

# Draft CVPIA Fiscal Year 2014 Annual Work Plan

June 12, 2013

## **Program Title:**

***Spawning and Rearing Habitat Restoration – CVPIA Section 3406(b)(13)***

## **Responsible Entities:**

<b>Staff Name</b>	<b>Agency</b>	<b>Role</b>
<i>John Hannon</i>	<i>Reclamation</i>	<i>Lead</i>
<i>Julie Zimmerman</i>	<i>Service</i>	<i>Co-Lead</i>
<i>Tom Kisanuki</i>	<i>Reclamation</i>	<i>Sacramento River Activity Manager</i>
<i>Patricia Bratcher</i>	<i>CDFW</i>	<i>State Point of Contact (Sacramento River)</i>
<i>Mike Healey</i>	<i>CDFW</i>	<i>State Point of Contact (American River)</i>
<i>Patricia Brantley</i>	<i>CDFW</i>	<i>State Point of Contact (Stanislaus River)</i>

The lead and co-lead are responsible for overall coordination of budget and projects between the three program rivers (Sacramento, American, and Stanislaus). Activities include project identification, planning, permitting, construction oversight, monitoring, and reporting. Reclamation is the lead agency in project implementation and manages contracts associated with project work. The State lead and points of contact from CDFW provide professional input and guidance to program activities for each of the rivers.

## **Background**

In a free flowing river rocks, gravel, dirt, and other materials are continually moving downstream providing diverse habitats for successful salmonid spawning and juvenile rearing. The construction of dams has had a dramatic effect on streams by impeding this process. Below the dams course sediment continues to be transported downstream by the flowing water without it being replaced by upstream sources. Section 3406(b)(13) was included in the CVPIA to provide for a continuing program for replacing, as needed, this material blocked by the dams along with the associated habitat values. Sediment deficits have been estimated for the project rivers. This program seeks to replace a portion of the gravel deficits with a focus on sites where the greatest habitat values can be achieved. Spawning gravel is most limited and adult fish are usually most abundant in upstream reaches below the dams so the program has focused on those areas first. The program is now implementing projects that incorporate both spawning and rearing habitat features to address the freshwater lifestages of salmonids.

## **Program Goals and Objectives for FY 2013**

The major program performance goals as stated in CPAR and other documents are as follows:

- Increase the availability of spawning and rearing habitat for Sacramento River Basin Chinook salmon and steelhead trout by placing 10,000 tons of gravel. Support at least 25% of riverwide spawning salmonids in gravel placement reaches.

- Increase the availability of spawning and rearing habitat for American River Basin Chinook salmon and steelhead trout by placing 7,000 tons of gravel. Support at least 25% of riverwide spawning salmonids on gravel placement projects. Less than 10% egg retention in Chinook salmon.
- Increase the availability of spawning and rearing habitat for Stanislaus River Basin Chinook salmon and steelhead trout by placing 3,000 tons of gravel and meet the NMFS OCAP RPA Action prescribing 50,000 cubic yards (75,000 tons) of gravel placed by 2014. Support at least 10% of riverwide spawning salmonids on gravel placement projects.

### **Source Documents and Plans that Guide the Program**

Upper Sacramento River Fisheries and Riparian Habitat Management Plan (State Advisory Council 1989); Fisheries and Instream Habitat Management and Restoration Plan for the Lower American River (Water Forum 2003); Lower American River Channel and Floodplain Restoration Planning Framework (Water Forum 2011); Stanislaus River Restoration Prioritization (Stanislaus Fish Group 2003); and 2009 NMFS Biological Opinion on CVP and SWP Water Operations .

Work performed in this program compliments the objectives in CVPIA Section 3406(b)(1). Staff involved in the two programs coordinate the development of the activities in the respective watersheds and share the data developed from this work.

### ***Status of the Program***

Project sites in each of the three rivers have been identified based on key habitat location (fish presence and habitat availability) and on ready river access. All gravel placed in the rivers conforms to criteria developed in coordination with the Fish and Wildlife Service, California Department of Fish and Wildlife and the National Marine Fisheries Service. These criteria relate to size and relative proportion of the various sizes, and to particular times of the year when the gravel can be placed. Project types, construction methods, and gravel quantities correlate to the timing and location of use by spawning anadromous salmonids.

### **Sacramento River**

In recent years (2002 to 2013), gravel has been placed each year on two sites in the Upper Sacramento River – (1) at the USBR Keswick Office injection site, on the right bank 300 yards downriver from Keswick Dam, and (2) at the Salt Creek injection site- 1.5 miles downriver from Keswick Dam. Both sites are within Redding city limits. The gravel is placed on the edge of the channel and high flows distribute the gravel within the river channel to be subsequently utilized for spawning and rearing. Since 1997, the CVPIA program has placed approximately 213,000 tons of gravel at these two sites (including the FY13 estimated placement of 9,000 tons). Examination of CDFW aerial redd survey data since the 1960's and instream gravel locations show that Chinook salmon are preferentially using injected gravel that was placed at the Keswick Dam and Salt Creek sites. Recent substrate/particle size, intergravel permeability and water quality survey data showed that spawning gravel quality was the highest upstream of the ACID dam area, where the greatest amount of gravel augmentation has taken place (North State Resources June 2012, Draft Technical Memorandum). The report also noted that gravels in areas downstream of ACID dam were typically coarser and displayed channel bed armoring.

Plans are currently underway to identify potential new project sites downstream of the ACID dam and evaluate site-specific project types.

## **American River**

The gravel in the American River and Stanislaus River has been placed to create habitat features anticipated to be immediately usable by salmonids. Gravel has been placed at six sites in the American River in 1999 and 2008 - 2012 - three locations at Sailor Bar, two locations at upper Sunrise, downstream of Lower Sunrise Bridge, and at Sacramento Bar. The substrate at the sites was manipulated prior to gravel placement in order to improve water quality conditions within the gravel (the area where eggs develop) after the gravel was in place. The conditions in the regions where gravel was placed has been monitored and compared with pre-project conditions and to conditions in adjacent areas. A five year series of projects began implementation in 2008. Reclamation contracted with the Water Forum (City of Sacramento) for assistance in the permitting, placement, and monitoring of projects. Placements through 2012 totaled 85,880 tons. Work has occurred at seven of the nine sites (six main channel and three side channel sites) identified in the initial planning document. The program is finalizing a planning framework using a Structured Decision Making process to help guide American River project selection, design, and monitoring. A data repository is being developed to house documents and data relevant to the projects.

## **Stanislaus River**

Several sites have been selected for gravel placement in the Stanislaus River in the reach within two miles downriver of Goodwin Dam and at Knights Ferry. Gravel has been placed by conventional front end loader, by sluice delivery, and by helicopter since 1997. Approximately 30,000 tons of gravel has been placed to date. The program is currently working on implementation of a channel enhancement project at Two Mile Bar where a side channel will be created through a high floodplain and the adjacent floodplain area lowered. Suitable material from the floodplain will be sorted to obtain the spawning sized material and that material placed into the river in the project area. The goal of the project is to provide juvenile rearing habitat year round, increased floodplain inundation during higher flows and additional gravel to the river. This helps to meet the NMFS RPA actions prescribing increased spawning gravel injections and enhanced floodplain rearing habitat, specifically for steelhead.

## **Overall**

Salmonids have been observed spawning on the placed gravel at the gravel placement sites on each river. Aerial and ground surveys have documented the location of salmon and steelhead redds and determined that juvenile salmonid rearing occurs at and in the vicinity of the projects. Intragravel conditions have been monitored for selected gravel placement projects and shown that gravel placement has provided high quality conditions for salmonid egg incubation.

The (b)(13) program is increasingly emphasizing restoration of side channels, channel margins, meander belts, and complexity to address the current potentially limited amount of juvenile rearing habitat, particularly in dryer years. Restoration of these habitats is being incorporated into the program as overall CVPIA Fisheries Program priorities are refined.

## ***Adaptive Management***

### **Sacramento River**

Monitoring of Chinook salmon spawning distributions in the Sacramento River has shown that spawning, particularly for the endangered winter-run Chinook, is concentrated near Keswick

Dam where water temperatures are coolest for successful incubation during the summer. This reach of the river has a gravel deficit due to the location of the dam and absence of significant tributary sediment sources in this upstream reach. Because of the monitoring information showing fish distribution, water temperature, and gravel deficit information, past and current projects in the Sacramento River have focused on sites near Keswick Dam to best meet the needs of the species for spawning habitat.

The importance of augmenting spawning gravel in areas other than Keswick Dam and Salt Creek injection sites is acknowledged to improve spawning habitat for winter-run and fall-run Chinook salmon. To this effect, the evaluation process to implement projects between Salt Creek and the confluence of Clear Creek has begun.

#### American River

Projects in the American River initially placed gravel on channel margins where use by fish was possible only during higher flow years. Lack of use during low water years influenced the decision to design projects spanning the river channel so that material was available to fish under nearly all flow conditions likely to occur during spawning periods. Monitoring of adult fish concentrations and egg retention identified that Chinook salmon and steelhead both congregate in the upper river where substrate conditions are most degraded. Chinook salmon escapement monitoring provided by CDFW identified high levels of egg retention (fish dying before spawning) in the American River. This could potentially be due to a lack of suitable spawning habitat in areas where fish are concentrated resulting in a high level of competition for spawning sites that stresses fish in the often warm water conditions. This resulted in a focus on projects in the stretch of the river near the dam in order to address the egg retention issue and improve degraded conditions by providing additional spawning habitat where the fish are most abundant.

The American River gravel team participated in a week long Structured Decision Making (SDM) workshop in October 2011. The workshop team identified fundamental objectives of the b13 program and developed a conceptual model that outlined key management actions available to the team, habitat variables and ecological processes that may be influenced by those management actions, and ultimate effects on juvenile outmigrating anadromous fish. This conceptual model was parameterized using expert opinion to develop a decision support tool that can be used to identify the management action(s) that would be expected to maximize the number of outmigrating juvenile salmon and steelhead per dollar spent. This model can also be used to determine which relationships between management actions and predicted outcomes have the most uncertainty, and where reducing uncertainty may cause a manager to make a different decision or implement an alternative action. These are the areas where information is most valuable and monitoring should be concentrated; thus, the model can be used to help develop a strategic monitoring plan that changes as information is acquired. Monitoring data should be incorporated into the model as it becomes available, so that knowledge gained through implementation and monitoring is used to influence future decisions in an adaptive management framework. We are further developing this model and incorporating existing b13 monitoring data with the help of a coach from USGS and using the SDM approach. Once complete, the resulting decision support tool will allow us to explicitly incorporate adaptive management into all future decisions of site selection, project design, and monitoring.

#### Stanislaus River

Projects in the Stanislaus River sometimes used gravel mixtures that lacked material smaller

than ½". Chinook salmon readily spawned in the gravel mixtures without a smaller size fraction, but egg to fry survival was unknown. Experiments conducted through AFRP in the Stanislaus in 2006, using experimental gravel mixtures provided by the program, examined egg to fry survival in various gravel mixtures and showed that gravel lacking smaller material supported only minimal egg to fry survival. As a result of this work gravel mixtures now contain material down to ¼" or smaller to attempt to provide conditions most conducive to high egg to fry survival.

#### Overall

Gravel projects have traditionally focused primarily on spawning habitat due to the gravel deficit that is present below most dams. The recognition that rearing habitat conditions in the lower rivers and delta are particularly degraded and emigration survival is low has resulted in an increased attempt to design both spawning and rearing habitat features into projects. It is anticipated that with increased rearing habitat in close proximity to spawning areas higher numbers of juvenile Chinook salmon will remain to rear and grow larger in these areas. Larger juveniles obtain higher survival rates during emigration to the ocean. Juvenile steelhead rearing habitat is expected to be enhanced by providing more habitat complexity in these areas where steelhead are present year round and water is coolest during summer. Features such as incorporation of side channel habitat, inundated floodplain habitat, inclusion of woody material, rock piles, boulders, and island creation have been included in recently constructed projects and are providing increased rearing habitat to increase carrying capacity for juvenile salmonids in the project rivers.

Table 1. FY2014 Proposed Activities and Costs

CVPIA Section 3406 (b)(13) , Spawning Gravel

	3406 (b)(13) Requested Funding for Fiscal Year 2014				
	Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources
<b>Total Funding</b>	\$1,200,000	\$0	\$0	\$30,000	\$1,230,000
<b>Reclamation</b>	\$1,044,240	\$0			\$1,044,240
<b>Service</b>	\$155,760	\$0			\$155,760
<b>CA DFG</b>			\$0	\$0	\$0
<b>CA DWR</b>			\$0	\$0	\$0

1.1 Program Management												
AWP Activity Number	Activity Name	Activity Description	Agency		Program Performance Goal	FY2014 Projected Performance	3406 (b)(13) Requested Funding for Fiscal Year 2014					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
1.1.1	Program Lead	Works with the FWS co-lead to plan projects, conduct monitoring, and oversee construction.	BOR	0.20			\$40,000					\$40,000
1.1.2	Program Co-lead	Coordinates with Reclamation staff and is the primary FWS contact to plan projects, conduct monitoring, and oversee construction.	FWS	0.25			\$55,760					\$55,760
							<b>Sub-Total for Program Management, FY2014</b>					
							<b>Restoration Fund</b>	<b>Water and Related Resources</b>	<b>State Cash</b>	<b>State In-Kind</b>	<b>Total All Sources</b>	
<b>Subtotal Funding</b>							\$95,760	\$0	\$0	\$0	\$95,760	
<b>Reclamation</b>							\$40,000	\$0			\$40,000	
<b>Service</b>							\$55,760	\$0			\$55,760	
<b>CA DFG</b>									\$0	\$0	\$0	
<b>CA DWR</b>									\$0	\$0	\$0	

1.2		Program Support										
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2014 Projected Performance	3406 (b)(13) Requested Funding for Fiscal Year 2014					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
1.2.1	Sacramento River Activity Manager	Serves as COR for spawning and rearing habitat restoration projects between Keswick Dam and Red Bluff	BOR	0.11			\$21,258					\$21,258
1.2.2	Sacramento River CDFW advisor	Provides technical review and support for Sacramento River projects	CDFW	0.06							\$10,000	\$10,000
1.2.3	American River CDFW advisor	Provides technical review and support for American River projects	CDFW	0.06							\$10,000	\$10,000
1.2.4	Stanislaus River CDFW advisor	Provides technical review and support for Stanislaus River projects	CDFW	0.06							\$10,000	\$10,000
							<b>Sub-Total for Program Support, FY2014</b>					
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
							<i>Subtotal Funding</i>	\$21,258	\$0	\$0	\$30,000	\$51,258
							<i>Reclamation Service</i>	\$21,258	\$0			\$21,258
							<i>CA DFG</i>	\$0	\$0			\$0
							<i>CA DWR</i>			\$0	\$0	\$0

1.3		Technical Support										
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2014 Projected Performance	3406 (b)(13) Requested Funding for Fiscal Year 2014					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
1.3.1	Geology support	Oversee gravel processing operations	BOR	0.18			\$39,600					\$39,600
1.3.2	Engineering support	Engineering contract specs development	BOR	0.10			\$22,000					\$22,000
							<b>Sub-Total for Technical Support, FY2014</b>					
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
							<i>Subtotal Funding</i>	\$61,600	\$0	\$0	\$0	\$61,600
							<i>Reclamation Service</i>	\$61,600	\$0			\$61,600
							<i>CA DFG</i>	\$0	\$0			\$0
							<i>CA DWR</i>			\$0	\$0	\$0

2.3		Outreach and Public Involvement										
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2014 Projected Performance	3406 (b)(13) Requested Funding for Fiscal Year 2014					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
2.3.1	Outreach	Public affairs office involvement in scoping and notifying the public of work	BOR	0.03	0	0	\$5,100				\$5,100	
							<b>Sub-Total for Outreach and Public Involvement, FY2014</b>					
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
							<i>Subtotal Funding</i>	\$5,100	\$0	\$0	\$0	\$5,100
							<i>Reclamation Service</i>	\$5,100	\$0			\$5,100
							<i>CA DFG</i>	\$0	\$0			\$0
							<i>CA DWR</i>			\$0	\$0	\$0

2.4		Environmental Compliance										
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2014 Projected Performance	3406 (b)(13) Requested Funding for Fiscal Year 2014					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
2.4.1	NEPA and permitting support	Provide support for NEPA and ESA compliance and permitting for projects on all rivers as needed.	0	0.20	0	0					\$0	
							<b>Sub-Total for Environmental Compliance, FY2014</b>					
							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



2.5		Design				3406 (b)(13) Requested Funding for Fiscal Year 2014						
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2014 Projected Performance	Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
			Name	Fractional FTE								
2.5.1	Design of projects	American River project design, Sac and Stanislaus design as necessary	BOR	0.00	0	0	\$80,000				\$80,000	
							<b>Sub-Total for Design, FY2014</b>					
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
							<i>Subtotal Funding</i>	\$80,000	\$0	\$0	\$0	\$80,000
							<i>Reclamation Service</i>	\$80,000	\$0			\$80,000
							<i>CA DFG</i>	\$0	\$0			\$0
							<i>CA DWR</i>			\$0	\$0	\$0

2.7		Construction/Implementation				3406 (b)(13) Requested Funding for Fiscal Year 2014						
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2014 Projected Performance	Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
			Name	Fractional FTE								
2.7.1	Sacramento River project	Spawning and rearing habitat restoration project at a site between Clear Creek and Keswick Dam - planning underway for new project site that could be implemented in 2014	BOR	0.00	Annually 10,000 tons gravel in the Sac. R.	0	\$260,000				\$260,000	
2.7.2	American River project	Gravel, side channel, and floodplain project at Nimbus Basin or other permitted site. Seven main channel and three side channel projects were permitted in 2008 and a site has been completed each year. Two sites remain to be worked on under the plan and some sites could be revisited for expanded habitat or new site chosen.	BOR	0.00	Annually 7,000 tons gravel in the Am. R.	0	\$245,000				\$245,000	
2.7.3	Stanislaus River Project	Gravel, side channel, and floodplain at Two Mile Bar or upper Honolulu Bar cooperative project. The Two Mile Bar project includes floodplain and side channel habitat but successful implementation is uncertain. Design is nearly complete. The Goodwin gravel placement sites may be augmented if the other projects cannot be implemented this year.	BOR	0.00	Annually 3,000 tons gravel in the Stan. R.	0	\$190,282				\$190,282	
							<b>Sub-Total for Construction/Implementation, FY2014</b>					
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
							<i>Subtotal Funding</i>	\$695,282	\$0	\$0	\$0	\$695,282
							<i>Reclamation Service</i>	\$695,282	\$0			\$695,282
							<i>CA DFG</i>	\$0	\$0			\$0
							<i>CA DWR</i>			\$0	\$0	\$0

2.8		Post-Project Monitoring										
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2014 Projected Performance	3406 (b)(13) Requested Funding for Fiscal Year 2014					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
2.8.1	American River Monitoring	Pre- and post- project monitoring, costs shared with AFRP. This work evaluates a series of seven restoration sites on the American River with biological and physical monitoring.	BOR	0.00	0	0	\$120,000				\$120,000	
2.8.2	Stanislaus River Monitoring	Redd mapping at gravel placement sites and monitoring gravel movement through snorkel surveys in coordination with CDFW	BOR	0.03	0	0	\$6,000				\$6,000	
2.8.3	American Spawning Photos	American River aerial photos documenting Chinook spawning riverwide - three flights conducted in November and December covering the reach between Nimbus Dam and the Business 80 bridge. Approximately 70 photos per flight at 1:2400 scale	BOR	0.01	0	0	\$15,000				\$15,000	
							<b>Sub-Total for Post-Project Monitoring, FY2014</b>					
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
							<i>Subtotal Funding</i>	\$141,000	\$0	\$0	\$0	\$141,000
							<i>Reclamation Service</i>	\$141,000	\$0			\$141,000
							<i>CA DFG</i>	\$0	\$0			\$0
							<i>CA DWR</i>			\$0	\$0	\$0

4.5		Adaptive Management										
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2014 Projected Performance	3406 (b)(13) Requested Funding for Fiscal Year 2014					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
4.5.1	American River Structured Decision Making	Build model and assemble information to parametrize the model for identifying restoration actions and monitoring priorities in the American River.	FWS	0.00	n/a	0	\$100,000				\$100,000	
							<b>Sub-Total for Adaptive Management, FY2014</b>					
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
							<i>Subtotal Funding</i>	\$100,000	\$0	\$0	\$0	\$100,000
							<i>Reclamation Service</i>	\$0	\$0			\$0
							<i>CA DFG</i>	\$100,000	\$0			\$100,000
							<i>CA DWR</i>			\$0	\$0	\$0

Outyear activities are estimates of funding capability only and do not reflect the future Congressional Appropriations process.

Table 2. FY2015 Proposed Activities and Costs  
CVPIA Section 3406 (b)(13) , Spawning Gravel

	3406 (b)(13) Requested Funding For Fiscal Year 2015			
	Restoration Fund	Water and Related Resources	State Cash	Total All Sources
<b>Total</b>	\$1,400,000	\$0	\$30,000	\$1,430,000
<b>US Bureau of Reclamation</b>	\$1,325,000	\$0		\$1,325,000
<b>US Fish and Wildlife Service</b>	\$75,000	\$0		\$75,000
<b>California Dept of Fish and Wildlife</b>			\$30,000	\$30,000
<b>California Dept of Water Resources</b>			\$0	\$0

Task	Project Name	Project Description	Federal Costs(\$)				State Cost Share (\$)		Total Costs (\$)
			BOR Restoration Fund	BOR W&RR Fund	FWS Restoration Fund	FWS W&RR Fund	CA DFW	CA DWR	
<b>Program Mgmt &amp; Support</b>			\$150,000		\$75,000				\$225,000
<b>Project 1</b>	Sacramento River	Spawning and Rearing Habitat Restoration	\$425,000				\$10,000		\$435,000
<b>Project 2</b>	American River	Spawning and Rearing Habitat Restoration - Sac Bar	\$400,000				\$10,000		\$410,000
<b>Project 3</b>	Stanislaus River	Spawning and Rearing Habitat Restoration - Two Mile or Honolulu	\$350,000				\$10,000		\$360,000

Outyear activities are estimates of funding capability only and do not reflect the future Congressional Appropriations process.

Table 2. FY2016 Proposed Activities and Costs  
CVPIA Section 3406 (b)(13) , Spawning Gravel

			3406 (b)(13) Requested Funding For Fiscal Year 2016						
			Restoration Fund	Water and Related Resources	State Cash	Total All Sources			
<b>Total</b>			\$1,200,000	\$0	\$30,000	\$1,230,000			
<b>US Bureau of Reclamation</b>			\$1,125,000	\$0		\$1,125,000			
<b>US Fish and Wildlife Service</b>			\$75,000	\$0		\$75,000			
<b>California Dept of Fish and Wildlife</b>					\$30,000	\$30,000			
<b>California Dept of Water Resources</b>					\$0	\$0			
			Federal Costs(\$)				State Cost Share (\$)		Total Costs (\$)
Task	Project Name	Project Description	BOR Restoration Fund	BOR W&RR Fund	FWS Restoration Fund	FWS W&RR Fund	CA DFW	CA DWR	Total Costs (\$)
<b>Program Mgmt &amp; Support</b>			\$150,000		\$75,000				\$225,000
<b>Project 1</b>	Sacramento River	Spawning and Rearing Habitat Restoration	\$350,000				\$10,000		\$360,000
<b>Project 2</b>	American River	Spawning and Rearing Habitat Restoration	\$325,000				\$10,000		\$335,000
<b>Project 3</b>	Stanislaus River	Spawning and Rearing Habitat Restoration	\$300,000				\$10,000		\$310,000

**Table 3 – Proposed Monitoring Activity 1 of 2**

<b>Project Description:</b>	American River Spawning and Rearing Habitat Projects - Effectiveness Monitoring
<b>FY 2013 Project Complete?</b>	No, this is a continuing series of restoration projects with ongoing monitoring.
<b>CVPIA annual work plan subtask number:</b>	2.8.1 and 2.8.3
<b>Scope of the monitoring effort:</b>	Evaluates an ongoing series of seven yearly projects in the American River from Nimbus Dam to River Bend Park permitted for 2008 through 2012
<b>Product/deliverable:</b>	Yearly biological monitoring report and physical monitoring report describe findings of the monitoring
<b>Cost:</b>	\$125,000 with additional costs shared with others
<b>Questions posed:</b>	Are steelhead and Chinook spawning on gravel projects? Are gravel conditions conducive to high egg to fry survival? Can gravel project designs enhance invertebrate production? Do the projects provide increased juvenile salmonid rearing habitat? Can the onsite rock source be used cost effectively? How much gravel should be added yearly? Can woody material be safely incorporated into projects? Can we improve spawning and rearing habitat without adding new gravel?
<b>Objectives:</b>	Determine effectiveness of projects by answering the questions listed above. Use results to inform future projects.
<b>Results – expected or actual:</b>	Spawning use is high. Intragravel conditions should be good for survival. Invertebrates quickly recolonize. Rearing habitat can be successfully incorporated into gravel projects. Onsite rock sources can be used cost effectively.
<b>Data collection methods:</b>	Ground and aerial redd surveys, intragravel permeability and water quality measurements, pebble counts, tracer rocks, snorkel surveys, invertebrate sampling, topographic mapping, hydraulic modeling
<b>Data management:</b>	Reports in regional library. GIS shapefiles, Excel files, and Access database will be available and maintained by USBR and USFWS
<b>Assessment:</b>	Spawning and rearing habitat use, habitat quality, and distribution will be evaluated to determine whether key limiting factors are being addressed and to help in design of future habitat improvement projects.
<b>Use of information in future decision making:</b>	Future project designs will be based on monitoring results. Species data is included in ESA consultations on CVP operations.

**Table 3 – Proposed Monitoring Activity 2 of 2**

<b>Project Description:</b>	Stanislaus River Redd Surveys at Gravel Projects
<b>FY 2013 Project Complete?</b>	Continuing
<b>CVPIA annual work plan subtask number:</b>	2.8.2
<b>Scope of the monitoring effort:</b>	Maps redds at gravel projects to compare with river-wide surveys conducted by CDFW during Chinook carcass surveys. This work is done cooperatively with CDFW.
<b>Product/deliverable:</b>	Map and shapefile of yearly redd locations and assessment of gravel movement
<b>Cost:</b>	\$5,000
<b>Questions posed:</b>	Are salmonids spawning on gravel placement projects? How does habitat use at project sites compare to riverwide spawning habitat use? Is placed gravel being transported downstream and, if so, where is it winding up?
<b>Objectives:</b>	Help determine effectiveness of projects by answering the questions above.
<b>Results – expected or actual:</b>	Habitat use is concentrated in upstream areas. Spawning distribution is influenced by escapement level.
<b>Data collection methods:</b>	Ground surveys collect GPS points with habitat parameters at redds. Carcass surveys count redds by river reach. Gravel movement monitored through snorkel surveys and tracers.
<b>Data management:</b>	ESRI shapefiles maintained by USBR in GIS library
<b>Assessment:</b>	This is a low intensity monitoring activity used to track habitat use through time.
<b>Use of information in future decision making:</b>	Future project designs will be based on monitoring results. Species data is included in ESA consultations on CVP operations.