

i. Proposal number.# 2001-K205*

ii. Short proposal title.# Intragravel Conditions and Anadromous Salmonid Egg Survival*

APPLICABILITY TO CALFED ERP GOALS AND IMPLEMENTATION PLAN

1a1. Link to ERP Strategic Goals: What Strategic Goal(s) is /are addressed by this proposal? List the letter(s) of all that apply.

- A. At-risk species**
- B. Rehabilitate natural processes**
- C. Maintain harvested species**
- D. Protect-restore functional habitats**
- E. Prevent non-native species and reduce impacts**
- F. Improve and maintain water quality# F***

1a2. Describe the degree to which the proposal will contribute to the relevant goal. Quantify your assessment and identify the contribution to ERP targets, when possible.# This is a research proposal. Its products may indicate whether or not sediment/discharge/temperature influences the survival of fall-run and spring-run chinook egg during development. It is unclear how this information will result in changes to project operations or existing stream conditions to improve conditions or contribute to species recovery.*

1b. Objectives: What Strategic Objective(s) is/are addressed by this proposal? List Objective (from the table of 32 objectives) and describe potential contribution to ERP Goals. Quantify your assessment, when possible.# Goal 6, Objective 3: Reduce fine sediment loading from human activities into rivers and streams to levels that do not cause adverse ecological effects.*

1c. Restoration Actions: Does the proposal address a Restoration Action identified in Section 3.5 of the PSP? Identify the action and describe how well the proposed action relates to the identified Restoration Action.# This proposal best fits the PSP category "Fishery Monitoring Assessment, and Research." This proposal is not specifically requested but should improve and expand the inventory and monitoring of fishery resources, assessment to better define correlations and relationships, research to establish the mechanisms that explain observed correlations. In this case there is not an identified physical problem, just a hypothesis that the research will test.*

1d. Stage 1 Actions: Is the proposal linked directly, indirectly or not linked to proposed

Stage 1 Actions? If linked, describe how the proposal will contribute to ERP actions during

Stage 1.# This is a monitoring and research proposal and is not linked to any proposed Stage 1 action.*

1e. MSCS: Describe how the proposal is linked to the Multi-Species Conservation Strategy and if it's consistent with the MSCS Conservation measures. Identify the species addressed and whether the proposal will "recover", "contribute to recovery" or "maintain" each species.# This proposal is weakly linked to the MSCS as it proposes to evaluate hyporheic flow and survival of eggs in spring-run chinook and fall-run chinook redds.*

1f. Information Richness/Adaptive Probing related to the proposal: Describe the degree to which the proposal provides information to resolve one of the 12 scientific uncertainties (Section 3.3 of the PSP), and whether the proposal offers a prudent approach to answer these uncertainties.# This proposal does not address elements of the twelve uncertainties.*

1g. Summarize comments from section 1a through 1f related to applicability to CALFED goals and priorities. Identify the strengths and weaknesses of the proposal, highlighting the applicability of the proposed project to CALFED and CVPIA goals and priorities. Focus on aspects of the proposal that may be important to later stages in the project review and selection process.# This proposal, at best, weakly addresses the requests in the PSP. Hyporheic flows may or may not be important in egg survival, and may not provide better information than traditional sediment studies. It is uncertain what management recommendations would originate from this investigation. Flows and temperatures in the upper portion of the Sacramento River are controlled and the upper section is characterized as sediment starved. Small tributaries in the Redding area have been identified as sources of turbidity and fine sediment which are being addressed through other program. Deer Creek is an uncontrolled tributary. Temperatures are dependent on the season and ambient weather conditions, stream flow and turbidity and sediment levels probably reflect watershed health or disturbance state. The study probably will not provide the type of management information required during the early stages of the implementation program. It certainly should be considered for funding in later stages, especially in areas where erosion and turbidity are identified as potential problems in chinook/steelhead survival.*

APPLICABILITY TO CVPIA PRIORITIES

1i. Describe the expected contribution to natural production of anadromous fish. Specifically identify the species and races of anadromous fish that are expected to benefit from the project, the expected magnitude of the contribution to natural production for each species and race of anadromous fish, the certainty of the expected benefits, and the immediacy and duration of the expected contribution. Provide quantitative support where available (for example, expected increases in population indices, cohort replacement rates, or reductions in mortality rates).

Because there is little or no control over flows in Deer Creek and the other tributaries to the upper mainstem Sacramento River and because of existing water rights, low flows and lack of upper watershed impoundments, the knowledge gained from this project would have little benefit on salmonid production in Deer Creek. This research would not contribute to spring-run chinook salmon or steelhead production in tributaries to the upper mainstem Sacramento River because these species are known to spawn in the upper reaches of the tributaries that have no impoundments or other associated man-made facilities to allow manipulation of streamflows for optimum conditions over spring-run chinook salmon and steelhead redds. In the foothill sections of these streams, fall-run and late-fall-run chinook salmon could benefit if appropriate flows were allowed below irrigation diversions.

There is little certainty of the proposal's expected contribution to anadromous fish production. The science from this project could possibly benefit fall-run chinook salmon production in the upper mainstem Sacramento River if this project could determine absolute surface and hyporheic flow relationships in fall-run, late-fall-run and winter-run chinook salmon redds in the upper mainstem Sacramento River and if this relationship was transferable to the natural system in the Sacramento River (if the dams and geomorphic characteristics of the river can support the flow management levels to be developed in this research). Because fall-run chinook salmon redd characteristics would be measured in the field and then transferred to a laboratory model where the majority of measurements would occur under controlled conditions, it is questionable whether these results would be representative of the actual biotic and abiotic conditions of the upper mainstem Sacramento River and transferable to that environment. In the Adaptive Management discussion, there is no proposed process to verify salmonid egg survival in natural fall-run, late-fall-run or winter-run chinook salmon redds in the mainstem.*

1j. List the threatened or endangered species that are expected to benefit from the project. Specifically identify the status of the species and races of anadromous fish that are expected to benefit from the project, any other special-status species that are expected to benefit, and the ecological community or multiple-species benefits that are expected to occur as a result of implementing the project.

Fall- and late-fall-run (candidate), winter-run (endangered) chinook salmon and steelhead (proposed threatened). These are species that could be benefited by a better understanding of the relationship of surface flows and hyporheic flows through salmon redds.

The literature already documents that fine sediments in redds can reduce survival in anadromous salmonid eggs (see proposal, p 3- Chapman, 1988; Kondolf, 2000, p. 268). This information supports ongoing sediment reduction restoration projects in the upper Deer Creek and other spring-run tributary watersheds. Since this project attempts to compare fine sediment loads in the upper mainstem Sacramento River to those in Deer Creek and, hence, demonstrate greater egg survival in the mainstem than in Deer Creek, this project

could provide Deer Creek and other tributary watershed managers with scientific information on fall-run chinook survival and production.*

1k. Identify if and describe how the project protects and restores natural channel and riparian habitat values. Specifically address whether the project protects and restores natural channel and riparian habitat values, whether the project promotes natural processes, and the immediacy and duration of benefits to natural channel and riparian habitat values.#

There are no habitat protection or restoration components proposed for enhancement of natural channel and riparian habitat values. The science gained from this project could be applied to the upper mainstem Sacramento River where natural channel values could be gained.*

1l. Identify if and how the project contributes to efforts to modify CVP operations. Identify the effort(s) to modify CVP operations to which the proposed project would contribute, if applicable. Efforts to modify CVP operations include modifications to provide flows of suitable quality, quantity, and timing to protect all life stages of anadromous fish as directed by Section 3406 (b)(1)(B) of the CVPIA, including flows provided through management of water dedicated under Section 3406(b)(2) and water acquired pursuant to Section 3406(b)(3).#

Project proposes to develop an understanding of the relationship between Sacramento River discharges on temperature, hyporheic flow conditions and egg survival with the idea that CVP operations could be changed to optimize fall-run chinook salmon egg survival. A model will also be used to manipulate hyporheic flow characteristics in the laboratory to evaluate the influence of flow conditions on egg survival, controlling temperature and fine sediment. If any precise relationships can be made between the laboratory derived hyporheic flows, egg survival on the redds and the river flows, then it's possible to develop recommended flows and modifications to current CVP operations to that optimize egg survival demonstrated in the laboratory. The certainty of this approach is unknown.*

1m. Identify if and how the project contributes to implementation of the supporting measures in the CVPIA. Identify the supporting measure(s) to which the proposed project would contribute, if applicable. Supporting measures include the Water Acquisition Program, the Comprehensive Assessment and Monitoring Program, the Anadromous Fish Screen Program, and others.#

This project supports 3406 (b)(19), leading to "reevaluation of criteria for carry-over storage at Sacramento and Trinity river reservoirs to protect and restore anadromous fish" in the upper mainstem Sacramento River only. It also supports CVPIA measure 3406(b)(13), replenish spawning gravel and restore riparian habitat below Shasta, Folsom and New Melones reservoirs and 3406(b)(2), manage 800,000 af of CVP yield for fish. Wildlife and habitat restoration purposes after.....

1n. Summarize comments from section 1i through 1m related to applicability to CVPIA priorities (if applicable, identify the CVPIA program appropriate to consider as the source of CVPIA funding [for example, the Anadromous Fish

Restoration Program, Habitat Restoration Program, Water Acquisition Program, Tracy Pumping Plant Mitigation Program, Clear Creek Restoration Program, Comprehensive Assessment and Monitoring Program, and Anadromous Fish Screen Program]). Identify the strengths and weaknesses of the proposal, highlighting the applicability of the proposed project to CALFED and CVPIA goals and priorities. Focus on aspects of the proposal that may be important to later stages in the project review and selection process.

Two CVPIA programs may be appropriate as a source for funding, 3406 (b)(19) and under the AFRP Upper mainstem Sacramento River Action 1. However, there is no anticipated nearterm contribution of this project to natural production of anadromous fish. For all intents and purposes, the proposal targets fall-run chinook salmon and later in the proposal (p.9), it mentions monitoring spring-run chinook salmon in upper Deer Creek and conducting laboratory experiments with hatchery provided spring-run eggs. The proposal targets restoring natural habitat values in hypothesizing that fine silt is deleterious to egg survival in redds, hyporheic flows influence egg survival and that discharge flows from dams can be optimized to get optimum salmonid egg survival. The proposal's major weaknesses are the lack of a detailed field and laboratory designs capable of providing the information being sought. Basic information on species timing in Deer Creek is erroneous and it is doubtful if the data derived from the laboratory simulations are transferable to the Sacramento River environment and if it's possible to regulate precision CVP flows to accommodate optimum laboratory derived egg and larval survival. The lack of an adaptive management follow-up design further limits the probability for success of this project. Also appears that a comprehensive review of the literature on this issue is lacking (See Kondolf 2000 and associated literature cited, - Assessing Salmonid Spawning Gravel Quality, AFS 129:262-281, 2000).*

RELATIONSHIP TO OTHER ECOSYSTEM RESTORATION PROJECTS

2a. Did the applicant explain how the proposed project relates to other past and future ecosystem restoration projects, as required on page 57 in the PSP? Type in yes or no.#yes*

2b. Based on the information presented in the proposal and on other information on restoration projects available to CALFED and CVPIA staff, describe how the proposed project complements other ecosystem restoration projects, including CALFED and CVPIA. Identify projects or types of projects that the proposed project would complement, now or in the future. Identify source of information. # Compliments flow regime research in the San Joaquin Basin (00B04) for the Sacramento River, management planning (on sediment issues), and watershed restoration projects in other CALFED ecozones (00E01, 00E02, 98F15, 98F20). Source: Proposal*

RESULTS AND PROGRESS ON PREVIOUSLY FUNDED CALFED AND CVPIA PROJECTS, INCLUDING REQUESTS FOR NEXT-PHASE FUNDING

3a1. Based on the information presented in the proposal and on project reports and data available to CALFED and CVPIA staff, has the applicant previously received CALFED or CVPIA funding? Type CALFED, CVPIA, both, or none.#none*

3a2. If the answer is yes, list the project number(s), project name(s) and

whether CALFED or CVPIA funding. If the answer is none, move on to item 4.#

3b1. Based on the information presented in the proposal and on project reports available to CALFED and CVPIA staff, did the applicant accurately state the current status of the project(s) and the progress and accomplishments of the project(s) to date? Type yes or no.#

3b2. If the answer is no, identify the inaccuracies:##

3c1. Has the progress to date been satisfactory? Type yes or no.#

3c2. Please provide detailed comments in support of your answer, including source of information (proposal or other source):##

REQUESTS FOR NEXT-PHASE FUNDING

3d1. Is the applicant requesting next-phase funding? Type yes or no.#no*

3d2. If the answer is yes, list previous-phase project number(s) here. If the answer is no, move on to item 4.#

3e1. Does the proposal contain a 2-page summary, as required on pages 57 and 58 of the PSP? Type yes or no.#

3e2. Based on the information presented in the summary and on project reports available to CALFED and CVPIA staff, is the project ready for next-phase funding? Type yes or no.#

3e3. Please provide detailed comments in support of your answers, including source of information (proposal or other source):##

LOCAL INVOLVEMENT

4a. Does the proposal describe a plan for public outreach, as required on page 61 of the PSP? Type yes or no.# Yes*

4b. Based on the information in the proposal, highlight outstanding issues related to support or opposition for the project by local entities including watershed groups and local governments, and the expected magnitude of any potential third-party impacts.## There are no outstanding issues nor are there any potential third-party impacts.*

ENVIRONMENTAL COMPLIANCE

4d. List any potential environmental compliance or access issues as identified in the PSP checklists.# No Comment*

4e. Specifically highlight and comment on any regulatory issues listed above that may prevent the project from meeting the projected timeline.# No Comment*

COST

5a. Does the proposal include a detailed budget for each year of requested support? Type yes or no.# Yes, for all three years*

5b. Does the proposal include a detailed budget for each task identified? Type yes or no.# Yes*

5c. Is the overhead clearly identified? Type yes or no.# Yes, overhead % varies--see Budget Table*

5d. Are project management costs clearly identified? Type yes or no.# Yes*

5e. Please provide detailed comments in support of your answers to questions 5a - 5d.# All information requested has been provided by project proponent in a clear, concise, and understandable format*

COST SHARING

6a. Does the proposal contain cost-sharing? Type yes or no.# Yes*

6b. Are applicants specifically requesting either state or federal cost share dollars? Type state, federal, or doesn't matter.# Doesn't matter*

6c. List cost share given in proposal and note whether listed cost share is identified (in hand) or proposed.

6c1. In-kind:# Deer Creek Watershed Conservancy: 9,000 dollars; Sierra Pacific Industries: 9,150 dollars*

6c2. Matching funds:# They are all matching funds (198,150 dollars total)*

6c3. Show percentage that cost sharing is of total amount of funding requested along with calculation.# Sierra Pacific Industries: 9,150 dollars; USBR Denver Tech. Service Ctr.: 105,000 dollars; DCWC: 9,000 dollars; USBR: 75,000 dollars. Total: 198,150 dollars*

6d. Please provide detailed comments in support of your answers to questions 6a - 6c3.# All information requested has been provided by project proponent in a clear, concise, and understandable format*