

Draft CVPIA Fiscal Year 2013 Annual Work Plan

August 11, 2012

Program Title:

Clear Creek Restoration – CVPIA Section 3406(b)(12)

Responsible Entities:

Staff Name	Agency	Role
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Program Goals and Objectives for FY 2013

The goal of the Central Valley Project Improvement Act (CVPIA) as stated in Section 3406 (b)(12) for Clear Creek is to:

“develop and implement a comprehensive program to provide flows to allow sufficient spawning, incubation, rearing, and outmigration for salmon and steelhead from Whiskeytown Dam as determined by instream flow studies conducted by the California Department of Fish and Game after Clear Creek has been restored and new fish ladder has been constructed at the McCormick-Saeltzer Dam. Costs associated with channel restoration, passage improvements, and fish ladder construction required by this paragraph shall be allocated 50 percent to the United States as a nonreimbursable expenditure and 50 percent to the State of California. Costs associated with providing the flows required by this paragraph shall be allocated among project purposes.”

Additionally, the CVPIA mandated the Secretary of the Interior to develop and impellent a program that makes all reasonable efforts to double natural production of anadromous fish in Central Valley streams (Section 3406 (b1)(1).; this program is known as the Anadromous Fish Restoration Program (AFRP). The AFRP’s “Final Restoration Plan” for the AFRP provides programmatic level direction and identifies actions and evaluations that are intended to increase production. The Restoration Plan has six actions and one evaluation for Clear Creek. These actions, for example address seasonal flow releases from Whiskeytown Dam, gravel replenishment through augmentation, halting channel degradation and restoring channel conditions, and preserving the habitat productivity through cooperative watershed management.

Therefore, the CVPIA legislation continues to be a driving force in defining the activities of this and previous annual work plans.

Goal A - Provide flows to allow sufficient spawning, incubation, rearing, and outmigration for salmon and steelhead.

Flows and temperatures must be provided and managed through releases from Whiskeytown Dam on a year-round basis to support the different life stages of salmon and steelhead in Clear Creek. The amounts of water, considering timing, magnitude, and duration, and water temperature are controlled to meet this goal.

Objectives: 1) provide minimum instream flows that create habitat that is at least 90 percent of the maximum possible, 2) provide temperature control flows to meet Igo gage water temperature criteria including 60°F from June 1 through September 15, and 56°F from September 15 through October 31, 3) provide annual adult attraction flows that result in 67 percent of adult spring Chinook being distributed upstream of the Igo gage and all being distributed upstream of the segregation weir, and 4) provide additional channel maintenance flows of 3,250 to 6,000 cfs in 3 years out of 10, to create and maintain the habitats upon which anadromous salmonids depend.

Task 1.1.2 – Coordinate monitoring results with the Clear Creek Technical Team, the (b)1 IFIM Program, the (b)2 Water Program, the Environmental Water Program (EWP), the fishery regulatory agencies, and Reclamation’s Central Valley Operations group, to guide adaptive flow management and evaluate results.

Task 2.4.1 – Assist Environmental Water Program (EWP) with NEPA / CEQA / Environmental compliance for Channel Maintenance Flows required by NMFS OCAP BO RPA Action I.1.2. Federal and State specialists provide technical expertise (fish biologists, geomorphologists) in the development of the EWP.

Task 3.1.1 - Provide funding for wheeling water for the McConnell Foundation. This is a perpetual legal compensation requirement resulting from the removal of the McConnell Foundation’s Saeltzer-McCormick Dam.

Goal B – Restore the stream channel and associated instream habitat.

Objectives: 1) restore a 2 mile section of Clear Creek floodplain and stream channel degraded by aggregate and gold mining, dams and diversions, 2) annually inject 17,000 tons of spawning gravel to recharge and maintain the system, 3) by 2020, create and maintain 347,288 square feet of usable spawning habitat between Whiskeytown Dam downstream to the Former McCormick-Saeltzer Dam, and 4) reduce fine sediments through erosion control, mechanical removal and channel maintenance flows.

Task 2.4.2 – Clear Creek Long-Term Gravel Supply Project. NEPA / CEQA / Environmental compliance for a project that processes a 40-year supply of spawning gravel from Clear Creek through reclaimed historic mining tailings.

Task 2.7.1 – Lower Clear Creek Floodway Restoration Project, Phase 3B. Revegetate restored floodplain, reroute and decommission roads used for restoration, and develop scour channels that reduce salmonid stranding.

Task 2.7.2 – Lower Clear Creek Parkway Project. Conduct post-project monitoring to evaluate the benefits of the project.

Goal C – Determine impacts of restoration actions on anadromous fish and geomorphology.

Objective: Conduct fishery and geomorphic monitoring at levels necessary to ascertain project effects on fishery and geomorphic resources. These are annual activities.

Task 4.1.1 – Conduct juvenile salmonid monitoring using rotary screw trapping to estimate spring Chinook production. This activity assesses whether CVPIA goals are being met.

Task 4.1.2 – Conduct spawning area mapping to evaluate the benefit of restoration actions (habitat improvement, spawning gravel augmentation, channel maintenance flows, and segregation weir operation) on fall Chinook.

Task 4.1.3 – Conduct spawning habitat suitability mapping to evaluate the benefit of restoration (habitat improvements, spawning gravel augmentation and channel maintenance flows,) actions on spring Chinook.

Task 4.1.4 – Evaluate gravel size-distributions to evaluate the effectiveness of gravel additions and pulse flows.

Task 4.1.5 – Conduct geomorphic monitoring to document in-stream channel and habitat conditions as a means to evaluate the effectiveness of restoration program actions in Clear Creek, such as spawning gravel injections. This work also evaluates effectiveness of pulse flows for both channel maintenance and fish passage needs.

Supporting documents

1) CVPIA Section 3406 (b)(1), (b)(12), (b)(13); 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; and 5) Biological Opinion on the Long-Term Central Valley Project and State Water Project Operations Criteria and Plan, National Marine Fisheries Service, June 2009.

Status of the Program

In addition to meeting the goals of the CVPIA, most actions in this Annual Work Plan are also included in the Reasonable and Prudent Alternative of the Central Valley Project Operation Criteria and Plan Final Biological Opinion from the National Marine Fisheries Service (NMFS OCAP BO).

Goal A – Provide Flows to allow sufficient spawning, incubation, rearing, and outmigration for salmon and steelhead.

Minimum Instream Flows and Temperature Control

Interim minimum instream flow increases began in 1995 and have occurred every year since. Pre-CVPIA baseline flows were 50 cfs between January and October and 100 cfs in November and December.

Under (b)(2), interim flows were increased to 200 cfs from October through June and approximately 70 to 250 cfs during the summer for temperature control. Minimum flows of 200 cfs between October 1 and May 31 meet the objective of providing 90% of the maximum possible habitat for all life stages and runs of salmonids and have been achieved in all but one year since 1999. Temperature control targets of 60°F from June 1 through September 15 and 56°F from September 15 through October 31, have also been met in most years. However the later target has not been met in the last 3 years. In 2011 and 2012, the Clear Creek Technical Team proposed many actions to improve future water temperatures, some of which were successfully implemented.

The interim minimum flow prescription was recommended by the AFRP Working Paper which derived its recommendations from an Instream Flow Incremental Methodology (IFIM) study conducted in the mid 1980's. The FWS began a new long-term IFIM study in 2004 to reassess flow requirements taking into account changes in instream habitat resulting from CVPIA restoration efforts. The field study portions of this study are completed, four reports have been completed, and a synthesis report is scheduled for completion by the end of September 2012.

In 2013, the IFIM synthesis report will be used by Reclamation and the Clear Creek Technical Team to develop a new long-term flow prescription, which will be proposed to NMFS under terms of the OCAP BO RPA I.1.6. The RPA I.1.6 prescription could result in proposed flows to: 1) meet habitat needs based on IFIM and habitat suitability study results; 2) provide temperature control; 3) move and maintain spawning gravels and create and maintain riparian vegetation; 4) avoid stranding; and 5) encourage anadromy of *Oncorhynchus mykiss* (steelhead / rainbow trout) through an adaptive management approach. Related to providing temperature control (item number 2), the Clear Creek Technical Team discussed and may recommend many actions such as: a) Avoid full power peaking; b) Replace Oak Bottom TCC; c) Ramp down fall flows (allows higher flows during temperature control); d) Move Igo temperature compliance point; e) Use upper Whiskeytown outlets when temperatures are not warm; f) Improve water temperature modeling (RPA I.1.5); and g) Evaluate temperature control curtains (RPA I.1.4). In addition, in 2014 and 2015 monitoring will be needed to guide adaptive management to encourage anadromy (item number 5).

Attraction Pulse Flows

Adult spring Chinook have been distributed too far downstream of the Igo temperature compliance point. On average, 50% hold downstream of Igo and 14% hold downstream of the segregation weir. These adults and their redds are therefore not fully protected by temperature control criteria. The objective of the pulse flows is to enable or encourage adult Spring Chinook to move further upstream so that 67 percent are upstream of the Igo gage and all are upstream of the segregation weir. The Igo gage is 67 percent of the way from Whiskeytown to the segregation weir. Two pulse flows were provided each spring in 2010, 2011, and 2012 to attract spring Chinook into Clear Creek. The results of these flows have been inconclusive. The Clear Creek Technical Team has proposed changing the timing, magnitude and duration of these flows to improve their effectiveness. Similar flows will occur each year as directed by the NMFS OCAP BO.

Channel Maintenance Flows

Studies have been undertaken by CVPIA and CALFED since 1999 to develop channel maintenance flows, which may be vital for maintaining ecosystem processes that provide salmonid habitat in Clear Creek. These efforts resulted in a FWS proposal to Reclamation to re-operate Whiskeytown Dam, between March 1 and May 15, such that a glory hole spill produces a minimum target release of 3,250 cfs for one day occurring three times in a ten year period. Flows of this magnitude and duration could reactivate fluvial geomorphic processes to re-create and maintain diverse instream and floodplain habitat required to support and recover aquatic and riparian species. This flow prescription is also required in the NMFS OCAP BO.

In 2008, CALFED contracted with FWS EWP for program management to facilitate a pilot channel maintenance flow. The program includes subcontracts with Reclamation's Denver Technical Service Center, ESSA Ltd, Graham Matthew and Associates (GMA), and Stillwater Sciences. This contract will develop forecast and decision making tools, finalize implementation and monitoring plans, provide

geomorphic and fisheries evaluations and pay for foregone power generation. The contract does not include funding for monitoring and EWP is looking to CVPIA to provide additional monitoring.

ESSA conducted a workshop, in October 2011, in Sacramento to ensure that best available information is used in the development of an on-the-ground in-season operational plan. Various levels of governing (federal, state, local, and quasi) agencies collaborated to identify data gaps and uncertainties, understand operational tools, identify resources needed, ensure safety-of-dams considerations, and mitigate for foregone power revenues. In February 2012, a three-day workshop was conducted to develop a monitoring and adaptive management plan. A hydrologic study was also conducted to estimate the safe channel capacity of Clear Creek during flooding in the Sacramento River. Fortunately, the channel capacity in the areas most susceptible to flooding exceeded that used in previous modeling for the project. Reclamation will work to secure NEPA / CEQA and other environmental compliance permits in 2013. To date, the program has not attempted to provide the objective of additional channel maintenance flows of 3,250 to 6,000 cfs in 3 years out of 10, to create and maintain the habitats upon which anadromous salmonids depend.

Goal B – Restore the stream channel and associated instream habitat.

Stream Channel Restoration

The Stream Channel Restoration project is a construction project designed to eliminate gravel extraction pits, restore a functional floodplain, and increase salmonid spawning and juvenile rearing habitat in a two-mile section of creek significantly degraded by gold and aggregate mining. Four phases of the project are complete including: Phase 1 in 1998, Phase 2A in 1999, Phase 2B in 2001, Phase 3A in 2002, Redding Bar in 2003 and Phase 3B in 2008. Phases 3A and 3B created new stream channels and the other phases filled gravel extraction pits, created and vegetated floodplain habitat and reduced most of the potential for fish stranding in the project area. Recent ERP funding for Phase 3B will allow for completion of revegetation and decommissioning of roads in 2012. Phase 3C, the last phase of the project, is currently being considered for potential implementation in future years. Phase 3C would create floodplain and stream channels in the lowest part of the reach. On-going analyses of geomorphic function, fish and wildlife limiting factors and priorities, mercury contamination, landownership, and cost-effectiveness, plus an inventory of other restoration opportunities in the watershed, is expected to result in restoration recommendations for Phase 3C in FY 2014.

Spawning Gravel Supplementation

Spawning gravel supplementation is a long-term need created by the construction of Whiskeytown Dam, which blocks gravel from moving downstream into the areas of Clear Creek where salmonids spawn. By the year 2020 the overall goal is to create and maintain 347,288 square feet of usable spawning habitat between Whiskeytown Dam downstream to the former McCormick-Saeltzer Dam, the amount that existed before construction of Whiskeytown Dam. Between 1996 and 2012, a total of approximately 152,012 tons of spawning gravel was added to the creek. In 2012, a total of ten thousand tons of gravel were placed at four sites: Below NEED Camp (Guardian Rock site), Placer Bridge, Clear Creek Road Crossing, and at Tule Backwater. The 10,000 tons is 59% of the CPAR annual goal. The programs' annual spawning gravel addition target is 17,000 tons per year, but only an average of 8,942 tons has been placed annually since 1996. Long-term environmental permits for spawning gravel addition and instream structure placement projects continue to be prepared with completion anticipated in 2013.

CVPIA has provided funding for the design and permitting of projects on BLM and DFG lands to provide a long-term supply of spawning gravel. The projects would reduce the threat of mercury contamination through separation and relocation of contaminated materials, and provide an economical 40-year supply of gravel, while using renovated mine tailings to restore (e.g. filling in deep pits) floodplain and upland habitats. In 2012 these projects were funded by the Ecological Restoration Program (ERP) using state funds. The final proposal included increased funding for monitoring mercury, riparian and avian impacts, for riparian revegetation and wetlands creation, and for improved designs taking into account the significant learning that has occurred in Clear Creek since 1996. Pre- and post-project monitoring to evaluate the success of the project will serve as a basis for improving future projects in Clear Creek.

Erosion Control

In the 1990's many programs including CVPIA funded erosion control projects in Clear Creek. By 2003 all of the cost-effective projects had been completed. Unfortunately in more recent years there have been large increases in deleterious fine sediment due to wildfire. In 2008, wildfire burned significant portions of the Clear Creek watershed resulting in fire line building, road building and salvage logging. Since 2009, large amounts of fine sediment entered Clear Creek and covered large areas of injected spawning gravels that were funded in previous years through CVPIA and CALFED. Efforts to remove this sediment and inventory its sources will be needed to avoid further degradation of habitat.

In July 2012, a 1,038 acre wildfire burned the entire project area of the long-term gravel supply project including about 10% of the creeks length. In some areas of higher fire intensity, large amounts of deleterious fine sediment are poised to be delivered to the creek during rains. The Clear Creek Technical team is working with the land-owning agencies to remediate the impacted areas prior to the FY 2013 rainy season. Remediation will require funding at levels unknown as of August 2012.

Adaptive Management

Goal C – Determine impacts of restoration actions on anadromous fish and geomorphology.

Spawning gravel-size specifications improved based on monitoring. Spawning ground surveys and spawning habitat suitability surveys identified that Chinook were no longer using the spawning gravel provided by the program in the reach directly downstream of Whiskeytown Dam. Gravel-size distributions suggested that only smaller size gravel was being delivered to spawning areas due to reduced high flows from Whiskeytown Reservoir, and that the size specifications being used for restoration in this area did not contain enough larger material. Therefore gravel size specifications were increased for projects implemented in 2012. Further monitoring will be needed to complete the adaptive management cycle and verify if Chinook use the new gravel. Spawning studies conducted by FWS and geomorphic studies conducted by GMA also suggested that some spawning gravel projects performed better than others. These results were used to improve projects conducted in 2012 and to prioritize sites for future spawning gravel augmentations.

Stream channel restoration designs improved based on monitoring. In 2012, stream channel restoration Phase 3B designs were improved by monitoring and evaluations. Based on monitoring results, plans and designs were made for habitat improvements in scour channels and riparian vegetation and for the reduction of negative habitat fragmentation by decommissioning of roads used during habitat restoration. Funding from ERP will allow completion of project construction in FY 2013. In

addition, the final proposal for the long term gravel supply project was greatly improved by the significant learning that has occurred in Clear Creek since 1996. This has included monitoring of birds, riparian vegetation, wetlands, mercury, and benthic macroinvertebrates in addition to geomorphology and fish.

Monitoring the impacts of wildfire will guide erosion control. The aforementioned 2008 wildfire in the South Fork Clear Creek tributary, and subsequent salvage logging and road building contributed to a significant instream sediment problem. These observations led to topographic surveys to quantify the amount of fine sediment delivered to the creek, bulk sampling to estimate changes in sediment size, and snorkel surveys to locate the downstream extent of sand deposition in pools. Information was synthesized by the Clear Creek Technical Team to evaluate options and to identify the most appropriate solutions: sediment removal from a large pool, an erosion inventory, and erosion control. These actions may be funded in 2014. Funding will be needed to monitor and evaluate the effectiveness of these actions and to determine whether additional remedial measures will be necessary. Since the 2008 fires, the juvenile productivity of steelhead and spring and fall Chinook has decreased, although it is not yet clear by why. It appears possible that the amount of fine sediment has been decreased, perhaps by the 6 pulse flows that have occurred since the fire.

Fish and geomorphic monitoring results may improve future pulse flows. Results of pulse flows in FY 2010 suggested that higher flows would provide more favorable geomorphic outcomes. In addition, it was determined that higher flows could have been provided without impacting the ability of the Clear Creek Community Services District to receive water. The 2010 results led to experimental flows in 2011, which were successful in achieving higher flows, and moving more sediment downstream. Therefore in 2012 both higher and lower flows were provided. The Clear Creek Technical Team requested that NMFS modify the OCAP RPA I.1.1 to provide more flexibility and aid in adaptive management. The proposal would allow the Clear Creek Technical Team to recommend to NMFS and Reclamation, changes in the timing, magnitude and duration of the spring attraction flows to better meet objectives of the Clear Creek RPA actions, additional ecosystem goals, operational constraints, and adaptive management. This proposal was prompted by the results from fish, geomorphic, avian and riparian monitoring.

Fish Population Monitoring Suggests Program Success. Monitoring continues to document the overall success of the Clear Creek Restoration Program. No other Central Valley watershed has survived the Chinook fishery collapse nearly as well as Clear Creek. This may be due to increased resilience of the watershed due to CVPIA's habitat restoration. In 2011, fall-run Chinook escapement was 4,841 compared to the average baseline escapement of 1,689 between 1967 and 1991. Escapement appeared lower in 2011 than in the previous 10-years (average of 8,825), in part because the method for estimating escapement was changed. Using the old method the 2011 escapement would be 6,332 (31% higher). In addition, spawning populations of threatened spring Chinook and steelhead have been re-established in the watershed.

The recent DFG Central Valley Steelhead Monitoring Plan and Central Valley Chinook Monitoring Plan recommended that a counting weir be used in Clear Creek to monitor adult populations of salmon and steelhead. In 2012 CVPIA partnered with DFG to build and install a fish counting weir in Clear Creek near the confluence with the Sacramento River. The weir will be operated year-round with DFG using it during fall Chinook passage and the FWS the rest of the year to monitor spring and late fall Chinook and steelhead.

The program will continue to use the adaptive management process to design experiments that will improve management actions and inform the development of future projects. Monitoring results were reported to the Clear Creek Technical Team during eight meetings, and in annual reports. This information was used in budget and project planning and the design of restoration projects.

Table 1. FY2013 Proposed Activities and Costs

CVPIA Section 3406 (b)(12), Clear Creek Restoration

	3406 (b)(12) Requested Funding for Fiscal Year 2013				
	Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources
Total Funding	\$555,000	\$0	\$3,942,628	\$169,601	\$4,667,229
Reclamation	\$161,287	\$0			\$161,287
Service	\$393,713	\$0			\$393,713
CA DFG			\$3,942,628	\$154,601	\$4,097,229
CA DWR			\$0	\$15,000	\$15,000

1.1 Program Management			3406 (b)(12) Requested Funding for Fiscal Year 2013								
AWP Activity Number	Activity Name	Activity Description	Agency		Program Performance Goal	FY2013 Projected Performance	Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources
			Name	Fractional FTE							
1.1.1	Program Lead	Bureau of Reclamation, Lead Program Manager. Provide program management, budgeting, preparation and oversight of restoration/project contracts. Participate in interagency program development, BOR representative to the Clear Creek Technical Work Group Team, prepare Purchase Requisitions for program related Procurements and Contracts, serve as the COR on restoration projects. (A30-17416700-0019100 37927)	BOR	0.42			\$83,294				\$83,294
1.1.2	Program Co-Lead	U.S. Fish and Wildlife Service, Co-Lead Program Manager. Provide program management, budgeting, program reviews, and lead/conduct biological monitoring. Represent USFWS on the Clear Creek Technical Work Group team. (FRFR 4833 0833CCO)	FWS	0.42			\$100,156				\$100,156
							Sub-Total for Program Management, FY2013				
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources
Subtotal Funding							\$183,450	\$0	\$0	\$0	\$183,450
Reclamation							\$83,294	\$0			\$83,294
Service							\$100,156	\$0			\$100,156
CA DFG									\$0	\$0	\$0
CA DWR									\$0	\$0	\$0

1.2		Program Support										
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2013 Projected Performance	3406 (b)(12) Requested Funding for Fiscal Year 2013					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
1.2.1	CDFG Technical Advisor	California Dept. of Fish and Game Technical Advisor - provide technical review on program documents and technical support for all Clear Creek projects. Provide input and represents CDFG interests on SCAMPI task orders.	CDFG	0.03						\$7,301	\$7,301	
1.2.2	CDWR Technical Advisor	California Dept. of Water Resources Technical Advisor - provide technical review on program documents and technical support for all Clear Creek projects. Provide input and represents CDWR interests on SCAMPI task orders.	CDWR	0.02						\$4,000	\$4,000	
1.2.3	FWS Financial Support	Provide FWS budget and finance support. (P2Q). (FRFR 4833 0833CCO)	FWS	0.02			\$3,979				\$3,979	
1.2.4	BOR Contracting Services	Provide contracting support services for NEPA/CEQA preparation for Long Term Gravel Supply and McConnell Foundation contracts(H30-17416700-0019100 346060)	BOR	0.03			\$6,560				\$6,560	
1.2.5	BOR Acquisition Services	Provide regional support for NEPA/CEQA preparation for Long Term Gravel Supply and McConnell Foundation contracts (H30-17416700-0019100 346060)	BOR	0.03			\$6,560				\$6,560	
1.2.6	BOR Administrative Support	Provide regional administrative support for travel and accounting. (H30-17416700-0019100 346060)	BOR	0.02			\$4,373				\$4,373	
1.2.7	FWS Regional Program Administration	FWS Region 8 management and administration. (PA) (FRFR 483308 33CCO)	FWS	0.02			\$5,189				\$5,189	
							Sub-Total for Program Support, FY2013					
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
							\$26,661	\$0	\$0	\$11,301	\$37,962	
							<i>Reclamation</i>	\$17,493	\$0		\$17,493	
							<i>Service</i>	\$9,168	\$0		\$9,168	
							<i>CA DFG</i>			\$0	\$7,301	\$7,301
							<i>CA DWR</i>			\$0	\$4,000	\$4,000

1.3		Technical Support										
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2013 Projected Performance	3406 (b)(12) Requested Funding for Fiscal Year 2013					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
1.3.1	Technical Support to Clear Creek Technical Work Group	Provide technical support to the Clear Creek Technical Work Group for CDFG. Represent State interest at meetings to discuss and prioritize Clear Creek actions.	CDFG	0.06						\$15,000	\$15,000	
1.3.2	Technical Support to Clear Creek Technical Work Group	Provide technical support to the Clear Creek Technical Work Group for CDWR. Represent State interest at meetings to discuss and prioritize Clear Creek actions.	CDWR	0.05						\$11,000	\$11,000	
							Sub-Total for Technical Support, FY2013					
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
							<i>Subtotal Funding</i>	\$0	\$0	\$0	\$26,000	\$26,000
							<i>Reclamation Service</i>	\$0	\$0			\$0
							<i>CA DFG</i>			\$0	\$15,000	\$15,000
							<i>CA DWR</i>			\$0	\$11,000	\$11,000

2.2		Planning-Feasibility										
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2013 Projected Performance	3406 (b)(12) Requested Funding for Fiscal Year 2013					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
2.2.1	Channel Maintenance Flows	Provide funds to FWS for Ecosystem Restoration Program (ERP) grant to plan the geomorphicflows project. This is a direct cash funding from the State of CA to the U.S. Fish and Wildlife Service, Red Bluff Fish and Wildlife Office.	CDFG	0.00	n/a	Completion of contracts			\$142,628		\$142,628	
2.2.2	Long-term Gravel Supply Project	Long-term Gravel Supply Project (AKA "Lower Clear Creek Mercury Abatement and Fisheries Restoration Project", "Lower Clear Creek Aquatic Habitat and Waste Discharge Improvement Project") to provide a long term (40 year) local supply of spawning gravel and remediate mercury contamination from supply. Project will also involve the construction of an onsite processing plant. CA. Dept. of Fish and Game provides administrative contract oversight staffing, project planning, and provide technical expertise in the development/planning of this project.	CDFG	0.00	n/a	Completion of planning				\$22,300	\$22,300	
							Sub-Total for Planning-Feasibility, FY2013					
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
							<i>Subtotal Funding</i>	\$0	\$0	\$142,628	\$22,300	\$164,928
							<i>Reclamation Service</i>	\$0	\$0			\$0
							<i>CA DFG</i>			\$142,628	\$22,300	\$164,928
							<i>CA DWR</i>			\$0	\$0	\$0

2.4		Environmental Compliance										
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2013 Projected Performance	3406 (b)(12) Requested Funding for Fiscal Year 2013					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
2.4.1	EWP -Federal	Environmental Water Program (Geomorphic flows to comply with RPA). The Program will conduct environmental compliance for the Environmental Water Program geomorphic flows, whereby Reclamation will re-operate Whiskeytown Dam to achieve a minimum 3,250 cfs flow event in Clear Creek for a 24-hour period, with the frequency of such an event occurring seven times during a ten-year period. This activity supports the NEPA/CEQA and all environmental compliance actions that are necessary to enable Reclamation to conduct EWP flows in Clear Creek. The EWP flows will help attain sufficient streamflows that will initiate geomorphic processes that are only possible at higher stream discharges. (H30-17416700-0019100 346060)	BOR	0.16	n/a	Completion of NEPA/ Environmental Compliance requirements	\$35,000					\$35,000
2.4.2	Long-term Gravel Supply Project	Long-term Gravel Supply Project. (AKA "Lower Clear Creek Mercury Abatement and Fisheries Restoration Project", "Lower Clear Creek Aquatic habitat and Waste Discharge Improvement Project", etc.). NEPA/CEQA/Environmental Compliance for processing spawning gravel from Clear Creek, and would be performed by a private Contractor for Reclamation. (H30-17416700-0019100 346060)	BOR	0.00	n/a	Complete NEPA/CEQA/ Environmental Compliance requirements for the project	\$25,500					\$25,500
							Sub-Total for Environmental Compliance, FY2013					
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
Subtotal Funding							\$60,500	\$0	\$0	\$0	\$60,500	
Reclamation Service							\$60,500	\$0			\$60,500	
CA DFG							\$0	\$0			\$0	
CA DWR									\$0	\$0	\$0	

2.7 Construction/Implementation											
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2013 Projected Performance	3406 (b)(12) Requested Funding for Fiscal Year 2013				
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources
2.7.1	Lower Clear Cr Floodway 3B Project	Lower Clear Creek Floodway Restoration Project, Phase 3B. Project revegetates 5 acres of riparian habitat; rerouting and decommissioning of roads in the Clear Creek drainage. Develop two scour channels in Clear Creek. This project supplements previous work conducted as part of the original Phase 3B.	CDFG	0.00	n/a	Complete two scour channels in Clear Cr.				\$100,000	\$100,000
2.7.2	Long-term Gravel Supply Project	Long-term Gravel Supply Project (AKA "Lower Clear Creek Mercury Abatement and Fisheries Restoration Project", "Lower Clear Creek Aquatic Habitat and Waste Discharge Improvement Project"). Implementation of this project will occur in FY2013, and managed by the Western Shasta Resource Conservation District. CALFED-ERP funding grant will finance the project	CDFG	0.00	Annually place 17,000 tons of spawning gravel	Implement project - (initiate the first year/first phase of this project) staging of equipment, assemble gravel processing plant, extract spawning gravel, isolate mercury-laden sediment, and stockpile gravel for long-term storage.			\$3,800,000		\$3,800,000
							Sub-Total for Construction/Implementation, FY2013				
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources
Subtotal Funding							\$0	\$0	\$3,800,000	\$100,000	\$3,900,000
Reclamation Service							\$0	\$0			\$0
CA DFG							\$0	\$0			\$0
CA DWR									\$3,800,000	\$100,000	\$3,900,000
									\$0	\$0	\$0

2.8		Post-Project Monitoring										
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2013 Projected Performance	3406 (b)(12) Requested Funding for Fiscal Year 2013					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
2.8.1	Lower Clear Cr Parkway Project	Lower Clear Creek Parkway Project. This activity conducts post-project monitoring of riparian re-vegetation to comply with state permitting requirements for the project. This activity is a smaller component of a much larger activity that consists of new trail construction, interpretive signs, revegetating riparian areas, constructing a pedestrian bridge, and related efforts to increase public awareness through interpretive education.	CDFG	0.00	n/a	Completion of project				\$10,000	\$10,000	
							Sub-Total for Post-Project Monitoring, FY2013					
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
							<i>Subtotal Funding</i>	\$0	\$0	\$0	\$10,000	\$10,000
							<i>Reclamation Service</i>	\$0	\$0			\$0
							<i>CA DFG</i>	\$0	\$0			\$0
							<i>CA DWR</i>			\$0	\$10,000	\$10,000
									\$0	\$0		\$0

3.1		Land or Water Acquisition or Water Conveyance										
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2013 Projected Performance	3406 (b)(12) Requested Funding for Fiscal Year 2013					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
3.1.1	McConnell Foundation	McConnell Foundation Water Exchange/Pumping. When needed, Reclamation will fund water pumping costs associated with the Saeltzer Dam removal. Dam removal impacted water deliveries and required pumping that was not needed beforehand. Therefore the additional pumping costs are part of the cost of removing Saeltzer Dam. Reclamation provides funding only if pumping costs occurs; which has not happened in most years. Reclamation Contract 00-WC-20-1707. (H30-17416700-0019100 346060)	BOR	0.00	n/a		\$0				\$0	
							-Total for Land or Water Acquisition or Water Conveyance, FY2					
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
							<i>Subtotal Funding</i>	\$0	\$0	\$0	\$0	\$0
							<i>Reclamation Service</i>	\$0	\$0			\$0
							<i>CA DFG</i>	\$0	\$0			\$0
							<i>CA DWR</i>			\$0	\$0	\$0
									\$0	\$0		\$0

4.1		Monitoring (Programmatic)										
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2013 Projected Performance	3406 (b)(12) Requested Funding for Fiscal Year 2013					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
4.1.1	Biological Monitoring - Juvenile Assessment	Juvenile spring Chinook salmon monitoring project. Juvenile production monitoring and estimation using rotary screw traps to capture juvenile salmon and steelhead, with emphasis on Spring-run Chinook salmon. (FRFR 4833 08 32CC 0W4)	FWS	0.00	n/a		\$112,951					\$112,951
4.1.2	Fall Chinook Salmon Area Mapping	Fall Chinook salmon spawning area mapping. ("SAM") Assess/describe distribution and amounts of spawning habitat in relation to restoration actions such as spawning gravel injections. Evaluate and compare effectiveness of spawning gravel injections relative to restoration costs, adult returns, and habitat use by anadromous salmonids. (FRFR 4833 08 32CC 0W4)	FWS	0.00	n/a		\$62,049					\$62,049
4.1.3	Spawning Gravel Evaluation	Spawning gravel evaluations. Survey, identify, and map spawning areas utilized by Chinook salmon and steelhead. Evaluate spawning habitats relative to gravel injections, evaluate changes in spawning gravel quantity. (FRFR 4833 08 32CC 0W4)	FWS	0.00	n/a		\$29,789					\$29,789
4.1.4	Geomorphic Monitoring	Geomorphic monitoring of Clear Creek. This activity evaluates and monitors sediment (bedload) transport, spawning gravel movement, channel changes (such as longitudinal profiles, meander, scour, etc.). This activity also directly evaluates and documents changes in stream habitat resulting from pulse flow events. (FRFR 4833 08 32CC 0W4)	FWS	0.00	n/a		\$79,600					\$79,600
							Sub-Total for Monitoring (Programmatic), FY2013					
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
							<i>Subtotal Funding</i>	\$284,389	\$0	\$0	\$0	\$284,389
							<i>Reclamation Service</i>	\$0	\$0			\$0
							<i>CA DFG</i>	\$284,389	\$0			\$284,389
							<i>CA DWR</i>			\$0	\$0	\$0

Table 2 – Intentionally left blank

Table 3 – Proposed FY2013 CVPIA Clear Creek Fish Restoration Program Monitoring Projects

Project Description:	Clear Creek Restoration Monitoring Project (Juvenile Spring Chinook Production Monitoring-Rotary Screw Trapping)
FY 2012 Project Complete?	This is an ongoing monitoring project.
CVPIA annual work plan subtask number:	Monitoring 4.1.1
Scope of the monitoring effort:	Clear Creek
Product/deliverable:	Annual Report
Cost:	\$112,951
Questions posed:	<ul style="list-style-type: none"> • How many juvenile spring Chinook were produced in 2012? • What environmental factors and/or management actions affected juvenile production?
Objectives:	<ul style="list-style-type: none"> • Produce annual report for 2012. • Collect salmonid monitoring data for 2013.
Results – expected or actual:	Most juvenile spring Chinook leave the upper Clear Creek watershed as fry rather than at juvenile size.
Data collection methods:	Data will be collected using a rotary screw trap. Regular efficiency trials (10 to 20 per year) will be used to produce passage estimates. Data will be entered directly into an electronic database in the field.
Data management:	Final reports and data will be archived in the central computer system at the RBFWO.
Assessment:	Passage estimates will be analyzed relative to environmental variables, population parameters and restoration activity.
Use of information in future decision making:	Information is used to evaluate the benefits of habitat restoration and flow and temperature management, to suggest and design future restoration actions, and to estimate carrying capacity which will be used to set overall program goals.

Table 3 – Proposed FY2013 CVPIA Clear Creek Fish Restoration Program Monitoring Projects

Project Description:	Clear Creek Restoration Monitoring Project (Fall Chinook Spawning Area Mapping “SAM”)
FY 2012 Project Complete?	This is an ongoing monitoring project.
CVPIA annual work plan subtask number:	Monitoring 4.1.2
Scope of the monitoring effort:	Clear Creek.
Product/deliverable:	Annual Report.
Cost:	•\$62,049
Questions posed:	<ul style="list-style-type: none"> • Where are fall Chinook spawning? • How much area was used for spawning? • Are salmon using the spawning gravel or restored habitat provided by the program? • How effective is the program at increasing spawning habitat? • Where is additional restoration needed?
Objectives:	<ul style="list-style-type: none"> • Describe the distribution and amount of spawning in relationship to restoration actions and document spatial and temporal changes. • Evaluate the effectiveness of spawning habitat restoration relative to restoration costs, adult escapement levels, and utilization by salmonids. • Document and evaluate environmental factors and restoration actions affecting salmonid spawning. • Provide recommendations for future habitat restoration.
Results – expected or actual:	Spawning areas mapped in 2008 was greater than in all of the 8 previous years, suggesting that the program has been successful at creating new spawning habitat, and perhaps due to implementation of stream channel restoration Phase 3B. Our prediction that phase 3B would increase spawning habitat by 15% was accurate, as 16% of the spawning in the creek occurred in this reach in 2008 but less than 2% in the past.
Data collection methods:	Data will be collected using sub-foot accuracy GPS units to outline redd aggregates while in the field and directly importing them into GIS.
Data management:	Final reports and data are archived in the central computer system at the Red Bluff FWO.
Assessment:	<ul style="list-style-type: none"> • Spawning area is summarized by both 1,000 foot reaches and by geomorphic-based reaches and compared between years, and between reaches. • Relationships between changes in spawning area and spawning escapement, redd counts, water temperature, stream flow, and restoration actions including spawning gravel supplementation are examined to evaluate success at the watershed and project levels.

Table 3 – Proposed FY2013 CVPIA Clear Creek Fish Restoration Program Monitoring Projects

Project Description:	Clear Creek Restoration Monitoring Project (Fall Chinook Spawning Area Mapping “SAM”)
Use of information in future decision making:	<ul style="list-style-type: none"> • Information will be used in determining future stream flow requirements in NMFS OCAP BO Action I.1.2. “Channel Maintenance Flows”. • Information will be used to improve the placement, particle size, and amount of supplemental spawning gravel used in NMFS OCAP BO Action I.1.3 “Spawning Gravel Addition”. • Information will be used to evaluate ongoing benefits of restoration projects and applied to the planning and design of future projects.

Table 3 – Proposed FY2013 CVPIA Clear Creek Fish Restoration Program Monitoring Projects

Project Description:	Clear Creek Restoration Monitoring Project (Conduct Spawning Gravel Evaluations; potential spawning area mapping for spring Chinook and steelhead and gravel size analysis)
FY 2012 Project Complete?	This is an ongoing monitoring project.
CVPIA annual work plan subtask number:	Monitoring 4.1.3
Scope of the monitoring effort:	Clear Creek
Product/deliverable:	Annual Report.
Cost:	\$29,789 Gravel size analysis will not be funded (need is about \$20,000 additional funding)
Questions posed:	<ul style="list-style-type: none"> • How much spawning habitat is created through gravel augmentation? • How is gravel quality / size changing over time due to restoration or disturbance?
Objectives:	<ul style="list-style-type: none"> • Map/document spawning areas for 2013. • Produce annual report for 2012. • Collect and evaluate data for 2013. • Estimate carrying capacity (i.e. number of spawning pairs supported) using mapping/area results.
Results – expected or actual:	Spawning area may increase due to restoration (gravel placements) or decrease due to reductions in gravel placement.
Data collection methods:	a) Potential spawning areas will be surveyed using hand held high precision GPS instruments. b) bulk gravel samples will be collected from long-term monitoring sites and sieved for size analysis by Red Bluff FWO.
Data management:	Final reports and data will be archived in the central computer system at the Red Bluff FWO.
Assessment:	a) The amount of potential spawning habitat will be compared to the 347,000 sq. feet that existed before construction of Whiskeytown dam in the reach between Whiskeytown and McCormick Saeltzer dams, b) the amount of deleterious fine sediments and desirable coarse sediments will be compared to literature and watershed specific values to determine the need for erosion control or channel maintenance flows.
Use of information in future decision making:	Information is used to evaluate the benefits of habitat restoration and flow and temperature management, to suggest future restoration actions, and to estimate carrying capacity which will be used to set overall program goals. In particular, a) the relationship between the amount of spawning gravel and the habitat created will be used to estimate future needs and costs for spawning gravel and direct restoration actions. Identification of areas lacking spawning gravel will guide future gravel placements; and b) the percent of fine sediment will be used to determine the need for erosion control or channel maintenance flows and evaluate the success of these actions.

Table 3 – Proposed FY2013 CVPIA Clear Creek Fish Restoration Program Monitoring Projects

Project Description:	Conduct Geomorphic Monitoring
FY 2012 Project Complete?	Project was not funded in 2011 or 2012.
CVPIA annual work plan subtask number:	Monitoring 4.1.4
Scope of the monitoring effort:	Clear Creek
Product/deliverable:	Report
Cost:	\$75,000
Questions posed:	<ul style="list-style-type: none"> • Do gravel injections alter the creek’s geomorphology in ways that benefit anadromous fish? • What level of maintenance flows are necessary to restore normative stream functions (e.g. gravel and sediment transport)? • What is the relationship between amount of gravel injected and amount of spawning habitat created?
Objectives:	<ul style="list-style-type: none"> • Document and conduct redd mapping, and complete project report. • Assess effectiveness of spawning gravel injections at creating useable spawning habitat. • Quantify newly created spawning habitat and use by salmonids.
Results – expected or actual:	<ul style="list-style-type: none"> • Complete report
Data collection methods:	<ul style="list-style-type: none"> • Data collected in the field using topographic and visual surveys coupled with the FWS spawning survey data and mapping
Data management:	Final report and data will be archived in the central computer system at Reclamation's NCAO and the FWS' Red Bluff FWO.
Assessment:	<ul style="list-style-type: none"> • Monitoring conducted to verify increases in available spawning habitat and use by anadromous fish.
Use of information in future decision making:	<ul style="list-style-type: none"> • Information will assist in determining future gravel addition amounts, injection locations and injection methods. Project results will also influence future restoration efforts in Clear Creek.