project and should be as quantitative as possible. Indicate which species and life stages are the focus of the project. Describe specifically the general condition of the target species in your watershed relative to the historical abundance. The condition of the species should be indicated using the categories in the drop-down box. Species condition categories are defined on the last page of this form. Biological objectives should include the following information: (1) an estimate of the expected contribution of the project in terms of potential adult returns, to the extent possible (and an explanation of how the estimate was developed); and (2) an explanation of how the biological objective for the species is addressed by the action relative to the environmental limiting factors (e.g., the biological objective of an action might be to increase egg incubation survival in a watershed that is currently limited by sediment levels).

VI. Project Cost

To the extent possible, estimate the capital cost of the project, the annual operating and maintenance (O&M) cost, a description of annual O&M activities, and the project lifetime (i.e., how many years O&M activities are expected, including indefinitely, and how long until you expect the project to provide benefits). Provide any confirmed or potential funding partners, or opportunities for cost sharing with other funders or between projects. Also, identify any confirmed or potential partners that might provide maintenance support for the project (funding support or labor support).

VII. Schedule

Describe the project schedule, including a potential start date, construction period, and environmental and biological response times (i.e., the expected time to realize environmental and biological benefits). The last points refer to the maturation period for the project during which time environmental conditions develop. For example, it may take 50–100 years before full environmental benefits (e.g., shading, channel stability, water quality) of planting riparian trees are realized.

VIII. Feasibility

Describe the feasibility and challenges of the project. Feasibility issues should include primarily technical issues, success of projects utilizing similar technology, and particular challenges posed by the specific project. Other issues of feasibility that may be included are challenges associated with property ownership, permitting, zoning, and other social-economic-legal issues.

IX. Project Support

Describe the support or potential conflicts associated with the project. Specifically, provide supporting and cooperating entities (e.g., agencies, non-governmental organizations). Are there cooperating agencies or groups, aside from the potential funding partners mentioned previously? Describe the degree of local support and any known opposition or conflicts with other parties.

X. Supporting Documents

Provide full references for each citation used to support the information presented in this questionnaire for your project. At a minimum, a reference should include the author(s) name; name of agency/organization (if applicable); title of the document; volume and title of journal, if the document is taken from a professional journal; and publisher, date, and location of publication.

Questionnaire

for

Information on Potential Projects to Support Spring-Run Chinook Salmon and Steelhead in the Sacramento River Basin for the Habitat Expansion Agreement

DUE: Thursday, April 30, 2009

Send completed questionnaires to hea@water.ca.gov

I. Contact Information

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II. Project Description

Project Name:	Expansion of Yuba River Salmon and Steelhead Habitat by Reintroduction and Habitat Restoration into the Upper Yuba Watershed
Reference No. or New:	New
Project Location:	Upper Yuba River upstream of Englebright Dam

Project Description:

Project Description: Upper Yuba River Reintroduction Options

The following information is provided to the California Department of Water Resources and Pacific Gas & Electric (HEA Licensees) to generally describe a comprehensive anadromous fish reintroduction program for the upper Yuba River watershed, and how the 2007 Habitat Expansion Agreement can be fulfilled by becoming a key component of a collaborative, watershed-based program dedicated to successful reintroduction of anadromous salmonids to the upper Yuba River basin. While certain details and commitments necessary to fully carry out such a program are as yet unknown and subject to future agreements and adaptive management, the overall goal of such a

program- attaining a robust and sustainable reintroduction of spring-run Chinook and steelhead in the upper Yuba River - shall remain constant. It is NMFS' intent to proceed with development of a Reintroduction Plan in a collaborative fashion with those stakeholder parties who express genuine interest in helping to achieve the overall goal. The HEA Licensees are invited and encouraged to join with NMFS in a leadership role in this endeavor.

The HEA Licensees have specific requirements under the 2007 Habitat Expansion Agreement (HEA) to accomplish an expansion of Central Valley spring-run Chinook (and Central Valley steelhead) habitat sufficient to meet a Habitat Expansion Threshold (HET) of 2,000 – 3,000 adult spring-run Chinook salmon. The program described herein contains some elements that may be applicable to the HEA Licensees alone, and some elements that may be accomplished via a phased development- in collaboration with NMFS and other parties who have interests and responsibilities for anadromous fish conservation in the Yuba River. It is recommended that the HEA Licensees engage with NMFS (and consultants R2 Resources, Stillwater Sciences) to craft an HEA-specific component of the overall reintroduction plan. This effort should also be developed in concert with other activities among the various parties engaged in the recently formed watershed group: the "Yuba Multi-Party Forum." However, in NMFS view, it is not necessary to gain full commitment from all of the other stakeholder parties because certain discrete "HEA actions" can be undertaken without causing any immediate alterations in land use or water management practices.

This proposal involves a phased, collaborative project for the reintroduction of spring-run Chinook salmon and steelhead in targeted reaches of the upper Yuba River watershed - upstream of project dams (Englebright, New Bullards Bar, and Our House), and in the South Yuba River, approximately up to the major tributaries of Canyon Creek and Poorman Creek. The Project will formally begin in 2011 with the adoption of a final Habitat Expansion Plan, subject to NMFS acceptance, that incorporates or substantially accommodates the key elements described herein, and is consistent with the (forthcoming) Upper Yuba River Reintroduction Plan for spring-run Chinook and steelhead.

An "Upper Yuba River Reintroduction Program Steering Committee" shall be convened to oversee and direct the implementation of the phased reintroduction program. Representation on the committee shall consist at a minimum of: HEA Licensees (PG&E and CDWR), NMFS, and CDFG. Other Agency or non-governmental representatives may be included upon the recommendation of NMFS and the HEA Licensees, and with expressed interest of these other parties. For example, other prospective members of the Program's Steering Committee are: Yuba County Water Agency, Nevada Irrigation District, Pacific Gas & Electric, U.S. Army Corps of Engineers, U.S. Forest Service, U.S. Fish &Wildlife Service, members of the existing "River Management Team," Native Tribes, and Conservation Groups. The Steering Committee shall appoint a technical advisory committee to assist with matters of science, engineering, technology, operations, and evaluations and monitoring.

The project's phases will proceed as follows:

Phase 1: Conduct Fish Passage Research, Habitat Modeling Assessments, and Development Operational Reintroduction Plans

Phase 1 is currently underway via three NMFS-sponsored contracts:

- Conceptual engineering plans - Montgomery-Watson-Harza, Inc. (2/2010)
- Habitat modeling and assessments - Stillwater Sciences, Inc. (11/2010),
- Anadromous salmonid reintroduction plan - R2 Resources, Inc. (12/2010)

Fish Passage Engineering:

The Montgomery-Watson-Harza, Inc. study (Yuba River Fish Passage: Conceptual Engineering Project Options) is completed. This information was made available to the HEA Licensees in February 2010. The purpose of the study was to perform a conceptual survey of habitat suitability and fish passage opportunities in the Upper Yuba River basin; and to identify an array of potential engineering options that may be applicable to future volitional or 'collection and transport' fish passage operations.

Habitat Assessments and Modeling:

II. Project Description

Stillwater Sciences, Inc., in collaboration with NMFS, is currently performing a more detailed, science-based habitat assessment of the upper Yuba basin - including the North, Middle, and South Yuba Rivers, and their major tributaries. This assessment features the application of a salmonid population dynamics model ("RIPPLE") as a tool to help inform salmonid population restoration and recovery planning. (www.stillwatersci.com/tools.php?tid=24). Additional existing information, including that which was developed in the Upper Yuba Rivers Studies Program and other relevant sources, is also being considered in connection with modeling development and results.

The expected completion date for the habitat assessment component is November 2010.

Comprehensive Upper Yuba Reintroduction Plan:

R2 Resources, Inc., along with support from Stillwater Sciences (and other collaborating parties), is currently developing a reintroduction plan for anadromous salmonids in the upper Yuba River. The expected completion date is December 2010. At this stage, NMFS views the development of the reintroduction plan as a "living document," in the sense that it will provide a scientific foundation - upon which others may build future, collaborative reintroduction implementation efforts. Other relevant information, from previous watershed studies, on-going FERC-relicensing studies, and planned field work, is also being assembled and considered in the formulation of the Reintroduction Plan.

The Anadromous Salmonid Reintroduction Plan for the Upper Yuba River is envisioned by NMFS as a "living document," and shall be updated as appropriate in light of new information and developments affecting the direction and implementation of the fish passage reintroduction program.

Anticipated Timeline: September 2009 - December 2010

Phase II: Early Pilot Reintroduction Experiments; Planning and Permitting for Short Term and Long Term Reintroduction Program

NMFS and R2 Resources, Inc., in cooperation with other collaborators to the reintroduction plan, will provide a detailed plan for a program that can begin to reintroduce anadromous fish into targeted areas of the upper watershed within 1-2 years. The goal of this “experimental reintroduction phase” is to commence strategic fish passage and reintroduction activities on a limited scale to test, develop, and refine effective program elements in support of future habitat expansion actions and full-scale fish passage facilities. The experimental phase will use a combination of pre-determined techniques and adaptive management, in such a way as to allow for: (a) controlled deployments of fish passage technologies and human resources, (b) use of experimental (hatchery) fish stocks, (c) use of temporary fish passage technologies and existing infrastructure, (d) extensive evaluation and monitoring of fish movements and behaviors, in order to evaluate reproductive, rearing, migrating, and escapement success, and e) development of collection, transport, and survival metrics, and other barometers of success, e.g.- meeting the HEA’s Habitat Expansion Threshold.

The Reintroduction Plan document will determine the specific elements of the pilot reintroduction experiments, including such details as identifying suitable fish stocks, transport and collection methods, and the sequencing and scheduling of experiments. The plan will describe detailed approaches, methods, and materials required to accomplish the goals of the experiments. While early pilot experiments are not necessarily intended to result in full life-cycle reproduction (i.e.- spawning to escapement of discrete cohorts), marking and monitoring techniques will be employed to track and enumerate experimental fish in all life stages, as necessary to provide science-based management information.

The project(s) will involve engineering design and implementation of "collection and transport" fish passage operations - in order to facilitate the movement of both Chinook salmon and steelhead in an efficient and coordinated fashion. While specific and detailed fish passage facility designs and operational schemes need to be further developed by the HEA Licensees' and others, NMFS has already produced conceptual level engineering plans that offer a variety of conceptual options for passage in the upper Yuba River (Montgomery-Watson-Harza, Inc. 2010). It is possible that certain collection and transport operations in the upper Yuba River may be supplanted

by future volitional or semi-volitional fish passage methods; but these are not within the immediate scope of responsibility of the HEA Licensees, and therefore are not further discussed in this brief program overview.

In parallel development with this pilot reintroduction phase, contracts will commence for engineering designs of full-scale, operational fish passage facilities, and when final design of facilities is accepted by both HEA Licensees and NMFS-Engineering Branch, the project will go out for bid and construction. Also during this period, the Steering Committee will begin assembling information and documentation needed for NEPA/CEQA analysis, as well as other relevant regulatory approval processes, including ESA coverage for future introduction of naturally spawning stocks of listed species, as required by NMFS.

Preliminary Target Reintroduction Experiment Areas:

(i) North Yuba River - upstream of New Bullards Bar Dam (estimated suitable mainstem habitat: 32 miles)

(ii) Middle Yuba River - upstream of Our House Dam to the Kanaka and Wolf Creek reaches (estimated potentially suitable mainstem habitat: 13 miles)

(iii) South Yuba River - upstream from Englebright Lake confluence to the Poorman Creek and Canyon Creek reaches (estimated potentially suitable mainstem habitat: 35 miles)

(iv) North Yuba and Middle Yuba River Reaches- downstream of New Bullards Bar Dam – in particular, the (approximate) one mile reach immediately downstream of the Colgate Powerhouse, and the (approximate) nine mile reach upstream of Colgate Powerhouse to New Bullards Bar Dam

Note: The preliminary target areas were selected based on best available scientific information, watershed analysis conducted on numerous site visits, and NMFS' best professional judgment regarding the potential immediate and incremental benefits of discrete and combination actions; actual targeted reintroduction areas will be determined after the Reintroduction Plan is more fully developed. In the interim, there is an opportunity for DWR and PG&E to join NMFS in a leadership role to pursue some of these potential actions as elements of the Final Habitat Expansion Plan.

These preliminary target areas are divided into distinct component “action areas” representing specific reaches of interest in the upper Yuba River that may offer opportunities for both immediate results and incremental, science-based program improvements over time. Exploiting some or all of these target areas would result in greater salmonid populations more quickly and over time, as well as optimize the cost-benefit ratio and overall programmatic effectiveness. Other reintroduction priority actions may be introduced for consideration during the further development of Phase I and Phase II activities.

At this time, the anticipated role of the HEA Licensees in Phase II of the reintroduction implementation plan is to:

1) Obtain easements from the U.S. Army Corps of Engineers, and permission of CDFG and NMFS, to utilize the existing ladders at Daguerre Point Dam for purposes of capture of upstream migrating adult spring-run Chinook and steelhead; and for collection, enumerating, marking, tracking, and monitoring of downstream migrating smolts

2) Manufacture a temporary collection facility to operate in conjunction with the existing Daguerre fish ladder(s). Manufacture and construct interim holding, counting, handling, marking, and transport facilities adjacent to the Daguerre fish ladder structure

3) Make other site improvements as necessary to conduct effective collection and transport operations

4) Obtain arrangements with DFG’s Feather River Fish Hatchery (or Coleman Fish Hatchery) to secure anadromous fish eggs, fingerlings, and adults for transport and strategic placement in the upper Yuba River in support of the Reintroduction Plan goals and objectives. All arrangements for fish stocks pursuant to Phase II experimentation will be conducted under an ESA S10(a)1(a) research permit, where applicable, or as otherwise authorized by NMFS.

5) Collect hatchery stock – fertilized eggs, fingerlings, or adults – and transport to specific locations in the upper Yuba River in accordance with Phase II of the Reintroduction Plan.

6) Collect Chinook or steelhead adults, at the Daguerre location, for purposes of obtaining adults for

spawning and fertilized eggs. In preparation for hatch box out planting in designated areas of the upper watershed, or, if and when directed by NMFS as part of the Reintroduction Plan, collect and transport adult spring-run Chinook and/or steelhead into the specified upper reaches of the Yuba River. These actions must be in accordance with the forthcoming, NMFS authorized Reintroduction Plan.

7) Construct or otherwise ensure suitable conditions exist for release of adults or juveniles in the designated areas of the upper watershed; or ensure that hatch box placements are conducted according to best scientific practices, and as approved by NMFS and CDFG. Conduct annual redd surveys and habitat assessments, including fluvial geomorphic and hydrology studies in spawning and rearing reaches.

8) Establish interim collection and marking facilities in the upper Yuba River for emigration of smolts

9) Establish state-of-the-art fish transport systems to carry salmonids to destinations and release in good condition

10) Establish monitoring site in the lower Yuba River, near confluence with the Feather River capable of assessing smolt annual and steelhead (kelt) outmigration

11) Establish a state-of-the-art monitoring, marking, tracking system to assist in the evaluation of the program, and to ensure that reliable and accurate management information is available to guide adaptive management decisions. The system will be developed in collaboration with NMFS, CDFG, and other relevant parties as part of the larger Reintroduction Plan protocol.

12) Other production or validation actions, not adequately captured here, consistent with the forthcoming Reintroduction Plan as necessary for program success, and within the boundaries of the HEA requirements of meeting and sustaining a habitat expansion to meet the HET.

Actions or operations not completed at the end of the Phase II timeline shall be adopted for implementation and continuation during Phase III, to the extent that they are: a) subject to ongoing adaptive management modifications, b) relevant in terms of the most updated version of the Reintroduction Plan, and c) continue to meet with NMFS acceptance.

Anticipated Timeline: January 2011- December 2013

Phase III: Short Term Reintroduction Plan Implementation with Adaptive Management Elements

Following Phases I & II, the program will shift its emphasis from a pilot reintroduction experiment to the actual build out and operation of state-of-the-art, permanent fish passage facilities. This transition will mark the end of experimental reintroduction efforts and the beginning of a full-scale production fish passage program. Phase III will begin servicing specific reaches of the upper Yuba River according to the adjusted time line and scheduling considerations in the updated Reintroduction Plan. The extent of operations and selection of specific reaches required for fulfillment of the HEA Program will be clarified after further analysis by the HEA Licensees and NMFS, using information that will become available from the aforementioned studies, adaptive management considerations, and with the final approval by NMFS within the context of the HEA section 4.2.3, NMFS approval criteria. The goal of meeting or exceeding the HET for spring-run Chinook and steelhead must be substantially met during this phase.

This phase will take place during years 3-6.

The Short Term Reintroduction Implementation Program will place its emphasis on the most feasible and productive reintroduction efforts as identified by the existing scientific information, the results of the earlier Pilot Reintroduction Program, and other adaptive management considerations. Determination of the “most feasible and productive reintroduction efforts” will be made as a result of either: validated enumeration from accepted monitoring results or, in absence of acceptable validation -NMFS professional judgment. The Steering Committee will make recommendations regarding the specific reaches and actions to be undertaken (subject to approval by NMFS). The Reintroduction Plan will include consideration of not only existing viable habitats, but also contingency plans that may yield additional or expanded suitable habitats should restoration actions be undertaken to expand the capacity for anadromous fish habitat in the upper Yuba River, e.g.- negotiated supplemental in-stream flow releases, reservoir facilities modifications and/or management actions that improve downstream thermal

conditions, spawning substrate rehabilitation actions, fish passage improvements at existing partial barriers, constructed fish passage facilities or enhanced capabilities, technological advances, or other habitat restoration actions, etc.

At this time, the anticipated role of the HEA Licensees in this phase of the Reintroduction Plan is to:

1) Implement any actions not completed from previous Phases that remain relevant and necessary for Program success and/or contribute to verifiable attainment of the HET.

2) Implement a production fish passage program to begin meeting the goal set by the HEA's Habitat Expansion Threshold (HET) - featuring interim fish collection and transport operations for effective upstream and downstream passage of adult and juvenile spring-run Chinook and steelhead into the following areas:

(a) Upper North Yuba River (upstream of New Bullards Bar reservoir);

(b) Middle Yuba River (upstream of Our House Dam in the Kanaka and Wolf Creek reaches)

(c) North Yuba River – (downstream of Colgate Powerhouse) – candidate reach for on-going actions; contingent upon results of Phase I & II studies and experimentation, a coordination or support role with other parties is envisioned at this time

(d) North Yuba River – (downstream of New Bullards Bar Dam) – candidate reach for on-going actions; contingent on negotiated or regulated in stream flow releases from the Dam over the course of the hydropower relicensing process or within the context of a negotiated settlement.

(e) Potential Purchase of North Yuba, Middle Yuba, or South Yuba in-stream supplemental flow alternatives – within the context of the Yuba Multi-Party Forum - or other direct multi-party negotiations. This might involve negotiated payments in exchange for supplemental cold water flow releases from any of the YCWA or YBDS project reservoirs. To the extent the hydropower licensees wish to engage in such novel approaches to habitat restoration, NMFS agrees that water purchases may be explored and may be acceptable as a partial contribution toward the HET, provided NMFS deems that:

- sufficient cold water flow releases can be guaranteed from the facilities currently controlled by Yuba County Water Agency with proper frequency, magnitude, duration, and timing
- An aggressive and scientifically sound habitat restoration program is undertaken to rehabilitate the reach between New Bullards Bar Dam and the Colgate powerhouse. This includes the restoration and maintenance of suitable spawning substrates and in-stream wood and other natural

In-stream structures for habitat enhancement.

- Agreement and commitment on the part of the HEA Licensees, or another capable and responsible party or parties, to ensure safe, timely, and effective fish passage is maintained in perpetuity within this reach.

These proposed habitat enhancement areas where either substantial evidence points to the existence of suitable spring-run Chinook habitat conditions; or there is potential for reasonable and realistic negotiated and cooperative agreements to effect necessary habitat improvements – potentially yielding large, near term returns benefits at relatively reduced costs. The forthcoming Reintroduction Plan will further help inform and refine these designations and contingencies. The Plan is expected to be available before the end of 2010.

3) Participate in, or support on-going, collaborative activities involving reintroduction feasibility in the South Yuba River, depending on progress toward additional fish passage as generated by the Yuba Multi-Party Forum, or other regulatory or voluntary reintroduction programs. While the South Yuba may or may not prove to support substantial spring-run Chinook under current flow management regimes, NMFS considers the South Yuba as potentially suitable habitat for steelhead reintroduction, given the information available at this time. Future information from FERC licensing studies, more extensive habitat assessments, modeling results, or other legitimate sources may improve our understanding of the South Yuba habitat potential. The HEA Licensees may assist in the initiation of a South Fork reintroduction effort, but a long-term juvenile salmonid collection operation (downstream

migrations) from South Fork progeny would likely require additional resources beyond the scope of the HEA's requirements.

Anticipated Timeline: January 2013 - January 2016

Phase IV: Long Term Reintroduction Implementation and Management Program with Adaptive Management Elements

Using adaptive management lessons, established operations frameworks, cooperative partnerships, and management information gained from previous phases, the Comprehensive Program will evolve into a permanent operation beginning in years 6-10. The operations and management framework will require an on-going commitment of resources for operations and maintenance, oversight and technical committees, qualified and trained personnel, and an adequate budget to continue fish passage activities and key program functions into the indefinite future.

- Management functions will involve: annual planning, permitting, performance metrics, budgeting, scheduling, reporting, evaluations, outreach, education, and other similar activities.
- Operations functions will involve: safe, timely, and effective collection and transport operations to and from designated permanent sites and facilities, adaptation of new or improved technologies or techniques over time
- Maintenance functions will involve the preventive and corrective maintenance of facilities and equipment necessary to maintain full operational capabilities
- Regulatory functions will involve the adherence to any lawful regulatory mandates that may be in effect

The HEA component of the long-term, comprehensive reintroduction plan will be responsible for on-going operations, maintenance, and other activities such that a minimum population of 2,000-3,000 spring-run Chinook salmon are maintained at all times , based on the independent actions attributable to the HEA Licensees, and not other reintroduction or habitat restoration actions by others. The specifics of how multiple, concurrent, or additive fish passage and habitat restoration actions will be quantified or measured will need to be developed more fully over time; but it is likely that many actions described herein can be undertaken with discrete and separable results, provided adequate monitoring and evaluation measures are put in place by the HEA Licensees or others. Regardless of any of these perceived or real ambiguities at present, there is enough quality salmonid habitat in the upper Yuba River watershed – either immediately accessible or reasonably recoverable- to ensure that the HET will be met and the HEA obligations can be fulfilled, provided the measures described are ambitiously and professionally implemented without undue delay.

Actions or operations not completed at the end of the Phase III timeline, shall be adopted for implementation and continuation during Phase IV, to the extent that they are: a) subject to ongoing adaptive management modifications, b) still relevant in terms of the most updated version of the Reintroduction Plan, and c) continue to meet with NMFS acceptance.

Anticipated Timeline: 2016-2057 (and beyond)

Disclaimer: This preliminary HEP-Project Description is supplied for information and planning purposes at this time. The reintroduction planning process is in development; thus the specific elements are subject to change or modfications. Nothing in this document shall be construed to exempt PG&E from any additional protective or conservation measures as may be prescribed or set forth in other regulatory proceedings pertaining to the Yuba River. It is subject to further review and comment by the HEA Licensees and modifications by NMFS as appropriate; so that the information herein can be translated into a final Habitat Expansion Plan that is supported by both Licensees and ultimately accepted by NMFS. The intention is that the final HEP - involving anadromous fish passage to and from the upper watershed - will become a first, major action not only to satisfy the requirements of the Feather River habitat Expansion Plan, but also to serve as a catalyst for implementation of additional actions within the framework of the Comprehensive Anadromous Salmonind Reintroduction Plan for the Upper Yuba River.

III. Species Limiting Factors

In this section, describe the limiting factors for spring-run Chinook salmon and steelhead in your watershed. The last page of this questionnaire defines the limiting factors.

Limiting Factors	Description (from back page)	Rank
☒ **Channel Form**	Channel incision and simplification are likely due to inhibition of the highest magnitude channel-forming flows in all but the wettest of seasons, when spills occur from New Bullards Dam over appreciable duration. Moderate and smaller floods are less likely to be inhibited due to the much smaller capacity of the Middle and South Yuba dams.	Select Rank
☒ **Channel Unit Types**	Supply of large woody material from the upper watershed is likely inhibited by several upper Yuba dams, and then its transport to the lower Yuba is interrupted by Englebright Dam. Reductions of large woody material throughtout the upper and lower watershed affects fish cover availability. Loss in side-channel habitats of the lower Yuba River contributes to loss of channel complexity.	Select Rank
☒ **Substrate**	Recruitment of coarse substrates is interrupted to the lower North Yuba by New Bullards Dam, and to the lower Middle Yuba by Our House and Log Cabin dams. Probably to a lesser extent in the upper Middle Yuba by Jackson Meadows and Milton dams, and in the South Yuba by Spaulding Dam. Abundant coarse sediments were placed in the lower Yuba River during hydraulic gold mining prior to construction and retention behind Englebright Dam. Lack of supply recruitment to the uppermost 1-mile reach downstream of Englebright Dam is likely.	Select Rank
☒ **Structure**	Channel simplification in the lower Yuba, due to incision.	Select Rank
☒ **Flow**	Inhibition of the highest magnitude channel-forming flow contributions from the North Yuba occurs in all but the wettest of seasons, when spills occur from New Bullards Dam over appreciable duration. Floods of moderate and smaller magnitude are less likely to be inhibited due to the much smaller capacity of the Middle and South Yuba dams. However, the South Feather, Yuba-Bear, and Drum-Spaulding hydroelectric projects Spring attraction flows, and flows to maintain holding and spawning water are natural limiting factors for spring-run Chinook populations. The Yuba-Bear and Drum-Spaulding projects divert more than 400 TAF annually from the Middle and South Yuba watersheds thus constraining the spatial and temporal habitat in these streams.	High
☒ **Temperature**	Water temperature in lower reaches of all three forks of the Yuba, as well as the upper Main Yuba above Colgate, currently exceeds thresholds of suitability for summer rearing, summer holding and early fall spawning habitat. Long reaches of the upper North Yuba remain suitable, as do upper reaches of the Middle Yuba. The Middle and South Yuba, as well as the upper Main could be made more suitable through flow augmentation.	High
☐ **Water Quality**		Select Rank
☒ **Passage**	Englebright Dam and the Narrows I &II hydropwoer facilities	Critical

III. Species Limiting Factors

	constitute a complete barrier to the entire upper watershed. New Bullards Bar Dam is a barrier to the North Yuba at RM 1. Our House Dam is a barrier to the Middle Yuba at RM 20	
☐ **Riparian/Floodplain**		Select Rank

Source Documents:

Upper Yuba River Watershed Chinook Salmon and Steelhead Habitat Assessment (UYRSP 2005). SYRCL temperature monitoring data and unpublished watershed assessment products were used as the basis for some statements.

Additional Notes:

The Upper Yuba Studies Program Habitat Assessment identified that the only natural barriers to migration at flows greater than 400 cfs in were at RM 34 in the Middle Yuba and RM35 in the South Yuba

IV. Project Objectives—Environmental

In this section, describe how your project will affect one or more of the limiting factors for spring-run Chinook salmon or steelhead described above.

Limiting Factor	Description and Objective	Focus
☐ **Channel Form**		Select Focus
☐ **Channel Unit Types**		Select Focus
☐ **Substrate**		Select Focus
☐ **Structure**		Select Focus
☒ **Flow**	Augmentation of flows (as needed in the upper Main, Middle and South Yuba) for migration, holding, spawning and rearing habitat.	Secondary
☐ **Temperature**		Select Focus
☐ **Water Quality**		Select Focus
☒ **Passage**	To provide passage (up and down) between the lower Yuba River and any combination of the North, Upper Main, Middle and South Yuba river segments where suitable habitat exists to support viable populations.	Primary
☐ **Riparian/Floodplain**		Select Focus

V. Project Objectives—Biological

In this section, describe the objective(s) of your project relative to the goal of providing habitat for spring-run Chinook salmon and steelhead. Indicate the species and life stage that are targeted by the project. (It is okay to have more than one species/life stage target).

Target Species: ☒ Spring-Run Chinook Salmon **Population Status Specific to Watershed:** Extirpated

Target Life Stages:

☒ Spawning ☒ Egg Incubation ☒ Summer Rearing ☒ Winter Rearing

☒ Juvenile Emigration ☒ Adult Immigration ☒ Adult Holding

Description of Project Objectives:

Establish a viable and self-sustaining population (totaling at least 2000-3000 adults on average) utilizing at least two segments of the upper Yuba Watershed. Note: remnant population of spring-run Chinook exists in Lower Yuba River below Englebright.

Target Species: ☒ Steelhead **Population Status Specific to Watershed:** Extirpated

Target Life Stages:

☒ Spawning ☒ Egg Incubation ☒ Summer Rearing ☒ Winter Rearing

☒ Juvenile Emigration ☒ Adult Immigration

Description of Project Objectives:

Establish a viable and self-sustaining population (totaling at least 2000-3000 adults on average) utilizing at least two segments of the upper Yuba Watershed.

VI. Project Cost

Capital Cost:	Unknown pending preferred alternative of a Reintroduction Plan
Annual Operation and Maintenance Cost:	Unknown pending preferred alternative of a Reintroduction Plan
Annual Operation and Maintenance Description:	Unknown pending preferred alternative of a Reintroduction Plan
Project Lifespan:	HEA could be used for the first period of a project to proceed at least a long as new FERC licenses.
Project Partners (Funding):	PG&E< Nevada Irrigation District, Yuba County Water Agency, and others may partners as per outcome of current relicensing actions or future settlement agreements.
Project Partners (Maintenance):	Army Corps of Engineers and YCWA own structures involved. PG&E and Nevada Irrigation District (as well as possibly YCWA) will need to be responsible for delivery of augmented flows.

VII. Schedule

Proposed Start:	2011
Expected Time to Completion:	2013-2016
Expected Time to Realize Environmental Benefits:	2013-2016
Expected Time to Realize Biological Benefits:	2016-2020

VIII. Feasibility

Technical Feasibility:	Appears feasible according to conceptual engineering studies and perliminary habitat assessments. To be further identified in additonal fish passage studies, habitat assessments and modleing, and Reintroduction Plans.
Technical Challenges:	Many specifics are known, others to be answered by additional studies, pending a preferred alternative in the Final Habitat Expansion Plan, consistent with the development of a Comprehensive Reintroduction Plan
Related Projects:	Yuba Spawning Habitat Rehabilitation project would provide means to increase natal spring-run salmon population prior to major reintroduction program.
Ownership or Permitting Challenges:	Army Corp of Engineers is not currently proactive. YCWA relicensing to officially begin this summer.
Conflicts with Cultural, Zoning, or Other Issues:	None determined. Calling Back the Salmon Committee represents coalition of tribal and non-tribal groups with mission of restoring salmon populations to the Upper Yuba

IX. Project Support

Supporting Entities:	In addition to NMFS, other likely supporting entities are: USFS, USFWS, CDFG, SYRCL, Foothills Water Network, Tribes
Cooperating Entities:	To be determined
Degree of Local Support:	Calling Back the Salmon Committee and SYRCL have held several events over the last 4 years putting this project goal into the public forum. These events, including the Calling Back the Salmon Ceremony and the Spring-run Salmon Symposium indicate a broad degree of local support.
Known Opposition:	To be determined

X. Supporting Documents

Please provide a full reference for each citation used to support the information presented in this questionnaire.

Lindley, S.T., R.S. Schick, E. Mora, P. B. Adams, J. J. Anderson, S. Greene, C. Hanson, B. P. May, D. McEwan, R. B. MacFarlane, C. Swanson, and J. G. Williams. 2007. Framework for Assessing Viability of Threatened and Endangered Chinook Salmon and Steelhead in the Sacramento-San Joaquin Basin. San Fran. Estu. & Water. Sci.:5(1)(4). California Bay-Delta Authority Science Program and the John Muir Institute of the Environment.

National Marine Fisheries Service. 2009. Public Draft Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the Distinct Population Segment of Central Valley Steelhead. Sacramento Protected Resources Division. October 2009.

CALFED Bay-Delta Ecosystem Restoration Plan July 2000

Upper Yuba River Watershed Chinook Salmon and Steelhead Habitat Assessment. 2006 See http://www.watershedrestoration.water.ca.gov/fishpassage/projects/upperyuba.cfm

NOAA-TM-NMFS-SWFSC-369 2005 Historical and Current Distribution of Pacific Salmon in the Central Valley

Note that distributions in the above NOAA tech memo have been revised after more in-depth work of UYRSP and additional GIS analysis by Technical Recovery Team (Wantuck personal communication).

Definitions of Limiting Factors for Spring-Run Chinook Salmon and Steelhead

Channel Form

This attribute describes changes to the channel, including incision, aggradation, diking, armoring, and other modifications of the channel adversely affecting spring-run Chinook salmon and steelhead.

Channel Unit Types

Examples of geomorphic features of the channel that form habitat types for spring-run Chinook salmon and steelhead are pools, riffles, glides, and runs. This attribute describes changes in the frequency and size of such features. For example, removal of large wood may reduce the frequency of pools, presence of steps, or retention of gravel for riffles.

Substrate

This attribute describes changes in the composition of the substrate of the stream, including increase in fine sediment and lack of gravel recruitment.

Structure

This attribute describes the loss of structural elements in the stream such as large wood, boulders, undercut banks, and so on. Loss of structure results in a simplification of the channel and influences Channel Form and Channel Unit Types.

Flow

This attribute addresses modification of the flow regime, including decrease in summer low flow, increased "flashiness," and dewatering of the channel as a result of withdrawals.

Temperature

Change in water temperature can be attributable to human actions such as removal of riparian shading. This attribute describes the increase in summer water temperature and the loss of temperature refugia (springs or groundwater) as a result of human actions.

Water Quality

This attribute pertains to the input to the stream of toxins or pollutants that produce adverse impacts on spring-run Chinook salmon or steelhead. This can include chemical pollutants such as fertilizer and pesticides and nutrient sources such as cattle and feedlots.

Passage

This relates to the effect of impediments to adult or juvenile migration of spring-run Chinook salmon or steelhead, including dams, culverts, channel dewatering, and other structural and channel modifications. Please describe the location of the passage impediment and describe the extent of impediment (i.e., a complete or partial blockage to migration).

Riparian/Floodplain

This attribute describes the loss of functionality of the riparian forest/vegetation and the connection of the stream to the floodplain during high water and flooding.

Population Condition Definitions for Section V. Project Objectives—Biological

Increasing

Adult returns of the target species to the watershed have generally been increasing over the last several years; expectations are that the species is displaying characteristics of a rebuilding or healthy population.

Stable

Adult returns of the target species to the watershed show no clear trend over the last several years.

Decreasing

Adult returns of the target species to the watershed are declining over the last several years; the decline in abundance is a cause of concern and characteristic of a potentially unhealthy population.

Intermittent

Adult returns of the target species are occasionally seen in the watershed, but there is no viable or sustained population in the basin.

Extirpated

The population has been eliminated from the watershed although the species was present in the past.

Never Present

The species has never been known to occur in the watershed.