Work Plan for Fiscal Year 2004

I Program Title: CVPIA § 3406 (b)(12), Clear Creek Restoration

II Responsible Entities:

	Agency	Staff Name	Role
Lead	USBR	Jim De Staso	Program Manager
Co-Lead	USFWS	Matt Brown	Program Manager

III. Program Objectives for FY 2004:

A Restore stream channel form and function necessary to optimize habitat for salmon and steelhead and the aquatic and terrestrial communities on which they depend.
B Conduct IFIM study as mandated in Section b(12), to determine long-term flow needs.
C Provide flows of adequate quality and quantity to meet the requirements of all life stages of Chinook salmon and steelhead trout known to use Clear Creek.
D Provide spawning gravel to replace supply blocked by Whiskeytown Dam.
E Monitor project results.

Source documents supporting each of the above objectives include: 1) CVPIA Section 3406 (b)(12); 2) Record of Decision, Central Valley Project Improvement Act; 3) CALFED Bay-Delta Programmatic Record of Decision, proposed Ecosystem Restoration Program stage 1 actions; 4) CALFED Ecosystem Restoration Program Strategic Plan For Ecosystem Restoration, action 3, page D-23; 5) Biological Opinion, Effects of the Central Valley Project and State Water Project Operations from October 1998 through March 2000 on Steelhead and Spring-run Chinook Salmon; and 6) Draft Biological Opinion, for Interim Operations of the CVP and SWP between April 1, 2002 and March 31, 2004.

IV. Status of the Program:

The Clear Creek Coordinated Resource Management Planning group (CRMP) and the Clear Creek Technical Team work directly with local entities to achieve program objectives. The CRMP and the Technical Team are comprised of local landowners, agency representatives and stakeholders. The groups have been meeting since 1995 to plan, implement, and monitor restoration projects using a multi-disciplinary restoration approach. Many of the projects are implemented by the Western Shasta Resource Conservation District with technical assistance from more than a dozen Federal, State and local agencies. The Clear Creek Restoration Team uses an adaptive management approach to improve learning through active experimentation.

The CVPIA Anadromous Fisheries Restoration Program Plan, the CALFED Strategic Plan for Ecosystem Restoration, and the Record of Decision for the CALFED Bay-Delta Program all call for similar actions on Clear Creek, some of which have already been implemented: removing Saeltzer dam, filling instream and floodplain mining pits, and refining and implementing a watershed management plan to reduce the transport of fine sediment to the creek. Continuing actions from the three plans include: A) implementing large-scale restoration projects; B) evaluating the need to augment flows; C) providing channel maintenance flows; C) increasing stream flow; and D) augmenting the supply of spawning-sized gravel.

Objective A) Four stream channel improvement projects were completed, in 1998, 1999, 2001 and 2002. The projects have functioned as designed in restoring a functional floodplain, but the majority of the potential increase in salmonid spawning habitat will occur in future phases when the stream channel is restored. Funding is being sought for Phases 3B and 3C. Funding for future phases has not been forthcoming from CALFED since the 1998 PSP due to concerns over the large scale and costs of the project, the desire for more explicit and active adaptive management and the potential for negative impacts from mercury. In response to these concerns, the Technical Team has designed smaller, less expensive projects (Phase 3A was funded by cost savings achieved in the two previous phases), participated in the Adaptive Management Forum, and waited for mercury studies.

Teams of interdisciplinary mercury experts from USGS, BLM and the University of Montana continue to evaluate the potential risk of using tailings in future restoration projects. This research is key to restoration efforts, as gold mining tailings used for restoration projects may liberate mercury which could have negative impacts on the environment and human uses. Recent reports available from USGS and University of Montana have shown that elevated mercury levels in the watershed are not associated with restoration activities and that restoration activities have not been shown to have negative impacts.

Objective B) The CVPIA mandated the development and use of an Instream Flow Incremental Methodology (IFIM) study to determine flows from Whiskeytown Dam to allow sufficient spawning, incubation, rearing, and outmigration for salmon and steelhead. The current instream flow prescriptions for the creek, based on 1983 conditions, needs updating to include temperature concerns, analysis of barriers to fish passage, recent developments in minimum flow setting methodology and changes in the stream channel that have been ongoing since Whiskeytown Dam was closed in 1963. Work continues on the Clear Creek Decision Analysis Model (CCDAM) to be used in the evaluation of costs and benefits to power generation, salmonid populations, and geomorphology from large managed flow increases.

Objective C) Clear Creek has experienced a five-fold increase in fall Chinook spawning escapement over the 1967 to 1991 baseline period. Record levels of escapement were estimated by carcass surveys in the last two years. The increase in average fall Chinook is largely attributable to higher minimum flows between October and June. The benefits of higher minimum flows between July and September for threatened spring Chinook and steelhead were demonstrated in rotary screw trap catches and in snorkel counts of adult spawners and their redds. While populations of these threatened species are small, they are on an upward trend.

Objective D) Spawning gravel supplementation is a long term need created by the construction of Whiskeytown Dam, which blocks all gravel from moving downstream into the areas of Clear Creek where salmonids spawn. Each year since 1996, spawning gravel has been augmented at two or more locations. Spawning gravel introductions have created high density spawning areas in areas once bereft of spawning gravel.

Objective E) Ongoing monitoring studies involve salmonid use of restored habitat, fish stranding and passage, juvenile salmonid out-migration, adult population estimates, redd mapping, neotropical migratory bird populations, riparian vegetation, wetlands, groundwater, stream flows, water temperatures, bedload movement, channel geomorphology, and spawning gravel quality. In addition to results listed in the accomplishments below, monitoring also indicated: a) riparian re-vegetation continues to show excellent growth and success; b) after a slow start, Chinook spawning in Phase 3A was high; c) fewer fish stranded during high flows on newly constructed floodplains than on natural floodplains; d) few fish were stranded by water project operations; e) juvenile salmonids and redds were subjected to severe scouring by high winter flows; f) stream flows in summer 2002 provided water temperatures favorable for steelhead summer rearing and spring Chinook spawning; g) stream flows provided in 1999 resulted in strong returns of adult spring Chinook in 2002; h) increased flows can not be used to separate fall and Spring Chinook; i) kayak-based redd surveys are preferred for estimates of steelhead populations trends; j) spawning gravel quality may have been negatively impacted by prolonged glory hole spill in April 2003; k) significant stream channel changes due to the removal of Saeltzer Dam continue to occur both up and downstream of the dam site; and l) the barrier weir was successful in preventing fall Chinook from entering spring Chinook spawning areas.

V. FY 2003 Accomplishments:

Lettered accomplishments refer to the lettered objectives above.
Monitored the greatly improved salmon spawning and rearing in the newly completed Clear Creek stream channel restoration project (Phase 3A)
Monitoring indicated that Phase 3A successfully restored natural geomorphic form and process
Monitoring indicated that migratory songbird diversity and population sizes were increasing in the restoration area
Revegetated floodplain reconstructed in Phase 3A

Participated in AFRP / CALFED Adaptive Management Forum to improve efficiency and understanding of large scale stream channel restoration projects
USGS and University of Montana mercury studies indicated that the stream channel restoration projects have not had an adverse impact
Provided flows suitable for all life stages of anadromous fish including an experimental pulse flow in September 2002 to minimize hybridization of fall and spring Chinook
Candidate fall Chinook escapement was the highest on record for the second year in a row
Threatened spring Chinook counts were the highest to date
Threatened steelhead spawning continues to increase following the removal of Saeltzer Dam.
Spawning is concentrated in injected spawning gravel.
Re-initiated work on the CCDAM model, begun with CALFED funding
Provided two experimental pulse flows to test ability to separate fall and spring Chinook and to improve spawning gravel distribution
Installed barrier weir to prevent fall Chinook from hybridizing with spring Chinook
Added 12,000 tons of spawning gravel to four locations: Placer Bridge, City of Redding, Clear Creek Road Bridge and Reading Bar

Tasks, Costs, Schedules and Deliverables:

A. Narrative Explanation of Tasks.

1. Program Management

2 Implement Clear Creek stream channel restoration project (objective A)

2.1 Topographic surveys for Phase 3B

2.2 Mercury characterization for Phase 3B

2.3 Monitor and evaluate channel constructed in Phase 3A

2.4 Synthesize evaluations of potential for mercury contamination due to restoration project

3 Provide baseline flows for all life stages of anadromous fish, and pursue summer and spring pulse flows (objective B)

3.1 Recommend flows between June and September to maintain water temperatures that meet standards established by the NOAA Fisheries for the protection of endangered spring-run Chinook and steelhead

3.2 Recommend flows between October and May to provide spawning and rearing habitat for Chinook and steelhead

3.3 Determine through IFIM study, long-term flows needed to satisfy requirements of (b)(12)

3.4 Improve CCDAM to evaluate power, sediment, riparian and salmonid impacts from large managed releases of water

4 Implement spawning gravel augmentation and monitoring program (objective C)

4.1 Implement and monitor spawning gravel augmentation at several locations

5 Monitoring (objective D)

5.1 Monitor anadromous fishery including juvenile salmonid use of restored habitats, fish stranding, adult population estimates, and redd mapping. Monitor stream flows, water temperatures, spawning gravel and stream substrate quality.

B. **Schedule and Deliverables.**

#	Task	Dates		Deliverable
		Start	**Complete**	
1	Program Management	10/01/03	09/30/04	
2.1	Topographic survey for Phase 3B	10/01/03	09/30/04	Hard and electronic copy of survey results
2.2	Mercury characterization for Phase 3B	10/01/03	09/30/04	Hard and electronic copy of survey results
2.3	Evaluate channel constructed in Phase 3A	10/01/03	09/30/04	Annual Report and recommendations for future Phases
2.4	Synthesize evaluations of potential for mercury contamination due to restoration project	10/01/03	09/30/04	Summary report and recommendations
3.3	Conduct IFIM study	10/01/03	09/30/04	Annual Report and recommendations for future Phases
3.4	Improve Clear Creek Decision Analysis Model	10/01/03	09/30/04	Report including computer model
4.1	Implement spawning gravel augmentation and monitoring program	10/01/03	09/30/04	Inject and place 10,000 tons of spawning gravel. Annual Report and recommendations for the future.
5.1	Monitor anadromous fishery	10/01/03	09/30/04	Annual Report and recommendations for the future.

C. **Summary of Program Costs and Funding Sources.**

#	Task	Total Cost	Funding Sources	
			W&RR	RF
1	Program Management	$100,000	$50,000	$50,000
2.1	Topographic survey for Phase 3B	$6,000	$0	$6,000
2.2	Mercury characterization for Phase 3B	$10,000	$0	$10,000
2.3	Evaluate channel constructed in Phase 3A	$14,000	$0	$14,000
2.4	Synthesize evaluations of potential for mercury contamination due to restoration project	$10,000	$0	$10,000
3.3	Conduct IFIM study	$105,000	$0	$105,000
3.4	Improve Clear Creek Decision Analysis Model	$50,000	$50,000	$0
4.1	Implement spawning gravel augmentation and monitoring program	$130,000	$0	$130,000
5.1	Monitor anadromous fishery	$175,000	$0	$175,000
Total Program Budget		**$600,000**	**$100,000**	**$500,000**

Program Costs and Funding Sources - Additional Funding Needs.

#	Task	Total Cost	Additional Funding Need
			CVPIA
2.3	Monitor and evaluate channel constructed in Phase 3A	$164,000	$155,000
3.4	Make Clear Creek Decision Analysis Model more useful and user friendly	$150,000	$100,000
4.1	Implement spawning gravel augmentation and monitoring program	$500,000	$370,000
5.3	Monitor anadromous fishery	$250,000	$75,000
Total Additional Funding Needs			**$700,000**

4. Limited funds for the Clear Creek Fish Restoration Program in 2004 will require reduced funding for spawning gravel. Clear Creek Gravel Management Plan recommends more gravel than current budget allows. The spawning gravel task has been underfunded for 3 years.

D. CVPIA Program Budget

#	Task	FTE	Direct Salary and Benefits Costs	Contracts Costs	Misc Costs	Admin Costs	Total Costs
1	Program Management						
	BOR	0.5	$32,500			$17,500	$50,000
	FWS	0.5	$35,000			$15,000	$50,000
2.1	Topographic survey for Phase 3B	NA		$6,000			$6,000
2.2	Mercury characterization for Phase 3B	NA		$10,000			$10,000
2.3	Evaluate channel constructed in Phase 3A	NA		$14,000			$14,000
2.4	Synthesize evaluations of potential for mercury contamination due to restoration project	NA		$10,000			$10,000
3.3	Conduct IFIM study	NA		$105,000			$105,000
3.4	Improve Clear Creek Decision Analysis Model	NA		$50,000			$50,000

4.1	Implement spawning gravel augmentation and monitoring program			$130,000			$130,000
5.1	Monitor anadromous fishery	NA		$175,000			$175,000
	Total by Category		$67,500	$500,000		$32,500	$600,000