



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**

NATIONAL MARINE FISHERIES SERVICE  
Southwest Region  
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FEB 18 2010

In response, refer to:  
SWR/F/SWR3:RW

Director Hydro Licensing, Power Generation  
Pacific Gas and Electric Company  
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San Francisco, California 94177

Chief, Division of Environmental Generation  
Department of Water Resources  
P.O. Box 942836  
Sacramento, California 94236

Subject: Response of NOAA's National Marine Fisheries Service to the November 2009 Draft Habitat Expansion Plan submitted by the California Department of Water Resources and Pacific Gas and Electric Company

Dear Licensees:

Thank you for providing a copy of your Draft Habitat Expansion Plan (DHEP) for review by NOAA's National Marine Fisheries Service (NMFS) and other stakeholders who are Parties to the 2007 *Habitat Expansion Agreement for Central Valley Spring-Run Chinook Salmon and California Central Valley Steelhead* (HEA), applicable to several hydroelectric projects in the Feather River watershed. The HEA Steering Committee is to be commended for their diligent search for prospective projects that will potentially satisfy the requirements of the HEA. Over the course of 12 months, the Committee identified numerous salmonid habitat restoration projects which may be completed to help contribute to the recovery of Central Valley spring-run Chinook salmon and steelhead populations.

As you know, the HEA was a negotiated agreement among Parties concerned with the outcome of FERC relicensing actions pertaining to your respective hydroelectric projects operating in the Feather River watershed. The primary hydroelectric project impact addressed by the HEA is the loss of well over one hundred miles of historic Feather River salmonid habitats due to man-made migration barriers (dams and other project structures) and the alterations to the aquatic environment caused by project operations and maintenance. The basis of the agreement was an understanding that the California Department of Water Resources (DWR) and Pacific Gas and Electric Company (PG&E) would identify and implement a program to restore spring-run



Chinook salmon habitat elsewhere in the Sacramento River watershed such that the newly gained habitat: (1) fully mitigates for the loss of habitats in the Feather River due to project-related impacts, (2) meets the conditions and criteria identified within the agreement, and (3) is ultimately subject to acceptance by NMFS within the context of the provisions of the agreement. Consistent with the HEA section 4.1.3 (Draft Habitat Expansion Plan), the Licensees fulfilled the task of producing a Draft Plan and distributed it among the Parties on November 20, 2010. A 90-day period ensued wherein the Parties were provided an opportunity to review and comment on the draft plan. Within 90 days after the close of this review and comment period on the DHEP, the HEA calls for the Licensees to prepare and submit a Final Habitat Expansion Plan to NMFS for approval within 90 days, unless a time extension is agreed to between NMFS and the Licensees.

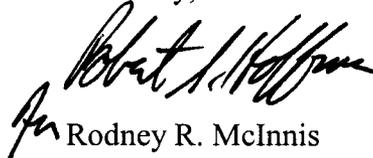
After reviewing the DHEP, *NMFS determines that there are significant areas of concern that need to be reconciled before moving forward with a Final Habitat Expansion Plan that can meet the approval requirements of the HEA.* Appendix A of this document addresses some of the key reasons for our conclusions and offers our recommendations for moving toward a successful resolution of our concerns.

In light of the deficient status of the DHEP, *NMFS recommends a formal time extension of six months* for completion of the Final Habitat Expansion Plan, consistent with HEA sections 4.2 and 5 (Timeframes). The “good cause” we cite for this extension is to allow time for NMFS to confer with the Licensees and other Parties over the reasons why we believe the DHEP is deficient, and to introduce new information and another alternative that NMFS believes will meet the requirements of the HEA.

NMFS proposes to convene a meeting among all interested Parties at the earliest opportunity to discuss ideas for resolving our disparate viewpoints successfully so that the HEA process can resume in a productive and viable fashion.

If you have questions about NMFS’ response to the DHEP, please contact Mr. Rick Wantuck, NMFS Regional Hydropower Program Supervisor, at 707-575-6063.

Sincerely,

  
Rodney R. McInnis  
Regional Administrator

Enclosure

cc: Bob Hoffman, HCD, NMFS, Long Beach, CA  
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HEA Signatory Parties

**Response of NOAA's National Marine Fisheries Service  
(NMFS) to the November 2009 Draft Habitat Expansion Plan  
submitted by the California Department of Water Resources  
and  
Pacific Gas and Electric Company**

**1.0 Introduction**

As explained in the 2007 *Habitat Expansion Agreement for Central Valley Spring-Run Chinook Salmon and California Central Valley Steelhead* (HEA), the purpose of the HEA is to fully mitigate for the unmitigated impacts resulting from the blockage of fish passage caused by the Feather River Hydroelectric Projects:

"Except as specifically provided, this Agreement: (a) fully mitigates for any presently unmitigated impacts due to the blockage of Fish Passage of all fish species caused by the Feather River Hydroelectric Projects; and (b) resolves among the Parties during the term of this Agreement issues related to regulatory conditions for Fish Passage associated with or related to any of the Feather River Hydroelectric Projects in excess of the action(s) contemplated under this Agreement, including, but not limited to, issues (related to Fish Passage) arising under exercise of authority under the ESA (subject to Section 13 of this Agreement), California Endangered Species Act (subject to Section 13 of this Agreement), Sections 18, 4(e), 10(a) and 10(j) of the FPA, and Section 401 of the Clean Water Act, provided the Licensees are complying with their obligations under this Agreement. (p. 5)."

NMFS' view is that full mitigation should carefully consider the extensive habitat lost to California spring-run Chinook salmon and Central Valley steelhead resulting from the Feather River hydroelectric projects that are the subject of the HEA. These projects block access to what

was likely the most productive and largest spring-run Chinook salmon system in the Central Valley; and they create additional impacts to existing aquatic habitats resulting from the operations and maintenance of these facilities.

The Feather River is the only Central Valley watershed that historically supported four independent spring-run Chinook salmon populations (West Branch, North Fork, Middle Fork, and South Fork) (Lindley *et al.* 2004). The North Fork of the Feather River between Oroville Dam and Lake Almanor covers roughly 80 river miles. Factoring in the historic upstream limits for Chinook salmon on the West Branch, Middle Fork, and South Fork (see Yoshiyama *et al.* 1996), access to well over 100 miles of spring-run Chinook salmon habitat are blocked by Oroville Dam. The Central Valley steelhead is blocked from access to at least this much Feather River habitat (and probably much more, given the species' tendency to migrate to high watershed elevations).

The declining status of the California spring-run Chinook salmon and the Central Valley steelhead are evident. These species remain threatened with extinction despite implementation of many habitat improvement projects in the lower elevations of the Central Valley; within currently occupied habitat downstream of dams that block upstream passage (see <http://www.fws.gov/stockton/afpr/> to view projects undertaken by the Anadromous Fish Restoration Program). The options for fish passage for the Feather River Hydroelectric Projects that were contemplated during relicensing, if enacted, would have expanded anadromous access into higher elevation Feather River habitats; these options were set aside in lieu of implementing a Habitat Expansion Plan (HEP) under the HEA, that would expand habitat in the Sacramento River basin. Given the origins of the HEA, NMFS encourages development of a HEP that strongly favors expansion into habitats that are presently inaccessible, over actions that only

affect existing habitat. NMFS was pleased that the DHEP includes some proposals that expand habitat for anadromous species, and agrees in principle with these action types. However, among these action types, some are not HEA-eligible proposals and the remaining proposals do not appear to be of sufficient scale to meet the HEA's Habitat Expansion Threshold (HET) of 2,000 to 3,000 adult spring-run Chinook, either individually or collectively. Our comments on actions proposed in the DHEP regarding eligibility, ability to meet the HET, and other facets are found in sections below.

## **2.0 Goals and Objectives of the Habitat Expansion Agreement**

The HEA states at Section 2.1:

"The overall goal of this Agreement is to expand the amount of habitat with physical characteristics necessary to support spawning, rearing and adult holding of spring-run [Chinook salmon] and Steelhead in the Sacramento River Basin as a contribution to the conservation and recovery of these species. The expansion shall be accomplished through enhancements to existing accessible habitat, improving access to habitat, or other action(s) and, as stated in Section 1.2(a), is intended to fully mitigate for any presently unmitigated impacts due to the blockage of Fish Passage of all fish species caused by the Feather River Hydroelectric Projects."

In addition to the above general goal of the HEA, the specific goal and objective of the HEA is to increase the numbers of spring-run Chinook salmon and steelhead by meeting or exceeding the HET, as stated in relevant part at Section 2.2:

"The specific goal of the Agreement is to expand spawning, rearing, and adult holding habitat sufficiently to accommodate an estimated net increase of 2,000 to 3,000 spring-run [Chinook salmon] for spawning ('Habitat Expansion Threshold') in the Sacramento River Basin, as compared to the habitat available under any relevant 'Existing Requirements or Commitments' [this term is defined in HEA Section 3.2]. The Habitat Expansion Threshold is focused on Spring-Run [Chinook Salmon] as the priority species, as expansion of habitat for Spring-Run typically accommodates steelhead as well."

Currently occupied habitats are entirely downstream of major dams and mostly confined to the lower foothills and Central Valley floor. In order to successfully recover these species and ensure their survival and recovery over the next 50 or more years, the habitats for these species must be expanded upstream of some of the major dams and into the historic, higher-elevation, habitats. These historic habitats are located above dams in mountainous elevations where the habitat conditions remain highly viable for these species: year-round supplies of very cold water, little human impacts, ample riparian/forest habitat for shading, and sufficient amounts of spawning substrate and holding/rearing habitats. Thus, one could improve existing habitats on the Central Valley floor, but that may only be a temporary and limited solution. While there may be some detrimental impacts from future potential global climate change scenarios, the much more immediate, ongoing, and likely impacts will continue to result from ever increasing demands for human use of water resources, as well as the increasing anthropogenic impacts from an increasing human population in the lower foothills, the Central Valley, and other developed areas of California that are dependent on limited fresh water resources produced in the western Sierra Nevada mountain range. Therefore, actions in currently occupied habitats are much less likely to meet the goals of the HEA.

### **3.0 NMFS Support of Licensees' Process for Development of DHEP**

NMFS commends the Licensees for what has obviously been an extensive and diligent process to search for suitable projects that satisfy the conditions agreed to by the Parties who are signatories to the HEA. Many of the identified projects are certainly worthy of further consideration, but for reasons explained below – some of these projects are ineligible for consideration under the provisions of Section 3 of the HEA, and others do not meet either the

specific selection, evaluation, or acceptance criteria – or the current NMFS management objectives articulated in our Draft Central Valley Recovery Plan .

The Licensees' Steering Committee called its first public HEA meeting in December 2008. NMFS staff attended this meeting, and subsequently met with the Steering Committee and other parties on at least six occasions during the DHEP development phase. In addition, NMFS staff responded to numerous phone calls and e-mails from Steering Committee members to communicate and share information. From the outset, NMFS staff clearly expressed its viewpoints to the Steering Committee. On one occasion in late spring of 2009, NMFS program managers met in person with the DWR and PG&E hydropower managers to ensure that our interests and concerns were as transparent as possible.

Unfortunately, we find little evidence that NMFS' perspectives and interests regarding the HEA are embodied in the DHEP. Some of our fundamental concerns surround issues that are clearly matters of interpretation of the agreement, but we can find little support within the HEA for some key conclusions arrived at by the Steering Committee through the DHEP development process. Other matters of concern have to do with the opaque nature of the Steering Committee's techniques for scoring projects and estimating numeric contributions to the Habitat Expansion Threshold. These concerns and other relevant issues are discussed in greater detail in the following sections of this document.

## **4.0 NMFS Comments and Instructions Relative to Draft HEP Section 3.2, "Applying the HEA [Evaluation and Selection] Criteria"**

### **4.1 General Comments and Instructions - Evaluation Criteria**

#### **Pages 3-9 through 3-12, Section 3.2.2.**

In this discussion of applying the Evaluation Criteria under Section 4.1.1 of the HEA, NMFS has the following comments related to specific criteria (for clarity, we have used uppercase to indicate the Criteria below):

#### **(F) Separation (Genetic).**

The discussion here relates only to the spatial separation of runs – fall-run and spring-run Chinook salmon. However, HEA section 4.1.1(f) provides an evaluation criteria that calls for “*favorable spatial separation from other populations or runs to maintain genetic diversity by minimizing interbreeding[.]*” This section and the evaluation should be revised based on this criterion to include discussion and consideration of favorable spatial separation from other populations, not just other runs.

#### **(J) VSP/ESA Consistency.**

The discussion here relates only to consistency with the VSP concept. However, HEA section 4.1.1(j) also includes consistency with “*ESA recovery goals and recovery plan (as available), and expected contribution to species recovery (higher consistency and greater contributions are favored)[.]*” In October 2009, NMFS issued a Public Draft Recovery Plan for 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. This section and the evaluation should be revised based on this criterion to include

discussion and consideration of consistency with ESA recovery goals and this recovery plan, and expected contribution to species recovery, not just consistency with the VSP concept.

**(M) Available Stocks.**

The discussion here indicates that a more favorable score of 5 was given “[i]f an action would occur in a watershed with an independent, self-sustaining population[.]” However, HEA section 4.1.1(m) provides an evaluation criteria that calls for “favorable relative availability of appropriate stocks of Spring-Run and Steelhead for reintroduction.” There is no explanation why a more favorable score should be given for an action that would occur in a watershed with an independent, self-sustaining population, compared to the text of the criterion that provides “...relative availability of appropriate stocks.” For example, there is no explanation why appropriate stocks would be any less available for an action that would occur in watersheds with extant, remnant populations. In addition, providing a greater score based on this factor appears contrary to NMFS’ approval criterion in HEA section 4.2.3(c) that the action “supports establishing a geographically separate, self-sustaining population of Spring-Run[.]” This section and the evaluation should be revised based on this criterion accordingly.

**(N) Actions Taken by Others.**

The discussion here relates only to actions taken by others. HEA section 4.1.1(n) provides an evaluation criteria that calls for a “low expectation for the action to be undertaken by the Licensees or others in the near future[.]” This section and the evaluation should be revised based on this criterion to include discussion and consideration of a low expectation for the action to be undertaken by the Licensees, not just a low expectation for the action to be undertaken by others, especially as this criterion relates to the Battle Creek Salmon and Steelhead Restoration Project.

## **4.2 Comparison of Scoring/Ranking of Evaluation Criteria for Upper Yuba River "Trap & Haul" Actions**

### **4.2.1 Introduction**

NMFS has concerns about certain aspects of the scoring process that yielded the Licensees' recommended actions. Regardless, NMFS advises that because most of these choices are ineligible under HEA section 3; their overall high rankings may be a moot point. In addition, while two of the Three Creeks Actions - Antelope and Big Chico creeks - are eligible, there are still many impacts to listed salmonids occurring in the lower watersheds of these creeks which may tend to negate or impair the purported benefits of implementing these two small actions (see comments on Big Chico Creek and Antelope Creek actions).

The scoring/ranking process applied Evaluation Criteria to the "Short List of Potential Actions (Appendix C3) to create the "Ranked Preliminary List of Potential Actions" (Appendix C4) and then the application of the "Selection Criteria" to C4 created the "Ranked List of Viable Actions" ("with Selection Criteria") (Appendix C5). However, NMFS believes the scoring attributes for each of the Evaluation Criteria, and the subsequent scoring of the Selection Criteria on the previous data set, were not correctly applied. The results of the scoring process are shown below, whereby the top choices of the Licensees scored much better than, for example, the two upper Yuba River "Trap & Haul above New Bullards Bar Reservoir" actions currently recommended by NMFS:

(#NS-94a) Trap and Haul to North Yuba River (NY) and  
(#NS-94c) Trap & Haul to Middle Fork Yuba River (MY).

#### **4.2.2 Licensees' Scoring Results verses NMFS' Scoring Results**

##### **Licensees' Lower Yuba River and Three Creeks Actions:**

C4 Ranking = 69-73 pts. or 95-100% (C4 range was 69-100%)

C5 Ranking = 12-16 pts. or 78-100% (C5 range was 28-100%)

##### **Licensees' Trap & Haul to North Yuba River (NS-94a) and to Middle Yuba River (NS-94c):**

C4 Ranking = 54-55 pts. or 74-75% (C4 range was 69-100%)

C5 Ranking = 6 - 8 pts. or 29-39% (C5 range was 28-100%)

##### **NMFS' Revised Trap & Haul to North Yuba River and to Middle Yuba River:**

New C4 Ranking = 69-70 pts. or 95-96% (C4 range was 69-100%)

New C5 Ranking = 15-16 pts. or 94-100% (C5 range was 28-100%)

As NMFS will explain below, when the scoring for C4 and C5 are revisited and logical scoring choices are made (based on relevant data and reasonable assumptions), then the above "Trap & Haul" actions to the North and Middle Yuba Rivers rank much better and could be considered as "equivalent to" the ranked levels of the Licensees' choices as shown above. NMFS explains below how we would score the 17 Evaluation Criteria and the 4 Selection Criteria for our 2 recommended actions, "Trap & Haul to the North (NS-94a) and Middle Yuba (NS-94c) Rivers."

#### **4.2.3 NMFS C4 Scoring by 17 Evaluation Criteria for "Trap & Haul to North and Middle Yuba Rivers**

Definitions of how each criterion is to be scored to generate C4 are found in DHEP Section 3.2.2, on pages 3-9 to 3-11 (we have used uppercase letters to denote the criteria for clarity). Ranking/Scoring of the North Yuba (NY) and Middle Yuba (MY) actions are discussed below where NMFS disagrees with the Steering Committee's scoring. NMFS describes below how each Evaluation Criteria ranks some attribute; how each criteria could be scored; and finally, the

Licensees' draft scores are listed for the two actions (NY; MY) and NMFS' corrected score and rationale is presented.

**(A) Feasibility**

Ranks: Technical feasibility, supported by accepted science, and proven methodology.

Scoring Criteria: Meet all three = 5; Meet one or two = 3; Meet none = 1.

Licensees' Score: NY=2; MY=2. (Rated a 2 when above states it as at least a 3).

NMFS' Score: NY=5; MY=5.

NMFS scoring indicates all three feasibility criteria would be met. Trap and haul is technically feasible, supported and accepted by science, and is a proven methodology. Contrary arguments based on a contention that these systems are not in common use for fish passage in California are irrelevant, as successful collection and transport operations have been demonstrated in the Pacific Northwest and elsewhere. In addition, in California, many thousands of hatchery reared salmonids are collected and transported hundreds of miles annually. The facts support that this fish passage method does work, can be safe and effective, and is a feasible alternative for reintroducing anadromous fish to the upper Yuba River. Hence, the revised score should be a 5, rather than a 2.

**(B) Scale**

Ranks: Large gain in potential spawners; increased habitat; and benefits all three habitat types (spawning, rearing, adult holding).

Scoring Criteria: Meet all three = 5;  
Meet some gain in spawners and at least one habitat type = 3;  
Low spawner gain and poor habitat = 1.

Licensees' Score: NY=4; MY=3.

NMFS' Score: NY=5; MY=5.

NMFS scoring indicates all three scale criteria would be met. The primary purpose is to achieve an increase in spawners and increase available habitats that benefit all three life stages. Moving fish into upstream habitats would achieve this purpose. Hence, the revised score should be a 5, rather than a 3.

**(C) Sustainability**

Ranks: Lifespan and relative maintenance.

Scoring Criteria: Long lifespan and minimal maintenance = 5;  
Limited lifespan and regular maintenance = 3; and  
Short lifespan and high maintenance = 1.  
(implied above is a "4" = Long lifespan, but regular maintenance).

Licensees Score': NY= 2; MY=2. (Rated a 2 when above states it as at least a 3).

NMFS Score': NY=4; MY=4.

The nature of a successful collection and transport system means that it will have a long lifespan over the term of the new licenses. Hence, the revised score should be a 4, rather than a 2.

**(D) Cost-Effective<sup>1</sup>**

Ranks: Total capital/O&M cost verses gain in population.

Scoring Criteria: Low-capital/O&M with a mid-high population gain = 5;  
Mid-capital/O&M with a low-mid population gain = 3;  
High-capital/O&M with a low population gain = 1.  
(implied above is a Mid-high capital/O&M and mid-high population = 4)

Licensees' Score: NY=1; MY=1. (Assumes a "high cost" only and a "low" population gain).

NMFS' Score: NY=4; MY= 4.

The nature of fisheries collection and transport programs to higher elevation habitats dictate a capital cost and O&M that will be significantly higher than incremental habitat enhancement

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<sup>1</sup> NMFS believes that cost-effectiveness comparisons must take into account the potential costs of the default alternative to the HEA: a major collection and transport operation on the Feather River above project dams.

programs on the Valley floor. However, the inherent purpose of such programs is to regain access to large amounts of existing and extremely productive habitats, so it is expected that such a program would ultimately result in a very substantial population gain (or such a program would not be done). In addition, higher elevation salmonid habitats are an invaluable resource – one that is currently under utilized; and therefore the value of these habitats is diminished until access is restored.

By comparison to the considered challenges of a similar collection and transport reintroduction program in the Feather River watershed, the Yuba River offers a less complex and less challenging environment from an engineering perspective. A comparable program in the Feather River is estimated by NMFS-engineering at a considerably higher cost. Hence, the revised score should be a 4, rather than a 1.

**(E) Minimal Intervention; (F) Separation/Genetic; and (G) Separation/Catastrophe**

Ranks: Degree of human intervention (E) and separation of stocks both genetically (F), and from potential catastrophes (G)

Licensees' Score: NY=1,5,5; MY=1,5,5. [E,F,G]

NMFS' Score: NMFS agrees with the Licensees' scoring of the above criteria.

**(H) Time to Implement**

Ranks: Relative implementation time.

Scoring Criteria: Implemented within 5 years = 5; Implemented within 5-10 years = 3; Implemented within more than 10 years = 1.

Licensees' Score: NY=2; MY=2. (Rated a 2 when above states it as at least a 3).

NMFS Score': NY=3; MY=3.

Although there is no scoring level of 2, there could be a 4 if actions could be implemented within a 5-7 year timeframe. However, NMFS would score this conservatively as a 3 because we have already been conducting feasibility studies and are attempting to form broad coalitions

comprised of agencies, licensees and stakeholders in order to accomplish NMFS' recovery plan goals. Hence, the revised score should be a 3, rather than a 2.

**(I) Local/Political Support**

Ranks: Relative degree of support.

Scoring Criteria: Support from all = 5; some support, but some opposition = 3 [50/50 implied?];  
Little or no support = 1.  
(implies that "most support" and "little opposition" = 4).

Licensees' Score: NY=3; MY=3.

NMFS' Score: NY=4; MY=4.

The degree of actual opposition versus support is very hard to quantify and by its nature, speculative. NMFS, however, believes that our initial and ongoing initiatives, NMFS-financed studies, and NMFS' leadership in forming a broad-based coalition, based on the successful Yuba Accords concept, leads NMFS to score this as a 4, rather than a 3. In addition, as institutional momentum and supporting data is acquired, such a scoring shifts closer to a 5.

**(J) VSP/ESA Consistency**

Ranks: Consistency with Viable Salmonid Populations (VSP) concept:  
Abundance, Productivity, Biological Diversity, and Spatial Structure.

Scoring: Consistent with: All four = 5; three = 4; two = 3; one = 2; zero = 1.

Licensees' Score: NY=4; MY=4.

NMFS Score': NY=5; MY=5.

Clearly, as NMFS is proposing a collection and transport action to the upper Yuba River and continuing to gather supporting data and form broad-based coalitions for implementing such an action, then it is in our best interests to meet all VSP criteria. Such an action is also contemplated in our draft recovery plan which is underpinned by the VSP concepts. The upper

Yuba River proposed action meets all four VSP concepts.<sup>2</sup> Hence, the revised score should be a 5, rather than a 4.

**(K) Balance of Benefits, (M) Available Stocks, (O) Other Feather River Species, and (Q) Adverse Affects on Cultural Resources**

**Ranks:** Relative degrees for balance of benefits to spring-run Chinook and Steelhead (K); degree of stocks available in watershed(s)(M); benefits to Feather River species (O); and adverse affects to cultural resources (Q).

**Licensees' Score:** NY=5,4,1,5; MY=5,4,1,5. [K,M,O,Q]

**NMFS' Score:** NMFS agrees with the Licensees' scoring of the above criteria.

**(L) Resource Consistency, (N) Actions by Others, and (P) Adverse Affects on Listed Species**

**(L) Resource Consistency**

**Ranks:** Degree by which the following are adversely affected by Action: Water supply, public safety, flood control; recreation, and power supply.

**Scoring Criteria:** Number Affected: None = 5; one = 4; two = 3; three = 2; and four = 1.

**Licensees' Score:** NY=3; MY=3.

**NMFS' Score:** NY=4; MY=4.

A claim is made in the DHEP that two components would be adversely affected. NMFS does not believe this to be true. A collection and transport program would have some effects on other resources, but these effects are part of a realistic balancing of natural resources and public uses of those resources. Considering that the Central Valley hydroelectric project impacts have been on-going for decades without commensurate mitigation of their effects on anadromous fish, NMFS believes a re-balancing of public trust resources is in order at this point in time. Some recreation may have to be adapted, but the actual degree is not yet known. Hence, the revised score should be a 4, rather than a 3.

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<sup>2</sup> The HEA Steering Committee selected the North and Middle forks of the Yuba River for analysis. At this time, NMFS does not limit its consideration for reintroduction of salmonids to these two streams, but is considering the habitat potential in the South Fork Yuba as well.

**(N) Actions by Others**

Ranks: Degree by which the action could be done by others within 5 years.

Scoring Criteria: Action not likely to be taken by others = 5; Action potentially taken by others = 3; Action would likely be taken by others = 1.

Licensees' Score: NY=4; MY=4.

NMFS' Score: NY=5; MY=5.

NMFS believes that such an action may be taken by others within 5-10 years, but no other party would *likely* take such an action within 5 years. Hence, the revised score should be a 5, rather than a 4.

**(P) Adverse Affects on Listed Species**

Ranks: Degree by which action was not expected to adversely affect listed species or Critical Habitat.

Scoring Criteria: "Not expected to adversely affect" = 5;  
"minimal, but mitigated, impacts" = 3;  
"Adversely affected and non-mitigated" = 1.

Licensees' Score: NY=4; MY=4.

NMFS Score': NY=5; MY=5.

NMFS believes that because a collection and transport action is within the guidance of our draft recovery plan and that the purpose of the action is to expand and enhance habitat for all life stages of listed spring-run and steelhead, then this action would benefit these species and not adversely affect them. Increasing available habitat also puts less stress on existing Critical Habitat which also benefits the species as a whole. Hence, the revised score should be a 5, rather than 4.

#### **4.2.4 Summary**

The original scoring of the "Trap & Haul" into North and Middle Yuba Rivers for C4 by the Licensees' was much lower than NMFS' revised C4 scoring, as shown below.

C4 Scoring "Trap & Haul to North Yuba (NS-94a) and to Middle Yuba (NS-94c) Rivers:  
Licensees' C4 Ranking = 54-55 pts. or 74-75% (C4 range was 69-100%)  
NMFS' C4 Ranking = 69-70 pts. or 95-96% (C4 range was 69-100%)

Consequently, when NMFS' C4 data is integrated and scored with the Selection Criteria for C4, NMFS' recommended "Collection and Transport" to upper Yuba River actions also rated significantly higher than what the Licensees' had rated them.

### **5.0 General Comments on Selection Criteria**

#### ***5.1 Page 3-12, Section 3.2.3.***

The discussion here of the Steering Committee's methodology for applying the Selection Criteria notes that 'cost effectiveness' is considered in the scoring process under both criterion (b) and (c), suggesting a stronger weighting based on a single criteria than was provided for under the HEA. HEA section 4.1.2(b) provides, "*Most cost-effective compared to other potential habitat expansion actions.*" Furthermore, HEA section 4.1.2(c) provides, "*Feasibility (action(s) can reasonably be accomplished)[.]*" HEA section 4.1.2(c) does not suggest that cost effectiveness should be considered again under the feasibility criterion. This section and the evaluation should be revised based on this section to remove consideration of cost effectiveness under the feasibility criterion.

## 5.2 NMFS C5 Scoring/Ranking by Four Selection Criteria for "Trap & Haul" to North and Middle Yuba Rivers

Definitions of how each criterion is to be scored to generate C5 (based on C4 results) are found in DHEP Section 3.2.3, on pages 3-11 to 3-12 (we have used uppercase letters to denote the criteria for clarity). Ranking/Scoring of the North Yuba (NY) and Middle Yuba (MY) actions are discussed below where NMFS disagrees with Licensees' scoring. NMFS describes below how each Selection Criteria ranks some attribute; how each criteria would be scored; and finally, the Licensees' draft scores are listed for the two actions (NY; MY) and NMFS' corrected score and rationale is presented.

### (A) Contribution to the HET<sup>3</sup>

Ranks: Relative degree by which action exceeds, meets, or fails to meet the HET.

Scoring Criteria: Exceeds HET = 5; Meets HET = 3; Fails to Meet HET = 1.

Licensees Score': NY=1; MY=1.

NMFS' Score: NY=5; MY=5.

NMFS' data shows that the combination of the North Fork and Middle Fork Yuba River trap and haul actions could exceed the HET of 2,000 to 3,000 fish. Estimates and ongoing studies are still being conducted or reviewed, but a recent conceptual engineering study<sup>4</sup> used an estimate of roughly 20,000 adult spring-run Chinook as a preliminary metric in sizing potential fish collection and transport systems for the upper Yuba River. Hence, the revised scores for both of these upper Yuba River actions should be a 5, rather than a 1.

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<sup>3</sup> The HEA Steering Committee did not evaluate any reintroduction actions for the South Fork of the Yuba River, but NMFS does not dismiss the potential of the South Fork Yuba to support anadromous salmonids at this point in time. The South Yuba River will be considered in future analysis.

<sup>4</sup> Yuba River Fish Passage – Conceptual Engineering Project Options, Montgomery-Watson-Harza, Inc., February 2010

**(B) Cost-Effectiveness**

Ranks: Relative cost-effectiveness.

Scoring Criteria: Lowest 10% = 5; mid-range = 3, Upper 10% =1.

Licensees Score': NY=3; MY=1.

NMFS' Score: NY=3; MY=3.

NMFS agrees with the Licensees' scoring estimate for this item, but only to a limited degree. In viewing both the North Fork and the Middle Fork Yuba Rivers' collection and transport actions collectively, both should significantly increase the habitat and approach or meet the HET. Economies of scale can be realized in a comprehensive anadromous fish reintroduction program, and the fish production potential in the upper Yuba River watershed is high. NMFS' believes that such a comprehensive program could ultimately be highly cost-effective as compared to other actions. Thus, the revised scoring for both of these actions is a 3 each, rather than a 1 for the Middle Fork action.

**(C) Feasibility**

Ranks: Relative feasibility, based on scores from the C4, Evaluation Criteria, data set: (A) feasibility, (D) cost-effectiveness, (I) local/political support, and (L) resource consistency. These scores were simply added up and averaged.

Scoring Criteria: The above C4, Evaluation Criteria, scores were simply added up and averaged (rounded up or down) for a single C5, Selection Criteria, score.

Licensees' Score: NY's C4: (A+D+I+L) divided by 4:  $(2+1+3+3)/4 = 9/4 = 2.25 = [2]$

NMFS' Score: NY's C4: (A+D+I+L) divided by 4:  $(5+4+4+4)/4 = 18/4 = 4.5 = [5]$

Licensees' Score: MY's C4: (A+D+I+L) divided by 4:  $(2+1+3+3)/4 = 9/4 = 2.25 = [2]$

NMFS' Score: MY's C4: (A+D+I+L) divided by 4:  $(5+4+4+4)/4 = 18/4 = 4.5 = [5]$

The four Evaluation Criteria scores revised by NMFS provide a higher score for the C5 Selection Criteria category (see rationale for each of NMFS' C4 scoring). NMFS believes that

the direction from NMFS' Central Valley Recovery Plan - as well as the collection of additional scientific data and the ongoing efforts to develop broad-based coalitions in support of an upper Yuba River reintroduction program - will aid in implementing NMFS' recommended upper Yuba collection and transport options.

**(D) Time to Implement**

Ranks: Relative degree for implementation of action.

Scoring Criteria: C4 Evaluation Criteria score (H) "Time to Implement" was merely repeated here.

Licensees' Score: NY=2; MY=2.

NMFS' Score: NY=3; MY=3.

The same logic applies here, as was presented in: (H) "Time to Implement" Evaluation Criteria scoring. Because this action could be partially implemented within 5 years - and fully implemented within a 5-10 year time frame - and because we have already been conducting feasibility studies and are attempting to form broad coalitions comprising agencies, licensees, and stakeholders in order to accomplish NMFS' recovery plan goals, this element deserves a higher ranking. Hence, the revised score should be a 3, rather than a 2.

**5.3 C5 Summary**

The original scoring of the "Trap & Haul" [above New Bullards Bar] into North and Middle Yuba Rivers for C5 by the Licensees' was much lower than NMFS' revised C5 scoring, as shown below.

**C5 Scoring "Trap & Haul" to North Yuba (NS-94a) and to Middle Yuba (NS-94c) Rivers:**

Licensees' C5 Ranking = 6-8 pts. or 29 - 39% (C5 range was 28-100%)

NMFS' C5 Ranking = 15-16 pts. or 94-100% (C5 range was 28-100%)

Consequently, when NMFS' new C4 data was integrated and scored with the Selection Criteria for C5, NMFS' preferred Yuba River Collection and Transport actions also rated significantly higher than what the Licensees' had rated them.

## **6.0 General Comments on the Draft HEP**

### Page 1-3, section 1.1.2.

This section states:

“NMFS prescribed the upper end of the trap-and-haul program in the Upper North Fork Feather River relicensing proceeding and intended to prescribe the lower end of the trap-and-haul program in the Oroville relicensing proceeding.” We clarify that NMFS filed modified or amended modified prescriptions in the Oroville Facilities, Upper North Fork Feather River Hydroelectric Project, and Poe Hydroelectric Project relicensing proceedings to reserve its authority to prescribe fishways as provided in the Habitat Expansion Agreement.”

### Page 1-4, Section 1.3.

This discussion of section 3.1 of the HEA does not include several important provisions from that section:

- "Habitat expansion action(s) shall ensure future operation and maintenance if such operation and maintenance is needed after initial implementation.”
- “Habitat expansion action(s) shall also include functional start-up testing, if needed, for technical validation of the action’s design (e.g., that a fish ladder operates as designed), but not long-term monitoring of species utilization or benefit.”
- “Actions identified in other venues, including unfunded actions, are acceptable for consideration, provided that implementation of the Agreement results in a net expansion

of habitat over any Existing Requirements and Commitments, whether by the Licensees or others.” Section 3.2 of the HEA provides what the term “Existing Requirements and Commitments” means.

This discussion should be revised to include these important requirements of section 3.1 of the HEA, which are necessary to understand the scope of eligible habitat expansion actions.

Page 2-2, section 2.2.1.

We clarify that “Consultation with NMFS”, as provided in the header of this section, means “...the act of conferring and is distinct from the term ‘Consultation’ under the ESA.” See HEA section 1.1, definition of “Consultation.”

Page 5-1.

The discussion at the beginning of Chapter 5 provides... “[o]nce comments are received, the Licensees expect to then select one of the two groups of [recommended] actions, as may be modified by comments received, and propose this group of actions in the final HEP.” However, this discussion assumes that comments on the two groups of recommended actions will not result in a change from the actions recommended in the DHEP to any different proposals for action, or group of actions, in the final HEP, and this should not be assumed.

Page 10-3, Section 10.2.2.

In this description of Pre-Approval Consultation requirements under the HEA, this section provides, “During the consultation period, NMFS will consider comments received on the DHEP . . . .” However, HEA section 4.2.2 provides for Pre-Approval Consultation “...[p]rior to approving the Final Habitat Expansion Plan . . . .” In addition, HEA section 4.2.2 provides, in relevant part, “During such consultation, NMFS shall give due consideration to any comment

received. . . .” Therefore, during the Pre-Approval Consultation period, NMFS will give due consideration to any comment received during that consultation period, and those comments will likely be on the final rather than the DHEP. This discussion should be revised accordingly.

#### Appendix A.

In this table, the line related to HEA section 4.2.7, the entry under the schedule column provides, “variable (~90 days).” However, HEA section 4.2.7 does not provide any time limit or refer to any number of days related to NMFS’ approval decision. Therefore, delete “(~90 days).”

#### Appendix C.

In all of the tables or sub-appendices for this Appendix (C1 to C5), the actual "method" for determining the HET, numbers of fish, was only indicated as a minor footnote in Table C5, as "Contribution from Quantification Method (unless otherwise noted)." NMFS could find no reference or explanation of what modeling or method was used to determine the contribution of an action to the HET. Please elaborate and describe in detail how all fish numbers were derived and if models were used please reference them and provide NMFS with copies to review. Not all methods or modeling may be acceptable to NMFS.

#### Appendix F.

Section VII of the questionnaire response from Gary Reedy of the South Yuba River Citizens League, states in relevant part:

"Access to rehabilitation site requires either permission from two private landowners so far offering less than consistent support, or construction of road on steep slopes of PG&E mitigation land. CDFG has expressed concerns

about the new road and immediate impacts of the project on holding spring-run salmon."

Please explain how this access problem and related concerns would be addressed in the recommended Lower Yuba River Actions.

#### Appendix G.

On page 1, this Appendix describes how the River Management Team (RMT) did not feel that it would be appropriate to provide comments as a group to the HEA Steering Committee, and members of the RMT have different views and perspectives about some habitat restoration measures. In addition, this page of the Appendix provides:

"However, some of the members of the RMT did work together to draft comments for the HEA Steering Committee, and to provide some feedback on the questions posed. Those comments are incorporated in this document."

This page also lists organizations included in the RMT. Please describe which members of the RMT prepared this Appendix in order to clarify whose comments and views are reflected in this Appendix.

On page 22, this Appendix describes additional information and analyses that are needed for the segregation weir component on the Lower Yuba River Actions and concludes... "[t]he segregation weir is not supported at this time." Please describe how and when the additional information would be collected and analyses would be done in relation to the recommended Lower Yuba River Actions.

## **7.0 Comments on Specific Habitat Actions**

### **7.1 Comments on Lower Yuba River Draft HEP Actions**

Section 6.1.1 of the DHEP (p. 6-1) provides a brief historical background regarding the habitat potential of the Yuba River, which describes habitat considerably diminished by extreme geomorphic alteration resulting from hydraulic and dredge mining for gold and then by construction of dams that blocked access to major spring-run Chinook salmon spawning areas. Englebright Dam (completed in 1941) at river mile 24 is mentioned, which now blocks all upstream passage of fish to the upper Yuba River. NMFS reviewed the historical background of the Yuba River provided in Yoshiyama *et al.* (2001) and noted accounts of appreciable salmon runs that occurred for many years in the Yuba River after its habitat was degraded by gold mining, and before construction of Englebright Dam. Yoshiyama *et al.* (2001) place the intensive hydraulic mining in the Yuba River as having occurred from 1853 to 1885, resulting in an immense influx of debris (sand and gravel) that filled the river channel, covered adjoining agricultural lands, and left the Yuba River discolored (yellow) and turbid. However, despite this severe habitat degradation, appreciable salmon migrations into the Yuba River persisted. For example, salmon were caught by PG&E workers in the North Yuba River (Bullards Bar area) during the 1898–1911 period of operation of the Yuba Powerhouse Project (Yoshiyama *et al.* 2001). Later, during the construction of PG&E’s Bullards Bar Dam (1921-1924), so many salmon congregated and died below the Dam that their carcasses had to be burned (Yoshiyama *et al.* 2001). These accounts suggest that despite habitat impairments in the Yuba watershed due to gold mining, spring-run Chinook salmon ascended the North Yuba in considerable numbers until the Bullard’s Bar Dam completely blocked their migrations into the higher gradient reaches (they are thought to have migrated beyond Sierra City to Loves Falls, about two miles above the

juncture of Salmon Creek) (Yoshiyama *et al.* 2001). In 1941, Englebright Dam was completed and from that date forward has prevented upstream passage of fish to the upper Yuba River watershed. In 1971, Yuba County Water Agency's New Bullards Dam project was constructed and it blocks all fish passage to the upper North Yuba River. NMFS believes a broader historical perspective would allow all parties to place the relative effects of hydraulic mining and dams in context as restoration projects are considered.

In the DHEP, the three proposed Lower Yuba River Habitat Enhancement Actions

(p. 6-3) are:

- 1) Rehabilitate spawning habitat in the Englebright Dam reach of the lower Yuba River and augment gravel in lower Deer Creek;
- 2) Plan for, and if necessary, install a segregation weir at a location in the 6-mile reach between Englebright Dam and the Highway 20 Bridge;
- 3) Restore juvenile rearing habitat between the Highway 20 Bridge and the downstream extent of the Yuba Goldfields.

The DHEP emphasizes the importance of integrating these three separate sub-actions because they benefit from one another. However, NMFS finds that the portion of sub-action #1 (recommended spawning habitat rehabilitation in the Englebright Dam reach) should be considered within the scope of Existing Requirements and Commitments under the HEA – and therefore is not eligible and cannot be integrated with sub-actions #2 and #3. Several DHEP statements and discussions regarding eligibility appear inaccurate as related to the component to rehabilitate spawning habitat in the Englebright Dam reach (Page ES-5, Table ES-2, NMFS Approval Criteria Evaluation, Eligible. See also similar statements and discussions on pages ES-5 to ES-6; 5-3, Table 5-1; 5-5, Section 5.1.4; and 6-16, Section 6.4.8.1). Section 6.4.8.1 of the DHEP quotes a reasonable and prudent measure and term and condition from NMFS' final

biological opinion concerning the effects of the U.S. Army Corps of Engineers' Operation of Englebright and Daguerre Point Dams on the Yuba River, California, issued November 21, 2007. In addition, this section discusses the Licensees' proposed spawning habitat rehabilitation program in the Lower Yuba River in comparison to this reasonable and prudent measure and term and condition. This section provides... "[i]n contrast, the Corps' responsibility is simply for gravel augmentation (i.e., long-term gravel injection similar to the pilot project initiated by the Corps in 2007)."

To the contrary, the NMFS Biological Opinion with the Corps of Engineers specifically states:

"The Corps shall develop and implement a long-term gravel augmentation program to restore quality spawning habitat below Englebright Dam. The Corps shall utilize the information obtained from the pilot gravel injection project to develop and commence implementation of a long-term gravel augmentation program within three years of the issuance of this biological opinion."

The reasonable and prudent measure and term and condition do not limit the Corps' responsibility simply to gravel injection similar to the pilot project initiated by the Corps in 2007. The Corps' responsibility is to "...*restore quality spawning habitat below Englebright Dam.*" Subsequent to the issuance of the biological opinion, two key sources of information regarding salmonid spawning habitat in the lower Yuba River were produced (Pasternak 2008; Pasternak 2009). One was a comprehensive study on the hydrology, geomorphology, and ecology in two reaches a short distance downstream of Englebright Dam (Pasternack 2008), and the other (Pasternack 2009) reported results of the Corps' pilot gravel injection. Through the two reports, it became known that in order to restore quality spawning habitat in the Englebright Dam Reach (the first 0.8 miles downstream of Englebright Dam to the Deer Creek confluence), shot-rock removal and related rehabilitation are likely required prior to a long-term gravel augmentation

program. Given that it is the Corps' responsibility is to restore quality spawning habitat below Englebright Dam, the Corps must take whatever steps necessary to accomplish this task, including spawning habitat rehabilitation (e.g., shot-rock removal). An additional factor supporting that the Corps should be responsible for removing the shot-rock is that one of the primary sources of the shot-rock was rock excavation during the construction of Englebright Dam, which the Corps owns and operates.

Although NMFS is not making a final determination on approval of the HEP at this point, the Licensees' recommended spawning habitat rehabilitation program apparently does not meet the NMFS' approval criterion in HEA section 4.2.3(e) regarding the requirements for eligible habitat expansion action(s) pursuant to Section 3 of the HEA. The NMFS' approval criterion in HEA Section 4.2.3(e) provides, "...meets the requirements for eligible habitat expansion action(s) pursuant to Section 3 of the Agreement[.]" HEA Section 3.1 provides, in relevant part, "Actions identified in other venues, including unfunded actions, are acceptable for consideration, provided that implementation of the Agreement results in a net expansion of habitat over any Existing Requirements and Commitments, whether by the Licensees or others." HEA Section 3.2 provides, in part, "...the term 'Existing Requirements and Commitment' is intended to encompass actions expected to occur in a timeframe comparable to implementation of habitat expansion action(s) under this Agreement." In addition, this section includes a non-exclusive list of what "Existing Requirements and Commitments may include," and (d) in that list specifically includes, "...reasonable and prudent alternatives, reasonable and prudent measures, and terms and conditions of any final Biological Opinion that has been issued at the time NMFS approves the habitat expansion action(s)." The Licensees' recommended spawning habitat rehabilitation program is within the scope of the actions required in the reasonable and prudent measure and

term and condition that is quoted in the DHEP. Thus, this recommended spawning habitat rehabilitation program should be considered within the scope of Existing Requirements and Commitments under the HEA.

A second component of sub-action #1 in the lower Yuba watershed is the augmentation of gravel substrates in Deer Creek to improve spring-run spawning habitat in lower Deer Creek and in the Yuba River at the mouth of Deer Creek (Section 6.4.1.3). It is unclear to NMFS if the DHEP recommends this component of sub-action #1 only if spawning habitat in the Englebright Dam Reach occurs concurrently. NMFS noted in the Questionnaire response for the Deer Creek Salmon and Steelhead Spawning Habitat Expansion Project (Appendix F) that passage of salmon and steelhead to the reach of Deer Creek upstream to Lake Wildwood Dam is a possibility if gravel placements in lower Deer Creek are sufficient to improve passage at Basher Falls. In principle, NMFS has a positive view of this possibility if access for anadromous fishes could be expanded into suitable historical habitats; Yoshiyama et al. (1996) cite an account of heavy runs of salmon up Deer Creek prior to the construction of Daguerre Point Dam, and personal communication indicating that steelhead migrated up Deer Creek a quarter of a mile where they were stopped by impassable falls. Given that impassable Lake Wildwood Dam has been constructed since the historical runs, it is likely that summer holding habitat potential for spring-run Chinook is lacking in Deer Creek, but restoration for steelhead spawning use may be possible. However, several outstanding issues need more discussion and evaluation, including the degree to which Basher Falls is an upstream migration impediment, the need to improve water quality, the need to provide a coarse sediment supply to areas downstream of Lake Wildwood Dam, the need for riparian vegetation restoration, and others.

Regarding sub-action #2 above (a lower Yuba River segregation weir), Table 6-1 (p. 6-10) provides a value for the segregation weir in the contribution to the HET. However, the discussion in Sections 6.5.3 and 6.5.5 imply that there would be some future determination about whether the segregation weir would be implemented as part of the Lower Yuba River Actions. NMFS requests clarification of whether the segregation weir is definitely part of the Lower Yuba River Actions discussed in Chapter 6 or whether it depends on some future determination, and how that determination would be made. If the segregation weir is not definitely part of the Lower Yuba River Actions, clarify in Table 6-1 that the value for the segregation weir in the contribution to the HET is not definitely part of the contribution of the Lower Yuba River Actions to the HET. Appendix G (p. 22) also describes additional information and analyses that are needed for the segregation weir component on the Lower Yuba River Actions and concludes, “[t]he segregation weir is not supported at this time.” NMFS requests description of how and when the additional information would be collected and analyses would be done in relation to the recommended Lower Yuba River Actions.

Appendix E includes contributions to the HET from use of a segregation weir; the entry for Segregation Weir under the column heading “Calculations/Assumption(s),” estimates that a segregation weir will improve the spatial segregation by 90%. However, it is unclear what this estimation of effectiveness assumes regarding the degree of temporal run-timing separation between spring-run and fall-run Chinook salmon in the lower Yuba River, and more study may be required to determine if temporal separation is discrete enough in the Yuba River so that a segregation weir could adequately spatially separate spring-run and fall-run Chinook. For example, preliminary results of a recent, genetically-based pilot study in the lower Yuba (Brian Ellrott, NMFS, personal communications) indicate that appreciable numbers of fall-run Chinook

are entering the lower Yuba in the early (spring) season, and would therefore not be excluded from upstream areas by a segregation weir closed later in the season (summer or early fall); the result would be overlap in the spawning area used by spring-run and fall-run Chinook even if the mechanical separation efficiency were high once the weir was in place and closed. It is also possible that use of a segregation weir could exclude spring-run Chinook that enter the Yuba River later in the summer or early fall, and this possibility has not yet been studied. A recent, genetically-based investigation (Smith *et al.* 2008) in the upper Sacramento River (at Red Bluff Diversion Dam) was based on sampling that spanned spring through fall seasons, and its results indicate that spring-run Chinook were still present in the July and August-September samples (in addition, fall-run Chinook comprised the large majority of fish passing the dam during all sampling periods (May through September). Therefore, NMFS suggests more evaluation is required before the potential benefits of a segregation weir to spring-run Chinook described in Section 6.5.2 can be assumed.

Another consideration is that a segregation weir would reduce the Yuba River habitat available to Central Valley fall-run Chinook, a federal species of concern with recent escapement numbers near historic lows; some such concerns are discussed in Section 6.5.8. This species historically used lower elevation habitats for spawning and rearing to a greater extent than did spring-run Chinook. Restriction of fall-run Chinook to the areas downstream of Timbuctoo Bend in the lower Yuba River would appreciably reduce the habitat area available to these fish, which currently spawn both upstream and downstream of this river reach. While the proximate cause of the recent declines in fall-run Chinook escapement numbers is believed to be poor ocean conditions, the ultimate cause of the longer-term declines is the loss and degradation

of inland, freshwater habitats (Lindley *et al.* 2009). Thus, reducing the area of Yuba River habitat accessible to fall-run Chinook could further exacerbate such longer-term declines.

Regarding sub-action #3, NMFS is not opposed in principle to restoration of rearing habitats in the lower Yuba River between the Highway 20 Bridge and the downstream extent of the Yuba Goldfields. However, we note that these actions propose enhancements of habitat within areas currently accessible to spring-run Chinook salmon and steelhead, not actions that expand access to habitats historically occupied by these species but now inaccessible; the latter actions are more highly preferred by NMFS.

In our review of the DHEP, NMFS found that more evaluation and discussion is needed of the causes of the lack of suitable rearing habitat in the lower Yuba River, as well as rationale for how the actions proposed would contribute to long-term, sustainable habitat restoration (that would in turn contribute to the HET for adult spring-run Chinook). The proposed actions and sites are described in Section 6.6.1 of the DHEP as “initial concepts” that do not yet have site-specific designs completed (p. 6-22). For example, a South Yuba River Citizens League (SYRCL) proposal for restoration of off-channel rearing habitat below the Highway 20 Bridge is described as being in the initial phases of planning and design (NMFS assumes this proposed site is the same as Site 1, named “Upper Guilt Edge” (p. 6-23) proposed as an action in the DHEP). In reviewing the proposed lower Yuba rearing proposals, NMFS also noted reference to pilot studies either planned or underway, and we suggest that such studies should be completed and reviewed so their results can inform decisions about suitable restoration actions or sites.

NMFS briefly reviewed the results of a study of the Timbuctoo Bend area (Pasternack 2008) of the lower Yuba River; the study clearly demonstrates the intensity of the effort required to

understand the linkages between hydrology, geomorphology, and salmonid habitat. However, this investigation occurred upstream of the sites proposed for restoration of juvenile rearing habitat, and NMFS suggests that similar investigations may be required prior to moving forward on plans or designs for downstream actions. One important finding of Pasternack (2008) was that Yuba River floods (>10,000-20,000 cubic feet per second) are frequent and strong enough to drive significant change in the geomorphology of the lower Yuba River. This fact could bear on the degree to which boulder and large wood placements (to create side channels) (Sections 6.6.1.1, 6.6.1.2, pp. 6-23 to 6-28, Figures 6-4 to 6-11) would respond under various flows, or how these actions would persist over time. NMFS also noted the DHEP often links the dredge mining tailings in the lower Yuba (that constrict its channel in the Yuba Goldfields area) to the loss of habitat complexity. Assuming that channel constriction by tailings can be verified as a controlling factor causing the habitat loss, it is unclear how the restoration actions within the nine proposed sites address the cause (they don't appear to propose tailings removals). In addition to physical improvements, adequate stream temperatures are a required component of suitable juvenile salmonid rearing habitat (EPA 2003). The DHEP includes statements regarding cold releases from New Bullard's Bar Reservoir (Section 4.2.1, p. 4-7; Section 6.1.1, p. 6-1;) and the existing suitability of temperatures for all life stages of salmonids under the Yuba Accord flows (Appendix E, p. 2; Appendix G, p. 2, 4, 9, 22). However, the DHEP does not reference a document that contains temperature evaluations under the Yuba Accord flow regime. NMFS reviewed the information referenced in the DHEP (Kozlowski 2004), and found that summer temperatures downstream of the diversions at Daguerre Point Dam may be elevated above levels suitable for juvenile salmonid rearing (although we acknowledge that these data were collected before implementation or full implementation of the Yuba Accord flows). NMFS' concern is

that this evaluation be performed to assure that juvenile rearing habitat objectives can be met based on water temperatures as well as physical habitat requirements.

NMFS' review suggests that the proposed lower Yuba River actions are intended to incrementally improve existing anadromous habitat, but not to expand habitat into areas now inaccessible to anadromous fishes. Of the three sub-actions proposed, sub-action #1 (Englebright Dam Reach Spawning Habitat Rehabilitation) is not eligible under HEA Section 3. Because sub-action # 1 comprises the greatest estimated contribution to the HET (Table 6-1), the remaining eligible sub-actions fall far short of the HET threshold. A proposed action to physically segregate spring-run and fall-run Chinook would not expand habitat, but rather would divide existing habitat. Even if the segregation is effective, fall-run Chinook would experience decreased availability of habitat. It appears more information is needed to determine if run timing is discrete enough to allow a weir to meet its segregation objective. For these reasons, NMFS questions the HET contribution attributed to the segregation weir action. Lastly, the proposed lower Yuba actions to create/restore juvenile rearing habitat appear to rely on pilot studies not yet completed. In addition, NMFS suggests that a more comprehensive understanding of the linkages between hydrology, geomorphology, and salmonid habitat in the areas proposed for these actions is required. NMFS noted that the HET contribution for this sub-action is estimated to be the lowest of the 3 sub-actions.

## **7.2 Comments on the "Three Creeks" DHEP Actions**

### **7.2.1 Introduction**

The Licensees identified a group of actions that, when combined, would meet the goals of the HEA and contribute to the HET. Collectively, these three sub-actions are referred to as the

"Three-Creek" Actions. This group of sub-actions consists of habitat expansion and enhancement actions in three watersheds: Antelope Creek, Big Chico Creek, and Battle Creek. Specifically, the individual sub-actions consist of the following:

- 1) Antelope Creek Habitat Expansion Action consists of replacing an instream ford-structure at Paynes Crossing on Antelope Creek with a bridge over the creek;
- 2) Big Chico Creek Habitat Expansion Action consists of rehabilitating the Iron Canyon Fish Ladder on Big Chico Creek; and
- 3) Battle Creek Habitat Expansion Action consists of providing partial funding for implementation of Phase 2 of the Battle Creek Salmon and Steelhead Restoration Project, specifically certain actions that would occur only on South Fork Battle Creek.

#### **7.2.2 Comments on the Antelope Creek Sub-action**

The proposed action is to construct a new bridge at Paynes Crossing, where Ishi Road intersects Antelope Creek in the California Department of Fish and Game Tehama Wildlife Area. The existing road crossing is described as a partial barrier to upstream fish migration at certain flows. NMFS requests that any existing biological or engineering evaluations of this site be identified for our review.

“The quality and quantity of available habitat for spring-run Chinook salmon and steelhead spawning and holding habitat in Antelope Creek are essentially the same as historical conditions...” (p. 7-1). There is no supporting information for this statement. Please supply NMFS with any existing information or evaluations of spring-run Chinook and steelhead habitat upstream of Payne’s Crossing.

The DHEP discusses limiting factors other than passage at Paynes Crossing that affect upstream and downstream passage and habitat suitability in Antelope Creek. Although not

mentioned with as much detail as found in the DHEP, Appendix D, these limiting factors quote NMFS' own "Co-Manager Review Draft" of the *Recovery Plan for the Sacramento River winter-run and Central Valley spring-run Chinook and Central Valley steelhead* (NMFS 2008). These include elevated water temperatures, insufficient attraction flows, stream braiding in the lower reaches that impairs upstream fish passage, and diversions that may cause entrainment, stranding and affect upstream passage. Diversions include Edwards Diversion Dam and others "...extending downstream of the Dam, to the confluence with the Sacramento River." The DHEP does not propose any actions to remedy the adverse effects of any "limiting factors" except the partial upstream barrier at Paynes Crossing (p. 7-2), but states that lower Antelope Creek actions are to be funded by the U.S. Fish and Wildlife Service's Anadromous Fish Restoration Program (AFRP) (p. 7-6).

NMFS does not believe it is appropriate to count a gain of 250 adult spring-run Chinook (p. 7-5) due to a habitat expansion action that improves Paynes Crossing because this singular action does not address other limiting factors lower in the watershed.

The reader is referred to Appendix E for the "Action-Specific Calculations of Contribution to the Habitat Expansion Threshold;" here, the modeling results are expressed in a highly condensed form (tabular and graphical), along with a summary table of model assumptions and sources. In this section, the result indicates the Paynes Crossing improvement would yield 264 adult spring-run Chinook salmon. Other information provided is that since 2000, the escapement of spring-run Chinook has ranged from 2 to 102 fish (p. 7-3), and a rounded average escapement from 1999 to 2008, using data from California Department of Fish and Game's (CDFG) GrandTab, is 50 fish (p. 7-4). Past estimates by CDFG suggest that

Antelope Creek can support at least 500 spring-run Chinook salmon (CH2M Hill 1998) (p. 7-3). It is not clear if this number, or the HET threshold established in the HEA, are averages, medians, etc.

Other information that should be considered is that *Lindley et al.* (2004) characterized the population of spring-run Chinook as dependent upon other populations (i.e. Butte, Deer, and Mill Creeks) for its existence. This will affect NMFS' approval decision toward the action under HEA section 4.2.3(c).

The Payne's Crossing option will result in increased numbers of adult spring-run Chinook and steelhead only if:

- 1) It is correct that Paynes Crossing is an appreciable impediment at most flows;
- 2) Habitat upstream is indeed suitable;
- 3) A new bridge is correctly designed and installed, and allows effective passage; and
- 4) Lower Antelope Creek diversions and other lower watershed impairments can be adequately remedied to improve attraction flows, upstream passage, downstream passage, water temperatures, and water quality, in conjunction with the Paynes Crossing action.

Even if one accepts a net gain of 250 adult spring-run Chinook, the project is relatively small and cannot alone satisfy the HET of 2,000 to 3,000 fish. It would need to be implemented along with several projects or another large project.

### **7.3.3 Comments on the Big Chico Creek Sub-action**

The proposed action is to reconstruct the Iron Canyon fish ladder to facilitate the upstream passage of spring-run Chinook salmon and steelhead.

Section 8.2.1 describes the habitat as, "...the watershed is relatively pristine. The amount of available spawning and holding habitat for spring-run Chinook salmon and steelhead in Big Chico Creek is essentially the same as historical conditions..." (p. 8-2). However there is no supporting information for this statement. Please provide substantiating information that fish passage above this ladder will result in access to high quality habitat. It is very possible that the upstream habitat on Big Chico Creek may be so disturbed by human recreational use in the summer that its former (historical) value for summer holding of spring-run and steelhead is now degraded appreciably. It appears that the DHEP does not address this issue.

The DHEP mentions several limiting factors in the lower watershed that affect upstream and downstream passage and habitat suitability in Big Chico Creek: "There is no summer holding habitat below Iron Canyon..." (page 8-1), "Big Chico Creek is a small watershed with substantial urban, agricultural, and flood control impacts in the lower watershed..." (page 8-2); "Low flows, mainly due to agricultural diversions, and high water temperatures are the primary limiting factors (BCCWA [Big Chico Creek Watershed Alliance] 2006)..."; "Low flows affect passage for both adults and juveniles and contribute to increased water temperatures..."; and "...loss of riparian habitat in the [lower] valley reach and diversion by flood control structures limit salmonid production (BCCWA 2006)"(page 8-3). The combination of these apparent impacts - elevated water temperatures, stream braiding in the lower reaches, groundwater pumping, and diversions at One-Mile and Five-Mile dams that may affect upstream passage – all these may be limiting factors in addition to the Iron Canyon fish ladder problem. Yet, the DHEP does not propose any actions to remedy the adverse effects of any of the above “limiting factors” except to fix the Iron Canyon fish ladder. Thus, the expense to fix this ladder may not

be worth it if the listed salmonids will continue to have trouble even reaching Iron Canyon; this raises questions about the actual contribution to the HET and cost-effectiveness.

Finally, *Lindley et al.* (2004) characterized the population of spring-run Chinook as dependent upon other populations (i.e. Butte, Deer, and Mill Creeks) for its existence. This will affect NMFS' approval decision regarding the proposed action under HEA section 4.2.3(c). An apparent positive factor is that the hatchery influence is low and there may be no need to introduce stocks of spring-run Chinook or steelhead. However, the ability of these listed salmonids to reach the fish ladder in sufficient numbers is questionable. Comprehensive watershed restoration actions in Big Chico Creek will require addressing other key limiting factors in Big Chico Creek, in addition to improved passage at the Iron Canyon site.

In summary relative to this sub-action, NMFS comments positively on this project because it is obvious that fixing a fish ladder will help enable fish to access upstream habitats. However, human impacts will still occur downstream, in addition to the ubiquitous amount of summer recreation impacts upstream. These are limiting factors reducing the probability of substantial anadromous fish improvements from this action in isolation. This action will be beneficial and result in increased numbers of adult spring-run Chinook and steelhead only if:

- 1) Habitat upstream is indeed suitable and human impacts can be limited;
- 2) The fish ladder is correctly designed and installed, and allows effective passage;
- 3) The lower creek diversions, groundwater pumping and other lower watershed impairments can be adequately remedied to improve attraction flows, upstream passage, downstream passage, water temperatures, and water quality, in conjunction with the Iron Canyon Fish Ladder action.

#### **7.3.4 Comments on the Battle Creek Sub-action**

DHEP statements and discussions regarding eligibility related to the Battle Creek Habitat Expansion Actions appear inaccurate (Page ES-7, Table ES-2, NMFS Approval Criteria Evaluation, Eligible. See also, similar statements and discussions on pages ES-8; page 5-12, Table 5-4; and 9-13 to 9-14, Section 9.3.8.1). As these discussions recognize, the Battle Creek Habitat Expansion Actions are part of Phase 2 of the Battle Creek Restoration Project, and NMFS' Biological Opinion on the Long-Term Central Valley Project and State Water Project Operation, Criteria, and Plan (OCAP Biological Opinion), issued on June 4, 2009, include these actions in the Reasonable and Prudent Alternative Action I.2.6.

Although NMFS is not making a final determination on approval of the HEP at this point, the Licensees' recommended Battle Creek Habitat Expansion Actions apparently do not meet the NMFS' approval criterion in HEA section 4.2.3(e) regarding the requirements for eligible habitat expansion action(s) pursuant to Section 3 of the HEA. The NMFS' approval criterion in HEA Section 4.2.3(e) provides, "...meets the requirements for eligible habitat expansion action(s) pursuant to Section 3 of the Agreement[.]" HEA Section 3.1 provides, in relevant part, "Actions identified in other venues, including unfunded actions, are acceptable for consideration, provided that implementation of the Agreement results in a net expansion of habitat over any Existing Requirements and Commitments, whether by the Licensees or others." HEA Section 3.2 provides, in part, "...the term 'Existing Requirements and Commitment' is intended to encompass actions expected to occur in a timeframe comparable to implementation of habitat expansion action(s) under this Agreement." In addition, this section includes a non-exclusive list of what "Existing Requirements and Commitments may include", and (d) in that list specifically includes, "...reasonable and prudent alternatives, reasonable and prudent

measures, and terms and conditions of any final Biological Opinion that has been issued at the time NMFS approves the habitat expansion action(s).” The Battle Creek Habitat Expansion Actions proposed in the DHEP are part of the reasonable and prudent alternative of NMFS’ final OCAP Biological Opinion. Thus, these actions are Existing Requirements and Commitments under the HEA.

On page ES-8 and in Section 9.3.8.1 of the DHEP, the Licensees argue that the reasonable and prudent alternative of NMFS’ OCAP Biological Opinion “...does not ensure that such discretionary funds will be available, does not provide an alternate funding mechanism in the absence of such funds, as is presently the case, and ultimately does not secure full funding for Phase 2.” In addition, the Licensees argue, “The biological opinion also does not provide a means for completing the project before 2019.” However, there is no support under HEA Section 3 for Licensees’ arguments. Funding and the means for completing the project are not part of the description of “Existing Requirements and Commitments” in HEA Section 3.2 and Subsection (d). In its reasonable and prudent alternative, NMFS has required that the project be completed within a timeframe comparable to implementation of habitat expansion action(s) under the HEA, and it has required reasonable conditions to follow implementation of the project and determine that it will be completed as required.

NMFS has other concerns related the proposed Battle Creek sub-action. Table ES-2 of the DHEP (p. ES-7), Note (b), provides, “Additional funding partners would need to be identified in order to meet this estimated contribution to the HET.” Note (c) provides, “Cost estimate includes partial funding for implementation of Phase 2 of the Battle Creek Salmon and Steelhead Restoration Project, and full funding for construction of Antelope and Big Chico

Creek actions, as well as provisions for operations maintenance not already committed to by others.” As these notes and similar or related discussions (pages 5-9, Table 5-3; 5-10, Section 5.2.1.1; 5-12, Table 5.4; 5-13, Section 5.2.1; 9-2, Section 9.1.1; and 9-10, Section 9.3.4.1) recognize, the estimated contribution to the HET for major components of the Three Creek Actions depend on unsecured funding from other sources. The estimated contribution to the HET should be based on actions that the Licensees propose to fund without reference to other actions that would require additional funding that has not been secured. In addition, these notes and similar or related discussions listed above raise the question of whether these proposed actions meet the selection criteria in HEA Section 4.1.2(c) (Feasibility (action(s) can reasonably be accomplished)) and (d) (Timing (action(s) can be accomplished in a reasonable period of time) as well as the NMFS’ approval criterion in HEA Section 4.2.3(f) (expected to be implemented within a reasonable period of time). Table ES-2 of the DHEP (p. ES-7), Note (e), provides, “Criterion is not required for NMFS approval.” The text of this note is inaccurate. See also notes with the same text on pages 5-3, Table 5-1, Note (d); 5-7, Table 5-2, Note (b); 5-9, Table 5-3, Note (e); and 5-12, Table 5-4, Note (b). HEA Section 4.2.4 provides, “NMFS may approve recommended habitat expansion actions(s) that meet at least [four specific approval criteria listed in that section].” Thus, NMFS may approve recommended habitat expansion action(s) that do not meet the other two approval criteria, but NMFS may decide not to approve habitat expansion action(s) that do not meet those other two approval criteria. In other words, the determination of whether these two approval criteria are “required” is left to NMFS’ discretion.

In the DHEP, Section 9.3.8.3 (p. 9-14) discussion of the recommended Battle Creek Actions, this section provides:

“A landowner abutting one of the construction sites near South Powerhouse and Inskip Diversion Dam on the South Fork Battle Creek has filed a lawsuit against DFG and the State Water Board related to their issuance of CEQA documents. The case is pending before the courts.”

The Licensees should explain how this challenge may affect the expectation that this recommended action could be implemented within a reasonable period of time. See HEA Sections 4.1.2(c) and (d) and 4.2.3(f).

In Appendix C4, in the line related to Phase 2 of the Battle Creek Restoration Project, the table provides “Maybe” under the column entitled, “Deal Killer (No/Maybe).” Explain why this action may be a “Deal Killer” and why the Licensees recommend this action in the DHEP despite having recognized that it may be a “Deal Killer.”

In summary on the Three-Creek sub-action, this project could provide true habitat expansion, and NMFS’ supports the concept in principle. Unfortunately, there are two prevailing conditions that prohibit NMFS from accepting this option as an HEA action: (1) the Battle Creek action is subject to eligibility restrictions as described in HEA section 3.1 and 3.2; and (2) the Big Chico and Antelope Creek actions are geographically close to existing Mill/Deer/Butte Creek populations; thus they do not fully comport with the spatial diversity principles as described in Lindley et al. 2007.

## **8.0 The Upper Yuba River Fish Passage Alternative**

NMFS staff conferred and met regularly with the Licensees’ HEA Steering Committee and other interested parties during the development phase of the Draft Habitat Expansion Plan. From the beginning, it was made clear to the Steering Committee that NMFS was interested in

taking a hard look at the upper Yuba River watershed as a geographic region for potential reintroduction of spring-run Chinook and steelhead. We expressed this viewpoint because NMFS had already conducted considerable science to inform the Draft Central Valley Recovery Plan, and that science indicates to us that reintroduction of spring-run Chinook and steelhead in the upper Yuba River is a prime candidate for a meaningful recovery action. While the Steering Committee indicated that the upper Yuba River was given consideration as a potential HEA action, it chose not to score this option as highly as other options; therefore it did not make the final list of recommended actions. NMFS is concerned about this preliminary determination because we believe that the upper Yuba River offers great potential for realizing the goals of the Habitat Expansion Agreement and meeting (or exceeding) the targeted Habitat Expansion Threshold of 2,000-3,000 adult spring-run Chinook salmon. Furthermore, since our analysis shows that the DHEP' recommended actions raise concerns about eligibility and suitability issues under the HEA, NMFS reminds all Parties that the upper Yuba River anadromous fish reintroduction option remains a viable alternative in our considered opinion.

During the period of development of the DHEP (December 2008- November 2009), NMFS undertook independent studies of the upper Yuba River watershed to assess its potential for reintroduction of spring-run Chinook salmon and steelhead.<sup>5</sup> One of the drivers of this activity was the need to gain additional scientific information about habitat potential in the upper Yuba River to support NMFS' positions in the FERC-relicensing actions that are concurrently underway. Another driver is the recognition that NMFS' Draft Central Valley Recovery Plan identifies passage over certain Sierra Nevada rim dams as a key element needed for recovery of the ESA-listed evolutionarily significant units, i.e., - spring-run Chinook, winter-run Chinook,

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<sup>5</sup> Two studies commissioned by NMFS in 2008-2010 are: (1) *Yuba River Fish Passage: Conceptual Engineering Project Options*, Montgomery-Watson-Harza, Inc. February 2010 and (2) *Habitat Assessment and Reintroduction Planning for the upper Yuba River* – study currently underway by Stillwater Sciences, Inc. and R2 Resources, Inc.

and steelhead. Notably, Englebright Dam on the Yuba River is specifically identified as one of those dams where anadromous fish passage could substantially contribute to the recovery of spring-run Chinook and steelhead. Moreover, reintroduction of anadromous fish into the upper Yuba River watershed is consistent with the seminal science underpinning NMFS Draft Central Valley Recovery Plan and our current management strategies.<sup>6</sup>

Because the results of the NMFS' sponsored studies were not available to inform the deliberations of the HEA Steering Committee during the formulation of the DHEP, it is appropriate at this time for NMFS to introduce these studies as new information - in addition to what is already known about the upper Yuba River – to help frame a new perspective of the upper Yuba River option as the potential solution for meeting the intent and criteria of the HEA.

The first study of importance is the newly published report by Montgomery-Watson-Harza, Inc.: *Yuba River Fish Passage: Conceptual Engineering Project Options*. This report focuses on conceptual engineering alternatives for restoring anadromous fish passage to the upper Yuba River watershed. It identifies realistic options for developing fish passage facilities capable of supporting long-term anadromous fish reintroduction to the upper Yuba River and its tributaries. The significance of this information is that it describes what engineered facilities could be constructed to support a variety of anadromous fish reintroduction strategies.

The second study of importance is the Anadromous Fish Habitat Assessment and Reintroduction Plan project that is currently underway. This NMFS- sponsored effort by Stillwater Sciences and R2 Resources has two components: (1) use of the GIS-based RIPPLE

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<sup>6</sup> Two of the scientific documents that NMFS relies on to guide its decisions in matters related to salmonid management and recovery are: (1) *Viable Salmonid Populations and the Recovery of Evolutionarily Significant Units*, McElhany et al, NOAA Technical Memorandum NMFS-NWFSC-42, June 2000 and (2) *Framework for Assessing the Viability of Threatened and Endangered Chinook Salmon and Steelhead in the Sacramento-San Joaquin Basin*, Lindley et al., San Francisco Estuary and Watershed Science 5(1), February 2007.

computer model platform to assess reintroduction potential in each fork of the upper Yuba River basin, and (2) translate the new and existing information about habitat potential and engineering considerations into realistic options for reintroduction of anadromous fish. Because the results of this study are not yet available, more time is needed to allow the benefits of this forthcoming information to be considered in final HEA implementation decisions.

NMFS is aware of information that indicates the upper Yuba River offers vast areas of historic, higher elevation habitats where spring-run Chinook salmon and steelhead once thrived before the advent of large dams and water diversions. Although no quantitative population estimates are available for the Yuba River fisheries prior to the construction of Englebright Dam and New Bullards Bar Dam, anecdotal information indicates that Chinook salmon were abundant and in considerable numbers (Yoshiyama et al. 2001). Numerous informal field surveys by resource agency biologists, along with our long-standing participation on Yuba River management committees and in the FERC Integrated Licensing Process, has revealed that the upper Yuba River offers great potential for reintroduction of spring-run Chinook and steelhead. In addition, a recent field survey of the upper Yuba River by Stephanie Theis, a Montgomery-Watson-Harza senior biologist, produced a professional opinion that there is existing high quality salmonid habitat in parts of the upper Yuba River watershed.

In light of this existing and new information, NMFS believes it is wise for the HEA signatory parties and stakeholders to pause and carefully consider the upper Yuba River actions on the merits of their potential to satisfy all the elements of the Habitat Expansion Agreement.

## **9.0 Recommended Future Actions**

In the interest of maintaining a collaborative approach toward the successful fulfillment of the HEA, NMFS recommends the following course of action to the Licensees and other interested Parties:

- 1) Licensees accept NMFS recommendation for a six month time extension
- 2) NMFS and Licensees develop a mutually acceptable, joint communication to the signatory parties informing them of the situation and a proposed approach for reconciling existing differences
- 3) Licensees and NMFS meet as required to explore specific areas in need of special consideration
- 4) Licensees and NMFS convene a special meeting (or meetings) among the signatory parties and directly affected third parties to explain the temporary impasse and enlist the other parties in seeking a solution
- 5) All interested parties direct their attention to the recent developments occurring in the Yuba River Multi-Party Forum arena to learn about the upper Yuba River anadromous fish reintroduction proposal, and whether there is a role for a Habitat Expansion Plan that can successfully fulfill all parties' expectations of the Habitat Expansion Agreement.

## XII. REFERENCES

- California Department of Fish and Game (CDFG). 2009. GrandTab. California Central Valley Sacramento and San Joaquin River Systems Chinook salmon escapement hatcheries and natural areas. Last revised: 2/18/2009. Available online: <nrm.CDFG.ca.gov/FileHandler.ashx?DocumentVersionD=26269>.
- CH2M Hill. 1998. Central Valley Project Improvement Act Tributary Production Enhancement Report. Draft Report to Congress. Prepared for U.S. Fish and Wildlife Service. Sacramento, California.
- Ellrott, Brian. Fisheries Biologist. National Marine Fisheries Service (NMFS), Protected Resources Division. Conversation with Larry Thompson, NMFS, Habitat Conservation Division, Sacramento, California. February 12, 2010.
- Kozlowski, J. F. 2004. Summer distribution, abundance, and movements of rainbow trout (*Oncorhynchus mykiss*) and other fishes in the Lower Yuba River, California. M.S. Thesis (Ecology), University of California at Davis. Davis, California.
- Lindley, S .T., R, Schick, B. May. J. J. Anderson, S. Greene, C. Hanson. A. Low. D. McEwan, R. B. MacFarlane, C. Swanson, and J. G. Williams. 2004. Population structure of threatened and endangered Chinook salmon ESUs in California's Central Valley Basin. (NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-360). April 2004.
- Lindley, S. T. and C. B. Grimes, M. S. Mohr, W. Peterson, J. Stein, J. T. Anderson, L.W. Botsford, , D. L. Bottom, C. A. Busack, T. K. Collier, J. Ferguson, J. C. Garza, A. M. Grover, D. G. Hankin, R. G. Kope, P. W. Lawson, A. Low, R. B. MacFarlane, K. Moore, M. Palmer-Zwahlen, F. B. Schwing, J. Smith, C. Tracy, R. Webb, B. K. Wells, and T. H. Williams. 2009. What caused the Sacramento River fall Chinook stock collapse? A Pre-publication report to the Pacific Fishery Management Council. March 18, 2009.
- NMFS. 2008. 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 Segments of Central Valley Steelhead. Co-Manager Review Draft, May, 2008. Sacramento, California.
- Pasternack, G. B. 2008. SHIRA-Based River Analysis and Field-Based Manipulative Sediment Transport Experiments to Balance Habitat and Geomorphic Goals on the Lower Yuba River. Prepared for the Cooperative Ecosystems Study Unit (CESU) 813326J002, University of California at Davis. Department of Land, Air, and Water Resources (in association with the UC Davis Center for Watershed Sciences). Final Report. August (Revised January 29, 2009).

Pasternack, Gregory. 2009. Current Status of an On-going Gravel Injection Experiment on the Lower Yuba River, CA. Report prepared for the U.S. Army Corps of Engineers. June. (26 pp.).

Smith, Christian T., LaGrange, Amanda R. and William R. Ardren. 2008. Run composition of Chinook salmon at Red Bluff Diversion Dam during gates-in operations: A comparison of phenotypic and genetic assignment to run type. Technical Information Leaflet No. AB-08-01, U.S. Fish and Wildlife Service, Abernathy Fish Technology Center, Applied Program in Conservation Genetics, Longview, WA. In Cooperation with Michael A. Banks and David P. Jacobson, Oregon State University, Hatfield Marine Science Center, Newport, Oregon (33 pp.).

U.S. Environmental Protection Agency (EPA). 2003. *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards*. EPA 910-B-03-002. Region 10 Office of Water, Seattle, Washington.

Yoshiyama, R.M., E.R. Gerstung, F.W. Fisher, and P.B. Moyle. 1996. Historical and Present Distribution of Chinook Salmon in the Central Valley Drainage of California. In *Sierra Nevada Ecosystem Project: Final Report to Congress, Volume III: Assessments, commissioned reports, and background information*. Pp. 309-362. Center for Water and Wildland Resources, University of California at Davis. Davis, California.

Yoshiyama, R.M., E.R. Gerstung, F.W. Fisher, and P.B. Moyle. 2001. Historical and Present Distribution of Chinook Salmon in the Central Valley Drainage of California *in Contributions to the Biology of Central Valley Salmonids*. Vol. 1. California Department of Fish and Game. Fish Bulletin 179. R.L. Brown, ed.