F1-104

EXECUTIVE SUMMARY

A. **Project Title and Applicant Name**: Monitoring juvenile chinook salmon and steelhead in Clear Creek, Shasta County, California.

Fish and Wildlife Service, Northern Central Valley Fish and Wildlife Office (NCVFWO)
10950 Tyler Road, Red Bluff, California 96080
Phone: (916)527-3043, FAX: (916)529-0292, E-mail: Matt_Brown@MAIL.FWS.GOV

B. **Project Description and Primary Biological / Ecological Objectives**: The proposed monitoring project will monitor juvenile salmonid outmigration and condition to provide information to guide adaptive management of restoration activities on lower Clear Creek. These restoration activities include: 1) improve flows and water temperature; 2) restoration of floodplain and stream channel form; 3) reduce impacts of gravel mining, timber harvest and urbanization through erosion control, land purchase, and land use planning; 4) improve spawning gravel recruitment blocked by Whiskeytown Dam through supplementation; 5) reduce the possibility of catastrophic wildfire through fuels management and fuel break construction; and 6) improvement of fish passage at McCormick Seltzer Dam.

Monitoring data will provide an overall estimate of success of the restoration efforts. Monitoring may indicate new limiting factors that would need to be addressed. Monitoring data is needed to determine more accurately the flows required to maintain late-fall salmon and restore spring salmon and steelhead. Knowledge of the life history and condition of juvenile fish is important in reducing the impacts of delta operations on outmigrants, and may identify limiting factors / stressors that reside outside of Clear Creek.

C. **Approach/Tasks/Schedule**. This project would use a rotary screw trap, a fish collection device, to sample outmigrants from Clear Creek. Fish size, abundance and condition information would be coupled within environmental data such as season, flow, temperature, and weather to determine fishery needs. This information will be used to set flows for fishery benefits. This approach will provide information also needed by the CVPIA Comprehensive Assessment and Monitoring Program (CAMP), which has also identified a need for Clear Creek screw trap information. A screw trap will be purchased in fall 1997 and installed in December. A small trailer and a john boat will be purchased to service the screw trap. Sampling would continue until outmigration is over, perhaps as late as July 1.

D. **Justification for Project and Funding by CALFED**: The individual impacts of Clear Creek restoration projects will be assessed individually by each individual project. The overall watershed scale impacts of these activities also need to be monitored. Monitoring of the overall watershed impact of restoration activities on sediment quality and stream channel morphology was begun in 1996, in a cooperative effort between the U.S. Fish and Wildlife Service (Service) the Natural Resources Conservation Service and California Department of Fish and Game. The Technical Work Group coordinating Clear Creek restoration activities has indicated a need for a rotary screw trapping program to guide adaptive management of restoration activities. In 1997, the Service began monitoring juvenile salmonids in Clear Creek to begin watershed scale monitoring and to evaluate and modify flow changes authorized under CVPIA.

CVPIA has increased flows in Clear Creek for the last two years, which has contributed to record returns of fall-run chinook salmon. The increased flows have benefitted salmon and steelhead in many ways including: 1) improving fish attraction and fish passage into CC, 2) decreasing high water temperatures, and 3) increasing the amount of spawning and rearing habitat. In the future flows will also be provided in Clear Creek for late-fall- and spring-run chinook salmon and steelhead. The amount of water needed for these fish populations will need adjustment based on information collected by the proposed monitoring project. For instance, in May 1997, additional water was provided for late-fall chinook salmon, a CALFED priority species. Water temperatures and salmonid populations were monitored by the Service and this information was used by the Bureau of Reclamation to guide water releases to protect both late-fall salmon and steelhead, another CALFED priority species. Proposed monitoring using a rotary screw trap will be much more efficient and meaningful than the electrofishing and seining techniques used in the past. Use of rotary screw trapping will provide a much better tool for evaluating population trends and making flow management decisions.

Clear Creek restoration activities will increase both instream aquatic habitat and shaded riverine aquatic habitat. The programs will benefit many priority species: spring-run chinook salmon, late-fall ruin chinook salmon and steelhead trout as well as migratory birds. These projects are being funded by the Jobs in the Woods Program, CVPIA, Proposition 204, and Four Pumps.

E. Budget Costs and Third Party Impacts: Annual cost for the project is $97,000 with an additional first year equipment purchase of $24,000. This request is for three years of funding, for a total of $315,000 There are no anticipated third party impacts. Many other Clear Creek restoration projects will benefit from this monitoring.

F. Applicants Qualifications: The Fish and Wildlife Service has been extensively involved with monitoring chinook salmon in the Northern Sacramento River for over 60 years. The NCVFWO was created in 1978 specifically to address restoration of anadromous salmonids in the Sacramento River basin. The Service has a strong interest in mitigating the impact of the Central Valley Project on Clear Creek. The Service has played a major role in recent restoration efforts in Clear Creek. The NCVFWO has been evaluating the benefits of increased flows on Clear Creek since 1995, including monitoring juvenile salmon and steelhead populations.

G. Monitoring and Data Evaluation: Quarterly and annual reports will be distributed widely. This monitoring program is designed to be compatible with the CAMP of CVPIA. Data will also be distributed to IEP / CAMP for dissemination.

H. Local Support/Coordination with Other Programs/Compatibility with CALFED Objectives: These projects are being funded by the Jobs in the Woods Program, CVPIA, Proposition 204, and Four Pumps The Technical Work Group coordinating lower Clear Creek restoration activities has identified the need for this watershed scale monitoring program. The Clear Creek Coordinated Resource Management Planning Team is also aware of the need for this monitoring. This program can be cost shared with the CVPIA Clear Creek program, which requires a 50% non-Federal share, and the CVPIA CAMP Goal 2 program.

Monitoring juvenile chinook salmon and steelhead in Clear Creek, Shasta County, California.

U.S. Fish and Wildlife Service
Northern Central Valley Fish and Wildlife Office

Principle Investigator: Matt Brown
10950 Tyler Road, Red Bluff, California 96080
Phone: (916)527-3043, FAX: (916)529-0292
E-mail: Matt_Brown@MAIL.FWS.GOV

Type of Organization and Tax Status: Federal Government, tax exempt
Participants/Collaborators in Implementation: U.S. Bureau of Reclamation
RFP Project Group Type: Group 3, Service

III. PROJECT DESCRIPTION

A. Project Description and Approach

This project would use a rotary screw trap, a fish collection device, to sample outmigrants from Clear Creek. Fish size, abundance and condition information would be coupled with environmental data such as season, flow, temperature, and weather to determine fishery needs. This information will be used in setting flows for fishery benefits. This approach will provide information also needed by the CVPIA Comprehensive Assessment and Monitoring Program, which has also identified a need for Clear Creek screw trap information. A screw trap will be purchased in fall 1997 and installed in December. A small trailer and a small john boat will be purchased to service the screw trap. Sampling would continue until outmigration is over, perhaps as late as July 1.

B. Location and/or geographic boundaries of project

Clear Creek, a tributary of the Sacramento River, is located in Shasta County. Anadromous fish restoration activities are located in lower Clear Creek, which is below Whiskeytown Dam, a feature of the Central Valley Project, which imports Trinity River water that is important for maintaining water quality in the Bay-Delta.

C. Expected Benefits

The monitoring project will initially benefit fall, and late-fall chinook salmon and steelhead. Benefits to spring chinook salmon will occur after they are restored to Clear Creek. CVPIA has increased flows in CC for the last two years, which has contributed to record returns of fall-run chinook salmon The increased flows have benefitted salmon and steelhead in many ways including: 1) improving fish attraction and fish passage into CC, 2) decreasing high water temperatures, and 3) increasing the amount of spawning and rearing habitat. In the future flows will also be provided in Clear Creek for late-fall- and spring-run chinook salmon and steelhead. The amount of water needed for these fish populations will need adjustment based on information collected by the proposed monitoring project. For instance, in May 1997, additional water was provided for late-fall chinook salmon, a CALFED priority species. Water temperatures and salmonid populations were monitored by the Service and this information was used by the Bureau of Reclamation to guide water releases to protect both late-fall salmon and steelhead, another CALFED priority species. Proposed monitoring using a rotary screw trap will be much more efficient and meaningful than the electrofishing and seining techniques used in the past. Use of rotary screw trapping will provide a much better tool for making flow management decisions.

D. Background and Biological/Technical Justification

Background The Fish and Wildlife Service along with the Bureau of Reclamation, Bureau of Land Management, National Park Service, Natural Resources Conservation Service, California Department of Fish and Game, California Department of Water Resources, Western Shasta Resource Conservation District, Clear Creek Coordinated Resource Management Planning Group, Horsetown-Clear Creek Preserve are cooperating on many salmonid restoration projects in Clear Creek. CVPIA is funding most of these restoration efforts, however a 50% non-Federal cost share is required

Justification The individual impacts of Clear Creek restoration projects will be assessed individually by each individual project. The overall watershed scale impacts of these activities also need to be monitored. Monitoring of the overall watershed impact of restoration activities on sediment quality and stream channel morphology was begun in 1996, in a cooperative effort between the RBFWO, the Natural Resources Conservation Service and California Department of Fish and Game. The Technical Work Group coordinating Clear Creek restoration activities has indicated a need for a rotary screw trapping program to guide adaptive management of restoration activities. In 1997, the Service began monitoring juvenile salmonids in Clear Creek to begin watershed scale monitoring and to evaluate and modify flow changes authorized under CVPIA.

CVPIA has increased flows in CC for the last two years, which has contributed to record returns of fall-run chinook salmon. The increased flows have benefitted salmon and steelhead in many ways including: 1) improving fish attraction and fish passage into CC, 2) decreasing high water temperatures, and 3) increasing the amount of spawning and rearing habitat. In the future flows will also be provided in Clear Creek for late-fall- and spring-run chinook salmon and steelhead. The amount of water needed for these fish populations will need adjustment based on information collected by the proposed monitoring project. For instance, in May 1997, additional water was provided for late-fall chinook salmon, a CALFED priority species. Water temperatures and salmonid populations were monitored by the Service and this information was used by the Bureau of Reclamation to guide water releases to protect both late-fall salmon and steelhead, another CALFED priority species. Proposed monitoring using a rotary screw trap will be much more efficient and meaningful than the electrofishing and seining techniques used in the past. Use of rotary screw trapping will provide a much better tool for making flow management decisions.

Clear Creek restoration activities will increase both instream aquatic habitat and shaded riverine aquatic habitat. The programs will benefit many priority species: spring-run chinook salmon, late-fall ruin chinook salmon and steelhead trout as well as migratory birds. These projects are being funded by the Jobs in the Woods Program, CVPIA, Proposition 204, and Four Pumps.

E. Proposed Scope of Work

Two stages are foreseen in this project: purchasing equipment, and collecting and processing data and reporting results. A screw trap will be purchased in fall 1997 and installed in December. A small trailer and a small john boat will be purchased to service the screw trap. Sampling would continue until outmigration is over, perhaps as late as July 1. Monitoring will generally take place whenever juvenile salmonids are present in sufficient numbers. For the first few years this means from December through July. Once Spring chinook salmon and steelhead are reintroduced, sampling may occur year round. Year-round sampling may not be necessary, if restoration actions no longer need the data. Screw traps will be fished 5 days a week. Traps will be cleared at least daily, depending on debris and other conditions

F. Monitoring and Data Evaluation

Quarterly and annual reports will be distributed. This monitoring program is designed to be compatible with the Comprehensive Assessment and Monitoring Program (CAMP) for CVPIA. Data will also be distributed to IEP / CAMP for dissemination. The monitoring effort is being coordinated with the Monitoring Subcommittee of the Clear Creek Technical Work Group.

G. Implementability

Screw trapping is sensitive to flow conditions- it is difficult to sample during extreme high water, and changes in flows require increases in maintenance. The NCVFWO will need to revise its scientific collecting permit to include Clear Creek as a location for screw trapping.

IV. COSTS AND SCHEDULE TO IMPLEMENT PROPOSED PROJECT

A. Budgeted Costs

Project Phase	Direct Labor Hours	Direct Salary and Benefits	Acquisition Contracts	Vehicles and Maintenance	Overhead Labor	Total Cost
Purchasing	16	$500	$20,000	$0	$3,895	$24,395
Sampling and Reporting	2,464	$77,500	$ 0	$3,902	$15,466	$96,868 per year
					Total Cost for three years	**$315,000**

B. Scheduled Milestones

Equipment will be purchased Fall 1997 and sampling will begin December 1997 and end approximately June 30, 1998. Sampling in future years may have similar start and end dates.

C. Third Party Impacts

No adverse third party impacts are anticipated. Many other restoration projects in Clear Creek will benefit from this monitoring.

V. APPLICANT QUALIFICATIONS

The Fish and Wildlife Service has been extensively involved with monitoring chinook salmon in the Northern Sacramento River for over 60 years. The NCVFWO was created in 1978 specifically to address restoration of anadromous salmonids in the Sacramento River basin. The Service has a strong interest in mitigating the impact of the Central Valley Project on Clear Creek. The Service has played a major role in recent restoration efforts in Clear Creek. The NCVFWO has been evaluating the benefits of increased flows on Clear Creek since 1995, including monitoring juvenile salmon and steelhead populations.

Matt Brown received a Bachelors of Arts Degree in Biology from UC Santa Cruz in 1986 and a Master of Science Degree from Arizona State University in 1990, with additional graduate level course work from UC Davis, Colorado State University, and Eastern New Mexico University. In addition, formal training has included. Habitat Evaluation Procedures, Designing and Negotiating Studies Using IFIM, Applied Fluvial Geomorphology, Fish Passageways and Diversion Structures, Principles and Techniques of Electrofishing, Introduction to Fisheries, River Safety and Rescue and Pre-acquisition Contaminants Surveys.

Matt's current work for the NCVFWO focuses on implementing the Central Valley Project Improvement Act. Matt is the Fish and Wildlife Services lead biologist for CVPIA activities in Clear Creek. He has worked since April 1995 on Clear Creek projects including: writing portions of the Clear Creek Watershed Analysis, developing the CVPIA project plan and budget for Clear Creek, evaluating the benefits of increased stream flows, implementing and improving sediment and stream channel monitoring programs, monitoring juvenile salmonid populations, coordinating and funding water quality monitoring efforts, coordinating restoration projects with other agencies, and reviewing restoration project proposals for CVPIA funding.

VI. Compliance with standard terms and conditions

The terms and conditions are agreeable and we are able to conform them.