

Table 2A. Summary and Costs of the 2012 Interagency Ecological Program Monitoring, Special Study and Fish Facility Activities (Elements)

(Element costs are approximate and expressed in thousands of dollars)

September 7, 2011

Created from 2012 IEP Program Budget v3 September, 2011.xls

I. Monitoring Elements

PROGRAM ELEMENT	ELEMENT DESCRIPTION	COST	FUNDING SOURCE	
			IEP Core	Directed or Coordinated
A. HYDRODYNAMICS				
1. Bay salinity monitoring a. (2012-029) b. Mandates – none	Salinity, water temperature, tide and meteorological measurements are collected in San Francisco Bay. Data is used to better understand the hydrodynamics of the estuary and calibration of multi-dimensional flow and transport models. Deliverables: a) Time series of salinity, water temperature wind speed, wind direction, air temperature, atmospheric pressure and visible radiation; b) annual USGS report “Water Resources Data for California;” June 2012; c) IEP Newsletter article, June 2012. (P. Buchanan and G. Shellenbarger, USGS)	\$253	DWR-\$206 USGS - \$47	\$0
2. Delta flow measurement and database management a. (2012-030) b. Mandates – FWS OCAP c. POD	Channel flow and flow splits at key Delta sites are measured via UVMs and ADCPs. Data is used to evaluate fish transport and migration issues and to validate hydrodynamic models. This element will also maintain the time series database of Bay and Delta hydrographic data (tides, currents salinity, wind, and Delta flows information collected by USGS. Deliverables: a) Time series of measured tidal and daily net-flow for each station in the flow network; b) IEP Newsletter article, IEP Technical Report, presentations and peer-reviewed journal contributions made as appropriate; c) provide real-time data to CDEC. (J. Burau, USGS)	\$2,447	DWR-\$737 USGS-\$382	City of Stockton-\$38 CCWD-\$20 USBR Other-\$1,270
		\$ 2,700		

PROGRAM ELEMENT	ELEMENT DESCRIPTION	COST	FUNDING SOURCE	
			IEP Core	Directed or Coordinated
B. ENVIRONMENTAL MONITORING				
1. Environmental monitoring program a. (2012-072) b. Mandates –D1641 c. POD	This element implements the D-1641 mandate to monitor water quality at 22 sites in San Pablo Bay, Suisun Bay, and the Delta. In addition to basic water quality parameters, chlorophyll, phytoplankton, benthic and zooplankton samples are collected. Deliverables: a) Quarterly interim reports to USBR within 30 days after reporting periods ending on each federal fiscal quarter; b) annual report to the SWRCB. (K. Gehrts, DWR)	\$3,238	DWR-\$1,665 USBR \$1,573	\$0

PROGRAM ELEMENT	ELEMENT DESCRIPTION	COST	FUNDING SOURCE	
			IEP Core	Directed or Coordinated
B. ENVIRONMENTAL MONITORING - Continued				
2. Upper estuary zooplankton sampling a. (2012-077) b. Mandates –D1641 c. POD	Neomysis shrimp and other zooplankton are sampled monthly in San Pablo Bay, Suisun Bay and the Delta. The monthly sampling is coordinated with the Environmental Monitoring Program (2011-072). Deliverables: a) Status and Trends IEP Newsletter article, May 2012; b) annual data release of zooplankton study data in Excel matrices of catch-per-unit-effort, April 2012; c) zooplankton chapter in an annual Water Quality report for DWR, June 2012. (A. Hennessy, DFG)	\$315	DWR-\$151 USBR-\$164	\$0
3. Operation of thermograph stations a. (2012-104) b. Mandates - OCAP	This element maintains the operation of the thermograph and sediment sampling stations at Vernalis on the San Joaquin River and the Sacramento River below Wilkins Slough. Deliverables: a) Data will be published yearly in the USGS annual report series “Water Resources Data for California” approximately six to nine months after the end of the water year. (J. Smithson, USGS).	\$38	DWR-\$24 USGS-\$14	\$0
		\$ 3,591		

PROGRAM ELEMENT	ELEMENT DESCRIPTION	COST	FUNDING SOURCE	
			IEP Core	Directed or Coordinated
C. FISH & MACROINVERTEBRATES				
1. Adult striped bass population estimates a. (2012-002) b. Mandates –none	Annual tagging of adult striped bass for the purpose of making mark-recapture estimates of legal-size striped bass abundance, age distribution, mortality rates and evaluating factors affecting abundance. Deliverables: a) Sportfish Restoration Act report, September 2012; b) updates to the adult striped bass population estimates as data becomes available; c) maintenance of long-term database (J. DuBois, DFG)	\$607	DWR-\$151 DFG-\$456	\$0
2. Fall midwater trawl survey a. (2012-003) b. Mandates –OCAP c. POD	Fall midwater trawl sampling (since 1967) is conducted from San Pablo Bay through the Delta to monitor pelagic fish abundance and distribution. Data is used to calculate young-of-the-year abundance indices of several important species including striped bass, delta smelt, longfin smelt, American shad and threadfin shad. Deliverables: a) Status and Trends IEP Newsletter article, April 2012; b) web-based updates of annual indices for six species, December 2012; c) maintenance and transfer of long-term ACCESS database to approved Tier 3 location; d) participation in special studies such as Net Mouth Geometry, Fall X2 experiment, Smelt Cam and First Flush. (D. Contreras, DFG)	\$353	DWR-\$122 USBR-\$97 DFG-\$111	USBR POD \$23
3. Adult sturgeon population estimates a. (2012-005) b. Mandates –none	Legal-sized green and white sturgeon are tagged to provide estimates of abundance, age distribution and mortality rates that are used to set angling regulations and evaluate factors affecting year-class strength. The frequency of the field work was periodic (every 2-4 years) but is now annual to provide better estimates. Deliverables: a) Sportfish Restoration Act report, September 2012; b) IEP Newsletter articles as appropriate; c) maintenance of long-term database; d). (J. DuBois, DFG)	\$363	DWR-\$246 DFG-\$117	\$0

PROGRAM ELEMENT	ELEMENT DESCRIPTION	COST	FUNDING SOURCE	
			IEP Core	Directed or Coordinated
C. FISH & MACROINVERTEBRATES- Continued				
4. Summer townet survey a. (2012-007) b. Mandates –OCAP c. POD	Summer sampling with a towed, small mesh net from eastern San Pablo Bay throughout the Delta to monitor the annual abundance and distribution of juvenile fish in the upper estuary and evaluate factors affecting abundance. Annual delta smelt and striped bass indices are used to track long-trends of relative abundance. Water quality profile and simultaneous zooplankton samples are collected as well. Deliverables: a) Annual delta smelt and striped bass indices, September 2012; b) IEP Newsletter article, Spring 2012; c) updated ACCESS database, September 2012; d) appropriately preserved fish specimens for directed research. (V. Afentoulis, DFG)	\$370	DWR-\$152 USBR-\$82 DFG-\$95	USBR POD \$41
5. Estuarine and marine fish abundance and distribution survey a. (2012-012) b. Mandates –D1641	Monthly mid-water and otter trawling survey (since 1980) at 52 channel and shoal stations from South San Francisco Bay to the lower Sacramento and San Joaquin rivers to track abundance and distribution trends of marine and estuarine fishes. Data is used to assess the status of marine and estuarine fishes in the estuary as required by D-1641. Deliverables: a) Status and Trends IEP Newsletter article, Spring 2012; b) updated ACCESS database and web pages; c) IEP Highlights article, Fall 2012; d) 2011 annual indices for the major demersal and pelagic fishes, May 2012. (M. Fish, DFG)	\$640	DWR-\$347 USBR-\$293	\$0
6. Bay shrimp and crab abundance and distribution surveys a. (2012-012) b. Mandates -D1641	The trawling survey described for 2012-011 also include the collection and processing of Caridean shrimp and <i>Cancer</i> crab species to track abundance and distribution trends of Bay and estuarine shrimp species. Data is used to assess the status of shrimp in the estuary. Deliverables: a) Status and Trends IEP Newsletter article, Spring 2012; b) updated ACCESS database and web pages; c) 2011 abundance indices for the 6 major shrimp species, August 2012. (K. Hieb, DFG)	\$167	DWR-\$81 USBR-\$86	\$0
7. Delta juvenile fish monitoring program a. (part of 2012-053) b. Mandates –OCAP	Sampling at key sites in the lower rivers, Delta and estuary targeting all races of juvenile salmon emigrating through and rearing in the Delta. The program provides information on the timing of emigration, extent of rearing in the Delta and annual production. Although this effort focuses on juvenile salmon, information is also collected on other delta fishes. Larval trawling and beach seine sites in Liberty Island provide information about the importance of the lower Yolo Bypass area for various life stages of native fishes and provide information that will assist with developing study designs for other programs or entities. Deliverables: a) Extensive fisheries database updated daily and dating back to the mid 1970's; b) real-time summaries are provided to the DAT, October – June annually; c) IEP Newsletter articles as appropriate; d) poster submission for the IEP annual workshop, March 2012. (J. Netto, USFWS)	\$2,203	DWR-\$398 USBR-\$1,625	\$0

PROGRAM ELEMENT	ELEMENT DESCRIPTION	COST	FUNDING SOURCE	
			IEP Core	Directed or Coordinated
C. FISH & MACROINVERTEBRATES- Continued				
8. Knight's Landing juvenile salmon monitoring a. (part of 2012-074) b. Mandates –OCAP	Continuous sampling by rotary screw traps of juvenile salmonids emigrating from the Sacramento River. Near real-time reporting of data provides early detection of salmon entering the Delta for management purposes. Deliverables: a) Daily catch of juvenile Chinook transmitted weekly to the DAT, DOSS (Action IV.5) and WOMT beginning around October 2011; b) technical reports as appropriate; c) Knights Landing Catch Index (KLCI). (R. Vincik, DFG)	\$43	DFG-\$43	\$0
9. Spring Kodiak trawl a. (2012-088) b. Mandates –OCAP c. POD	Monthly Kodiak trawl sampling between January and April or May from Napa River and Carquinez Straight through the Delta to monitor pre-spawning adult delta smelt during late winter and spring. Data collected determines the distribution and maturity status of adult delta smelt. Deliverables: a) Near real-time data of delta smelt distribution, sexual maturity stage and CPUE are provided to water management groups and posted at http://www.delta.dfg.ca.gov/data/projects/?ProjectID=SKT ; b) maintenance of ACCESS database; c) IEP newsletter article, as appropriate. (J. Adib-Samii, DFG).	\$302	DWR-\$173 USBR-\$129	\$0
10. UCD Suisun Marsh fish monitoring a. (2012-093) b. Mandates –none c. POD	Monthly monitoring of fish abundance and distribution in Suisun Marsh channels using otter trawls and beach seines. All work is done by UCD personnel. Deliverables: a) Semi-annual progress reports to DWR contract manager; b) long-term Suisun Marsh ACCESS database; c) oral or poster presentation at IEP annual workshop, March 2012; post-project peer-reviewed manuscript submission. (T. O'rear, UCD)	\$78	\$0	DWR ^b -\$78
11. Smelt larva survey a. (2012-096) b. Mandates – SWP longfin smelt ITP c. POD	This survey provides near real-time distribution data for longfin smelt larvae in the Delta, Suisun Bay and Suisun Marsh. Data are used by agency managers to assess vulnerability of longfin smelt larvae to entrainment in south Delta export pumps. Sampling begins within the first two weeks in January and repeats every other week through the second week in March. Deliverables: a) Weekly updates of longfin smelt and delta smelt distribution to the Smelt Working Group; b) maintenance of ACCESS database; c) real-time updates of catch data to http://www.delta.dfg.ca.gov/data/projects/?ProjectID=SLS ; d) IEP Newsletter article, as appropriate. (J. Adib-Samii, DFG)	\$506	DWR-\$141 USBR-\$87	USBR POD \$278
12. Yolo Bypass a. (2012-047) b. Mandates – none	The objectives of this interdisciplinary monitoring effort are to: (1) continue collection of baseline data on lower trophic levels (phytoplankton, zooplankton and aquatic insects), juvenile and adult fishes, hydrology and physical conditions; and (2) analyze Yolo Bypass data collected during 1997 – 2007 to elucidate potential influences on fish community trends. Deliverables: a) Peer reviewed journal article, December 2012; b) upload survey data to IEP data vaults, October 2012. (K. Reece, DWR)	\$392	DWR-\$392	\$0
		\$5,844		

PROGRAM ELEMENT	ELEMENT DESCRIPTION	COST	FUNDING SOURCE	
			IEP Core	Directed or Coordinated
D. OPERATIONS MONITORING				
1. 20mm delta smelt survey a. (2012-033) b. Mandates –OCAP c. POD	A fine-mesh trawl survey of the upper estuary and Delta to determine the distribution and abundance of post-larval delta smelt. Zooplankton sampling is conducted simultaneously; data collected is used to calculate density. Sampling is conducted every two weeks from mid-March through mid-July at 35-40 stations from eastern San Pablo Bay through the Delta. The near real time sample processing enables distribution data to be used by agency managers in the Smelt Working Group to assess risk of delta smelt and longfin smelt entrainment. Deliverables: a) Maintenance and updated ACCESS database, June 2012; b) IEP Newsletter article as appropriate; c) real-time catch provided weekly to the Smelt Working Group and posted at http://www.delta.dfg.ca.gov/data/projects/?ProjectID=20mm (J. Adib-Samii, DFG)	\$553	DWR-\$340 USBR-\$213	\$0
2. Delta juvenile fish monitoring program a. (part of 2012-053) b. Mandates -OCAP	Trawl and beach seine sampling at key sites in the lower rivers, Delta and estuary targeting all races of juvenile salmon emigrating through and rearing in the Delta. The program provides information on the timing of emigration, extent of rearing in the Delta and annual production. Although this effort focuses on juvenile salmon, information is also collected on other delta, estuarine and marine fishes. Larval trawling and beach seine sites in Liberty Island provide information about the importance of the lower Yolo Bypass area for various life stages of native fishes and provide information that will assist with developing study designs for other programs or entities. Deliverables: a) The main deliverable is an extensive fisheries database updated daily and dating back to the mid 1970's; b) real-time summaries are provided to the DAT, October – June annually; c) IEP Newsletter articles as appropriate; d) poster submission for the IEP annual workshop, March 2012. (J. Netto, FWS)	\$914	DWR-\$457 USBR-\$457	\$0
3. Mossdale spring trawl a. (2012-071) b. Mandates – OCAP	This money supports Region 4 field work, collation and reporting of data from the Mossdale trawl sampling program during April through June. Overall effort is to provide "near-time" information on the relative vulnerability of key fish species (primarily Chinook salmon and steelhead) to water project operations. Sampling results are made available within 48-hours via the Internet along with data to guide the decision making of the CALFED Ops Group. Deliverables: a) Annual chapter contribution to the VAMP technical report; b) IEP Newsletter article, as appropriate; c) analyses contributing to the enhancement of the current population model being developed for the SJR Basin. (S. Tsao, DFG)	\$147	DWR-\$63 DFG-\$84	\$0
4. Water quality telemetered data collection a. (part of 2012-072) b. Mandates – D1641	Continuous collection of water quality data for multiple parameters including electrical conductivity or salinity, from 7 telemetry sites used for day-to-day CVP and SWP operational decisions. Data is made available on a real-time basis. Deliverables: a) Quarterly interim reports to USBR within 30 days after reporting periods ending on each federal fiscal quarter; b) annual report to the SWRCB. (S. Batmanghilich, DWR)	\$1,329	DWR-\$555 USBR-\$774	\$0
5. San Joaquin River dissolved oxygen monitoring a. (2012-073) b. Mandates - none	Summer and fall monitoring of dissolved oxygen and temperature levels at several sites in the San Joaquin River near Stockton to evaluate the cause of seasonal dissolved oxygen levels and trigger placement at the Head-of-Old-River Barrier. Data is used to guide water project operations and barrier placement. Deliverables: Annual report. (K. Gehrts, DWR)	\$66	\$0	DWR ^a -\$66

PROGRAM ELEMENT	ELEMENT DESCRIPTION	COST	FUNDING SOURCE	
			IEP Core	Directed or Coordinated
D. OPERATIONS MONITORING - Continued				
6. Knights Landing juvenile salmon monitoring a. (part of 2012-074) b. Mandates – OCAP	Continuous sampling by rotary screw traps of juvenile salmonids emigrating past Knights Landing to determine the timing of Delta entry of juvenile salmonids. Deliverables: a) Daily catch of juvenile Chinook transmitted weekly to the DAT, DOSS (Action IV.5) and WOMET beginning around October 2011; b) technical reports as appropriate; c) Knights Landing Catch Index (KLCI). (R. Vincik, DFG)	\$291	\$0	USBR ^f -\$111 DWR ^a -\$180
7. Mill and Deer creeks juvenile salmonid monitoring a. (2012-075) b. Mandates – OCAP	Continuous sampling by rotary screw traps of juvenile salmonids emigrating from Mill and Deer creeks. Near real-time reporting of data provides early detection of salmon entering the Delta for management purposes. Deliverables: a) Daily catches of Chinook and steelhead summarized twice weekly for the Data Assessment Team (DAT); b) Fish length database, July 2012; c) Sportfish Restoration Act Report, September 2012; d) technical presentations to the IEP, EWA, Delta Science Conference and NMFS Central Valley Salmon Technical Recovery Team, if requested. (M. Berry, DFG)	\$93	DFG-\$38	USBR ^f -\$27 DWR ^a -\$28
		\$ 3,393		

TOTAL FOR ESTUARINE MONITORING:	\$ 15,528,000
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III. Program Management Activities

PROGRAM ELEMENT	ELEMENT DESCRIPTION	COST	FUNDING SOURCE	
			IEP Core	Directed or Coordinated
G. IEP FUNCTIONS				
1. Data Management and Utilization a. (2012-019) b. Mandates - none	Management and dissemination of data and information generated by IEP monitoring and special study activities. (S. Brubaker, DWR)	\$836	DWR-\$190 USBR-\$396	DWR ^a \$250
2. Science Advisory Group (SAG) a. (2012-020) b. Mandates – none	Funding to support travel and meeting costs for the Science Advisory Group. (E. Van Nieuwenhuyse, USBR)	\$20	DWR- \$20	\$0
		\$ 856		

H. IEP OVERSIGHT AND COORDINATION –Program Management refers primarily to management, administrative and oversight activities, such as performance of Coordinator and Management Team responsibilities. All funding from IEP Core except DELTA Science which is from IEP Coordinated.		
Dept. of Fish and Game		\$1,025
Dept. of Water Resources		\$405
Water Resources Control Board		\$167
U.S. Bureau of Reclamation		\$565
U.S. Fish and Wildlife Service		\$150
U.S. Geological Survey		\$100
U.S. Environmental Agency		\$40
National Marine Fisheries Service		\$5
U.S. Army Corps of Engineers		\$166
Delta Science Program		\$150
		\$ 2,773

TOTAL FOR PROGRAM MANAGEMENT ACTIVITIES	\$ 3,629,000
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TOTAL ESTUARINE MONITORING	\$ 15,528,000
TOTAL DIRECTED AND COORDINATED	
TOTAL PROGRAM MANAGEMENT ACTIVITIES	\$3,629,000
2012 CORE PROGRAM TOTAL	\$19,157,000

Notes:

^a = funding from DWR Operations

^b = funding from Suisun Marsh group (60% DWR and 40% USBR)

^c = funding from USBR Tracy Operations

^d = funding from DWR Prop 13 funds

^e = funding from DWR Planning

^f = funding from USBR Operations

^h = funding from DWR FERC

ⁱ = funding from DWR Fish facilities

^j = funding from USBR DSP

^k = DSP funded projects that were affected by a stop work order issued in December 2008. In some cases, bridge funding was obtained and work was restarted by winter 2009. The only project that has not yet been restarted is project 2010-041.