EXHIBIT A: SHARED BIOP COMPLIANCE RESPONSIBILITIES v02012019

Exhibits A, B, and C are considered Final as of January 18, 2019. Expenditures and Projected costs are considered current as of that date. It is important to note that these figures may change as additional information is obtained.

Require	Requirements Information Agency Action Title Action Action Description					USBR			
Agency	Action Title (BiOP-ITP Requirement)	Action Status	Action Description	2018 Actual Expenditure	2019 Projected 2020 Projected	2018 Obligations (Contract)	2018-Actual Expenditures (Contract + Labor)	2019-Actual & Projected (Actual Exp Contract + Actual Exp Labor + Obligated Contract + Projected Contract + Projected Labor)	2020-Projected (Contract + Labor)
NMFS	11.2.1.2 (1 - 5)	Active	Not later than November 30 of every year, in conjunction with the CALFED Science Program or other Science Peer Review process, Reclamation and NMFS shall host a workshop to review the prior water years' operations and to determine whether any measures prescribed in this RPA should be altered in light of information learned from prior years' operations or research. After completion of the annual review, NMFS may initiate a process to amend specific measures in this RPA to reflect new information, provided that the amendment is consistent with the Opinion's underlying analysis and conclusions and does not limit the effectiveness of the RPA in avoiding jeopardy to listed species or adverse modification of critical habitat. NMFS will ask the appropriate informational and technical teams to assess the need for a particular amendment and make recommendations to NMFS, according to the group processes for decision-making set forth in this RPA in action 11.2.1.1 above. Science Program and other agencies to address key research and management questions arising from this Opinion. Prior to the beginning of a new calendar year, Reclamation shall submit to NMFS a research plan for the following year, developed in coordination with the above programs and agencies. Reclamation also shall provide NMFS access to all draft and final reports associated with this research. Specific research projects have been identified as part of the Biological Opinion.	\$0.00	\$0.00	\$0.00	\$2,142,211.56		\$0.00

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NMFS	11.2.1.3 (1)	Active	1) Reclamation and DWR shall participate in the design, implementation, and funding of the comprehensive CV steelhead monitoring program, under development through ERP, that includes adult and juvenile direct counts, redd surveys, and escapement estimates on CVP- and SWP-controlled streams. This program is necessary to develop better juvenile production estimates that form the basis of incidental take limits and will also provide necessary information to calculate triggers for operational actions.	\$0.00	\$0.00	\$0.00	\$9,857,073.15	\$4,701,769.15		\$7,959,985.69
NMFS	11.2.1.3 (2)	Active	2) Reclamation and DWR shall ensure that all monitoring programs regarding the effects of CVP and SWP operations and which result in the direct take of winterrun, spring-run, CV steelhead, or Southern DPS of green sturgeon, are conducted by a person or entity that has been authorized by NMFS. Reclamation and DWR shall establish a contact person to coordinate these activities with NMFS.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	11.2.1.3 (3, 4, 6) 13.4 (1 i) 13.4 (5a-c)	Active	3) Reclamation and DWR shall submit weekly reports to the interagency Data Assessment Team (DAT) regarding the results of monitoring and incidental take of listed salmonids and sturgeon associated with operations of project facilities. 4) Reclamation and DWR shall provide an annual written report to NMFS no later than October 1, following the salvage season of approximately October to May. This report shall provide the data gathered and summarize the results of listed salmonids and sturgeon monitoring and incidental take associated with the operation of the Delta pumping plants (including the Rock Slough). All juvenile mortality must be minimized and reported, including those from special studies conducted during salvage operations. 6) Reclamation and DWR shall submit weekly DAT reports and an annual written report to NMFS describing the results of real-time monitoring of listed salmonids and sturgeon associated with operations of the DCC and CVP and SWP Delta pumping facilities, and other Division level operations authorized through this RPA. (p 783) 5. Reclamation and DWR shall annually report to NMFS the incidental take resulting from the implementation of the Proposed Action. Refer to the NMFS BiOp for additional information.	\$200,000.00	\$200,000.00	\$200,000.00	\$0.00	\$0.00	\$0.00	\$0.00

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NMFS	11.2.1.3 (5)	Active	5) Reclamation and DWR shall continue the real-time monitoring of winter-run, spring-run, CV steelhead, and Southern DPS of green sturgeon in the lower Sacramento River, the lower San Joaquin River, and the Delta to establish presence and timing to serve as a basis for the management of DCC gate operations and CVP and SWP Delta pumping operations consistent with actions in this RPA. Reclamation and DWR shall conduct continuous real-time monitoring between October 1 and June 30 of each year, commencing in 2009.	\$50,000.00	\$50,000.00	\$50,000.00	\$4,647,687.00	\$1,971,370.10		\$4,189,360.08

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NMFS	11.2.1.3 (8)	Active	Reclamation and DWR shall jointly fund these monitoring locations p 585. Summary is below, for full details refer to the NMFS Biological Opinion. (8) Monitoring Requirements: The following (A-E) are necessary to adaptively manage project operations and are either directly related to management of releases (e.g., temperature and flow), or are a necessary component the Salmon Decision Process used to manage Delta operations. Reclamation and DWR shall jointly fund these monitoring locations for the duration of the Opinion (through 2030) to ensure compliance with the RPA and assess the performance of the RPA actions. a) Adult escapement and juvenile monitoring for spring-run, winter-run, and steelhead on the Sacramento River, American River, Feather River, Clear Creek, Mill Creek, Deer Creek and Battle Creek. Carcass surveys, redd surveys, weir counts, and rotary screw trapping. b) RBDD: Adult counts using the three current fish ladders until the new pumping plant is operational. Rotary screw trapping to determine juvenile Chinook salmon passage or abundance year-round before and after pumping plant is operational. Green sturgeon monitoring, to include adult and juvenile estimates of passage, relative abundance, and run timing. c) Sacramento River new juvenile monitoring station: The exact location TBD, in order to give early warning of fish movement and determine survival of listed fish species leaving spawning habitat in the upper Sacramento River. d) Delta: Continuation of the following monitoring stations that are part of the IEP: Chipps Island Trawl, Sacramento Trawl, Knights Landings RST, and beach seining program. Fund studies to determine green sturgeon relative abundance and habitat use. e) San Joaquin River monitoring shall include: Adult escapement and juvenile monitoring for steelhead on the Stanislaus River; Mossdale Kodiak Trawling to determine steelhead smolt passage; steelhead survival studies associated with VAMP; predation studies in front of HORB and at the three agricultural barriers in the Sou	\$895,000.00	\$895,000.00	\$895,000.00	\$1,367,196.52	\$1,199,063.07	\$294,449.40	\$117,682.46
NMFS	11.2.2: Action I.1.3	Active	Reclamation, in coordination with the Clear Creek Technical team, shall continue spawning gravel augmentation efforts. By December 31 each year, Reclamation shall provide a report to NMFS on implementation and effectiveness of the gravel augmentation program.	\$0.00	\$0.00	\$0.00	\$7,586,481.28	\$1,875,382.19	\$7,269,871.01	\$7,269,871.01

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NMFS	11.2.2: Action I.2.6	Active	Reclamation shall direct discretionary funds to implement the Battle Creek Salmon and Steelhead Restoration Project. Phase 1A funding is currently allocated through various partners and scheduled to commence in Summer 2009 (Reclamation 2008c). DWR shall direct discretionary funds for Phase 1B and Phase 2, consistent with the proposed amended Delta Fish Agreement by December 31 of each year, Reclamation and DWR will submit a written report to NMFS on the status of the project, including phases completed, funds expended, effectiveness of project actions, additional actions planned (including a schedule for further actions), and additional funds needed. The Battle Creek Salmon and Steelhead Restoration Project shall be completed no later than 2019.	\$0.00	\$0.00	\$0.00	\$410,381.00	\$25,826.41	\$517,588.30	\$535,114.23
NMFS	11.2.2: Action I.5	Active	Reclamation shall screen priority diversions as identified in the CVPIA AFSP, consistent with previous funding levels for this program. In addition, Reclamation/CVPIA Program shall evaluate the potential to develop alternative screened intakes that allow diverters to withdraw water below surface levels required by the antiquated Wilkins Slough navigation requirement criterion of 5,000 cfs.	\$0.00	\$0.00	\$0.00	\$630,275.00	\$1,272,797.87	\$2,094,611.00	\$120,771.00

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NMFS	11.2.2: Action I.6	Active	The suite of actions includes near term and long-term actions. The near-term action (Action I.6.2) is ready to be implemented and can provide rearing benefits within two years of issuing this Opinion. The long-term actions (Actions I.6.1, I.6.3, and I.6.4) require additional planning and coordination over a five- to tenyear time frame. These actions are consistent with Reclamation's broad authorities in CVPIA to develop and implement these types of restoration projects. When necessary to achieve the overall objectives of this action, Reclamation and DWR, in cooperation with other agencies and funding sources, including the Delta Fish Agreement and any amendments, shall: (1) apply for necessary permits; (2) seek to purchase land, easements, and/or water rights from willing sellers; (3) seek additional authority and/or funding from Congress or the California State Legislature, respectively; and (4) pursue a Memorandum of Agreement with the Corps. Similar actions addressing rearing and fish passage are under consideration in the BDCP development process and may ultimately satisfy the requirements in Actions I.6 and I.7. BDCP is scheduled to be completed by December 31, 2010.	\$7,097,821.55	\$5,167,000.00	\$5,826,000.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	11.2.2: Action I.6.1	Active	"In cooperation with CDFG, USFWS, NMFS, and the Corps, Reclamation and DWR shall", to the maximum extent of their authorities (excluding condemnation authority), provide significantly increased acreage of seasonal floodplain rearing habitat, with biologically appropriate durations and magnitudes, from December through April, in the lower Sacramento River basin, on a return rate of approximately one to three years, depending on water year type. In the event that this action conflicts with Shasta Operations Actions I.2.1 to I.2.3, the Shasta Operations Actions shall prevail. (p 608)	\$682,986.86	\$15,120,000.00	\$22,060,000.00	\$11,108,823.34	\$2,434,081.26	\$25,579,720.78	\$28,363,135.15

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NMFS	11.2.2: Action I.6.2	Active	By September 30, 2010, Reclamation and/or DWR shall take all necessary steps to ensure that an enhancement plan is completed and implemented for Liberty Island/Lower Cache Slough, as described in Appendix 2-C. This action shall be monitored for the subsequent five years, at a minimum, to evaluate the use of the area by juvenile salmonids and to measure changes in growth rates. Interim monitoring reports shall be submitted to NMFS annually, by September 30 each year, and a <i>final monitoring report shall be submitted on September 30, 2015, or in the fifth year following implementation of enhancement actions</i> . NMFS will determine at that time whether modification of the action or additional monitoring is necessary to achieve or confirm the desired results. This action shall be designed to avoid stranding or migration barriers for juvenile salmon.	\$0.00	\$0.00	\$0.00	\$75,616.00	\$63,438.74	\$31,138.14	\$67,738.72
NMFS	11.2.2: Action I.6.4	Active	By December 31, 2015, Reclamation and/or DWR shall, to the maximum extent of their authorities, assure that improvements to the Lisbon Weir are made that are likely to achieve the fish and wildlife benefits described in Appendix 2-C. Improvements will include modification or replacement of Lisbon Weir, if necessary to achieve the desired benefits for fish. If neither Reclamation nor DWR has authority to make structural or operational modifications to the weir, they shall work with the owners and operators of the weir to make the desired improvements, including providing funding and technical assistance. By September 1 of each year, Reclamation and/or DWR shall submit to NMFS a report on progress toward the successful implementation of this action. Reclamation and DWR must assure that this action does not result in migration barriers or stranding of juvenile salmon.		\$300,000.00	\$1,050,000.00	\$0.00	\$0.00	\$0.00	\$0.00

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NMFS	11.2.2: Action I.7	Active	By December 31, 2011, as part of the plan described in Action I.6.1, Reclamation and/or DWR shall submit a plan to NMFS to provide for high quality, reliable migratory passage for Sacramento Basin adult and juvenile anadromous fishes through the Yolo Bypass. By June 30, 2012, Reclamation and/or DWR shall obtain NMFS concurrence and, to the maximum extent of their authorities, and in cooperation with other agencies and funding sources, begin implementation of the plan, including any physical modifications. By September 30, 2009, Reclamation shall request in writing that the Corps take necessary steps to alter Fremont Weir and/or any other facilities or operations requirements of the Sacramento River Flood Control Project or Yolo Bypass facility in order to provide fish passage and shall offer to enter into a Memorandum of Understanding, interagency agreement, or other similar mechanism, to provide technical assistance and funding for the necessary work. By June 30, 2010, Reclamation shall provide a written report to NMFS on the status of its efforts to complete this action, in cooperation with the Corps, including milestones and timelines to complete passage improvements. Reclamation and/or DWR shall assess the performance of improved passage and flows through the bypass, to include an adult component for salmonids and sturgeon (i.e., at a minimum, acoustic receivers placed at the head and tail of the bypass to detect use by adults)	\$682,986.86	\$3,000,000.00	\$5,000,000.00	\$100,000.00	\$204,412.84	\$24,314.52	\$108,794.48
NMFS	11.2.2: Action II.5	Active	See Fish Passage Program, Action V.	\$0.00	\$0.00	\$0.00	\$112,000.00	\$119,247.17	\$0.00	\$0.00
NMFS	11.2.2: Action II.6 (Suite)	Active	The following actions are identified to offset project effects related to Nimbus Fish Hatchery by reducing introgression of out-of-basin hatchery stock with wild steelhead populations in the Central Valley, including the American River population and other populations in the Sacramento River system (Garza and Pearse 2008). In addition, actions are necessary at both Nimbus and Trinity River fish hatcheries to increase diversity of fall-run production, in order to increase the likelihood of prey availability for Southern Residents and reduce adverse effects of hatchery fall-run straying on genetic diversity of natural fall-run and spring-run.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

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NMFS	11.2.2: Action II.6.1	Active	Objective of Actions II.6.1-3: The following actions are identified to offset project effects related to Nimbus Fish Hatchery by reducing introgression of out-of-basin hatchery stock with wild steelhead populations in the Central Valley, including the American River population and other populations in the Sacramento River system (Garza and Pearse 2008). In addition, actions are necessary at both Nimbus and Trinity River fish hatcheries to increase diversity of fall-run production, in order to increase the likelihood of prey availability for Southern Residents and reduce adverse effects of hatchery fall-run straying on genetic diversity of natural fall-run and spring-run.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	11.2.2: Action II.6.2	Active	Objective of Actions II.6.1-3: The following actions are identified to offset project effects related to Nimbus Fish Hatchery by reducing introgression of out-of-basin hatchery stock with wild steelhead populations in the Central Valley, including the American River population and other populations in the Sacramento River system (Garza and Pearse 2008). In addition, actions are necessary at both Nimbus and Trinity River fish hatcheries to increase diversity of fall-run production, in order to increase the likelihood of prey availability for Southern Residents and reduce adverse effects of hatchery fall-run straying on genetic diversity of natural fall-run and spring-run.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	11.2.2: Action II.6.3	Active	Objective of Actions II.6.1-3: The following actions are identified to offset project effects related to Nimbus Fish Hatchery by reducing introgression of out-of-basin hatchery stock with wild steelhead populations in the Central Valley, including the American River population and other populations in the Sacramento River system (Garza and Pearse 2008). In addition, actions are necessary at both Nimbus and Trinity River fish hatcheries to increase diversity of fall-run production, in order to increase the likelihood of prey availability for Southern Residents and reduce adverse effects of hatchery fall-run straying on genetic diversity of natural fall-run and spring-run.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

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NMFS	11.2.2: Action III.2.1	Active	Reclamation shall minimize effects of their operations through improving spawning habitat with addition of 50,000 tons of gravel by 2014. Reclamation shall submit a plan, including monitoring, and schedule to NMFS for gravel augmentation by June 2010. Reclamation shall begin gravel augmentations no later than summer 2011. Reclamation shall submit to NMFS a report on implementation and effectiveness of action by 2015. Spawning gravel replenishment sites shall be monitored for geomorphic processes, material movement, and salmonid spawning use for a minimum of three years following each addition of sediment at any given site.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00
NMFS	11.2.2: Action III.2.3	Active	By June 2010, in cooperation with the SOG, Reclamation shall develop a list of projects to improve the habitat values of freshwater migratory habitat in the Stanislaus River, and associated monitoring, for implementation and submit the list to NMFS for review. Reclamation shall begin implementation of NMFS-approved projects by June 2011. Reclamation shall submit a report of project implementation and effectiveness by June 2016. These projects may include actions that reduce exposure to predation directly, or projects that may offset predation effects by improving rearing habitat values to allow juveniles to grow larger before outmigration. These projects may include both flow- and non-flow-related actions. Flow-related actions shall be coordinated with operational flows as defined in Action III.2.2 and Action III.1.2. These projects may also include, but shall not be limited to, evaluations to identify locations or sources of higher juvenile mortality in order to identify and implement projects with the highest likelihood to prevent CV steelhead mortality.	\$0.00	\$0.00	\$0.00	\$7,803,008.93	\$6,188,550.32	\$757,611.00	\$0.00
NMFS	11.2.2: Action III.2.4	Active	See Fish Passage Program, Action V.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

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NMFS	11.2.2: Action IV.1.1	Active	Monitoring of Chinook salmon migration in the Sacramento River Basin and the Delta currently occurs at the RBDD, in spring-run tributaries to the Sacramento River, on the Sacramento River at Knights Landing and Sacramento, and sites within the Delta. Reclamation and DWR shall continue to fund these ongoing monitoring programs, as well as the monitoring of salvage and loss of Chinook salmon juveniles at the Delta fish collection facilities operated by the CVP and SWP. Funding shall continue for the duration of the proposed action (2030). Reclamation and DWR may use their own fishery biologists to conduct these monitoring programs, or they may provide funds to other agencies to do the required monitoring. Monitoring protocols shall follow established procedures utilized by the USFWS, CDFG, Reclamation, and DWR. Information collected from the monitoring programs will be used to make real-time decisions regarding DCC gate operation and export pumping. The DOSS group (Action IV.5) and WOMT will use information from monitoring to make decisions regarding DCC closures consistent with procedures below. The DCC gate operations in the fall are initiated through a series of alerts. These alerts are signals that gate operations may need to be altered in the near future to avoid diversion of juvenile Chinook salmon migrating down the Sacramento River. (p. 633).	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	11.2.2: Action IV.1.3	Active	Reclamation and/or DWR shall convene a working group to consider engineering solutions to further reduce diversion of emigrating juvenile salmonids to the interior Delta and consequent exposure to CVP and SWP export facilities. The working group, comprised of representatives from Reclamation, DWR, NMFS, USFWS, and CDFG, shall develop and evaluate proposed designs for their effectiveness. in reducing adverse impacts on listed fish and their critical habitat. Reclamation or DWR shall subject any proposed engineering solutions to external independent peer review and report the initial findings to NMFS by March 30, 2012. Reclamation or DWR shall provide a final report on recommended approaches by March 30, 2015. If NMFS approves an approach in the report, Reclamation or DWR shall implement it. To avoid duplication of efforts or conflicting solutions, this action should be coordinated with USFWS' Delta smelt biological opinion and BDCP's consideration of conveyance alternatives.(p 640)		\$2,350,000.00	\$12,925,000.00	\$0.00	\$0.00	\$0.00	\$0.00

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NMFS	11.2.2: Action IV.2.1	Active	Phase I: Interim Operations in 2010-2011. From April 1 through May 31: 1. Flows at Vernalis (7-day running average shall not be less than 7 percent of the target requirement) shall be based on the New Melones Index32. In addition to the Goodwin flow schedule for the Stanislaus River prescribed in Action III.1.3 and Appendix 2-E, Reclamation shall increase its releases at Goodwin Reservoir, if necessary, in order to meet the flows required at Vernalis, as provided in the following table. NMFS expects that tributary contributions of water from the Tuolumne and Merced rivers, through the SJRA, will continue through 2011 and that the installation of a fish barrier at the Head of Old River will continue to occur during this period as permitted. 2. Combined CVP and SWP exports shall be restricted through the following. In addition: 1) Reclamation/DWR shall seek supplemental agreement with the SJRGA as soon as possible to achieve minimum long term flows at Vernalis (see following table) through all existing authorities. Phase II: Beginning in 2012: From April 1 through May 31: 1. Reclamation shall continue to implement the Goodwin flow schedule for the Stanislaus River prescribed in Action III.1.3 and Appendix 2-E. 2. Reclamation and DWR shall implement the Vernalis flow-to-combined export ratios in the following table, based on a 14-day running average exception procedure for multiple dry years: If the previous 2 years plus current year of San Joaquin Valley "60-20-20" Water Year Hydrologic Classification and Indicator as defined in D-1641 and provided in following table, is 6 or less, AND the New Melones Index is less than 1 MAF, exports shall be limited to a 1:1 ratio with San Joaquin River inflow, as measured at Vernalis.	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00

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NMFS	11.2.2: Action IV.2.2	Active	Reclamation and DWR shall fund a 6-year research-oriented action concurrent with Action IV.2.1. The research shall be composed of studies utilizing acoustically-tagged salmonids, and will be implemented to assess the behavior and movement of the outmigrating fish in the lower San Joaquin River. The studies will include three releases of acoustic tagged fish, timed to coincide with different periods and operations: March 1 through March 31, April 1 through May 31, and June 1 through June 15. NMFS anticipates that studies will utilize clipped hatchery steelhead and hatchery fall-run as test fish. During the period from March 1 through March 30, the exports will be operated in accordance with the requirements dictated by action IV.2.3. During the 60-day period between April 1 and May 30, exports will be dictated by the requirements of action IV.2.1. Reclamation shall operate to a minimum 1:1 inflow to export ratio during the period between June 1 and June 15, allowing exports to vary in relation to inflows from the San Joaquin to test varying flow to export ratios during this period. If daily water temperatures at Mossdale exceed 72°F for seven consecutive days during the period between June 1 and June 15, then the inflow to export ratio may be relaxed. NMFS anticipates that warm water conditions in the lower San Joaquin River will not be suitable for steelhead under these conditions. (p 645)	\$0.00	\$0.00	\$0.00	\$170,565.00	\$339,210.38		\$163,805.91
NMFS	11.2.2: Action IV.2.3	Active	From January 1 through June 15, reduce exports, as necessary, to limit negative flows to -2,500 to -5,000 cfs in Old and Middle Rivers, depending on the presence of salmonids. The reverse flow will be managed within this range to reduce flows toward the pumps during periods of increased salmonid presence.	\$0.00	\$0.00	\$0.00	\$535,870.03	\$273,910.48	\$535,870.03	\$535,870.03

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NMFS	11.2.2: Action IV.3	Active	From November 1 through April 30, operations of the <i>Tracy and Skinner Fish Collection Facilities</i> shall be modified according to monitoring data from upstream of the Delta. In conjunction with the two alerts for closure of the DCC (Action IV.1.1), the Third Alert shall be used to signal that export operations may need to be altered in the near future due to large numbers of juvenile Chinook salmon migrating into the upper Delta region, increasing their risk of entrainment into the central and south Delta and then to the export pumps. Third Alert: The catch index is greater than 10 fish captured per day from November 1 to February 28, or greater than 15 fish captured per day from March 1 to April 30, from either the Knights Landing catch index or the Sacramento catch index	\$1,543,500.38	\$1,543,500.38	\$1,543,500.38	\$0.00	\$0.00	\$715,000.00	\$715,000.00
NMFS	11.2.2: Action IV.4 (Suite)	Active	Reclamation and DWR shall each achieve a whole facility salvage efficiency of 75 percent at their respective fish collection facilities. Reclamation and DWR shall implement the following actions to reduce losses associated with the salvage process, including: (1) conduct studies to evaluate current operations and salvage criteria to reduce take associated with salvage, (2) develop new procedures and modifications to improve the current operations, and (3) implement changes to the physical infrastructure of the facilities where information indicates such changes need to be made. Reclamation shall continue to fund and implement the CVPIA Tracy Fish Facility Program. In addition, Reclamation and DWR shall fund quality control and quality assurance programs, genetic analysis, louver cleaning loss studies, release site studies and predation studies. Funding shall also include new studies to estimate green sturgeon screening efficiency at both facilities and survival through the trucking and handling process.	\$1,659,365.26	\$2,903,000.00	\$3,481,000.00	\$0.00	\$0.00	\$0.00	\$0.00

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NMFS	11.2.2: Action IV.4.3 (1-8)	Active	Reclamation and DWR shall undertake the following actions at the TFCF and the Skinner Fish Collection Facility, respectively. Actions shall commence by October 1, 2009. For additional details, refer to the NMFS Biological Opinion. (1) Sampling rates at the facilities for fish salvage counts shall be no less than 30 minutes every 2 hours (25 percent of operational time) year round to increase the accuracy of salvage estimates used in the determination of trigger levels. Exceptions to the 30-minute count may occur with NMFS' concurrence under unusual situations, such as high fish densities or excessive debris loading. (2) By October 1, 2010, websites shall be created or improved to make salvage count data publicly available. (3) Release Site Studies shall be conducted. Studies shall examine but are not limited to: a) potential use of barges to release the fish in different locations within the western Delta; b) multiple release points (up to six) in western Delta with randomized release schedule; and c) conducting a benefit to cost analysis to maximize this ratio while reducing predation at release site to 50% of the current rate. (4) By June 15, 2011, predation reduction methods shall be implemented according to analysis in 3. By June 15, 2014, achieve a predation rate that has been reduced 50 percent from current rate. (5) Add salt to water within the tanker trucks hauling fish to reduce stress of transport. Assess use of other means to reduce stress, protect mucous slime coat on fish, and prevent infections from abrasions (i.e., commercially available products for this purpose). (6) All personnel conducting fish counts must be trained in juvenile fish identification and have working knowledge of fish physiology and biology. (7) Tanker truck runs to release salmonids should be scheduled at least every 12 hours, or more frequently if required by the "Bates Table" calculations (made at each count and recorded on the monthly report). (8) Reclamation and DWR shall use the Bates Table to maintain suitable environ		\$600,000.00	\$600,000.00	\$0.00	\$0.00	\$426,000.00	\$0.00

Agency	Action Title (BiOP-ITP Requirement)	Action Status	Action Description	2018 Actual Expenditure	2019 Projected	2020 Projected	2018 Obligations (Contract)	2018-Actual Expenditures (Contract + Labor)	2019-Actual & Projected (Actual Exp Contract + Actual Exp Labor + Obligated Contract + Projected Contract + Projected Labor)	2020-Projected (Contract + Labor)
NMFS	11.2.2: Action IV.5	Active	The DOSS group will be comprised of biologists, hydrologists, and other staff with relevant expertise from Reclamation, DWR, CDFG, USFWS, and NMFS. Invitations to EPA, USGS, and Regional Water Quality Board biologists will be extended to provide expertise on issues pertinent to Delta water quality, hydrology and environmental parameters. By October 1, 2009, Reclamation shall, jointly with NMFS, convene the DOSS working group. The working group will have biweekly phone conferences, or more frequently if necessary for real-time operations, and meet at least quarterly to discuss and review information related to project operations and fisheries issues. Either Reclamation or NMFS may call for a special meeting of the DOSS group if they deem it necessary. The team will: 1) provide recommendations for real-time management of operations to WOMT and NMFS, consistent with implementation procedures provided in this RPA; 2) review annually project operations in the Delta and the collected data from the different ongoing monitoring programs; 3) track the implementation of Actions IV.1 through IV.4; 4) evaluate the effectiveness of Actions IV.1 through IV.4 in reducing mortality or impairment of essential behaviors of listed species in the Delta; 5) oversee implementation of the acoustic tag experiment for San Joaquin fish provided for in Action IV.2.2; 6) coordinate with the SWG to maximize benefits to all listed species; and 7) coordinate with the other technical teams identified in this RPA to ensure consistent implementation of the RPA. The DOSS team shall provide annual written reports to Reclamation, DWR, and NMFS, including a summary of major actions taken during the year to implement Action Suite IV of this RPA, an evaluation of their effectiveness, and recommendations for future actions.		\$50,000.00	\$50,000.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	11.2.2: Action V: LF 1	Active	If the Comprehensive Fish Passage Report indicates that long-term fish passage is feasible and desirable, Reclamation shall continue to convene, fund, and staff the Fish Passage Steering Committee.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

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NMFS	11.2.2: Action V: LF 2 (Suite)	Active	Based on the results of the Comprehensive Fish Passage Report, Reclamation, with assistance from the Steering Committee, shall develop a Long-term Fish Passage Plan and implement a Long-term Fish Passage Program. Reclamation and partner agencies shall submit a plan to NMFS on or before December 31, 2016, which shall describe planned longterm upstream and downstream fish passage facilities and operations, based on the best available information at that time. The plan shall include a schedule for implementing a long-term program for safe, timely, and effective anadromous fish passage by January 31, 2020. The Long-term Fish Passage Plan and Program shall target the following performance standards: (1) demonstrated ability to withstand long-term effects of climate change, (2) must support populations in the target watersheds that meet the characteristics of a population facing a moderate risk of extinction by year 5 (2025) and a low risk of extinction by year 15 (2030), according to the population parameters identified in Lindley et al. (2007), "Framework for Assessing Viability of Threatened and Endangered Chinook Salmon and Steelhead in the Sacramento-San Joaquin Basin." The structural and operational modifications needed to implement the program shall be developed as high priority measures in the plan. The plan shall include an evaluation of a range of structural and operational alternatives for providing fish passage above Reclamation dams in the Sacramento, American, and Stanislaus River watersheds. Reclamation and partner agencies will evaluate the information gathered through plan development, the NEPA process, ESA recovery planning (including life cycle modeling developed as part of the recovery planning process), university studies, local monitoring efforts public comment, and other relevant sources, to determine which alternative(s), will provide the most cost-effective 670 means to achieve adequate passage benefits to avoid jeopardy to ESA-listed fish from the water projects in the long term. Reclamati	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	11.2.2: Action V: LF 2.1	Active	Based on the results of the Comprehensive Fish Passage Report and the Fish Passage Plan, and with the assistance of the Steering Committee, Reclamation shall construct long-term fish passage facilities necessary to successfully allow upstream and downstream migration of fish around or through project dams and reservoirs on the Sacramento and American Rivers by 2020, and Stanislaus River depending on results of study provided for in Action NF 4.7.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

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NMFS	11.2.2: Action V: LF 2.2	Active	Based on the results of the Comprehensive Fish Passage Report and the Fish Passage Plan, and with the assistance of the Steering Committee, in consultation with the NMFS Southwest Fishery Science Center, Reclamation shall develop and implement a long-term population supplementation plan for each species and fish passage location identified in V. Fish Passage Program, with adult recruitment and collection criteria developed with consideration for source population location, genetic and life history diversity, abundance and production. The purpose is to ensure that long-term abundance and viability criteria are met for all reintroduced populations, with contingencies for supplementing populations with wild and/or conservation hatchery fish if necessary. The plan shall be developed by 2020. The plan shall identify wild and/or hatchery sources for adult reintroductions and long-term supplementation, and the specific NMFS-approved hatchery management practices that qualify a hatchery for conservation purposes. Species-specific conservation hatchery programs may be developed to supplement reintroductions and maintain long-term performance standards for abundance and viability.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00
NMFS	11.2.2: Action V: LF 2.3	Active	Reclamation, through the Steering Committee shall develop a Long-term Fish Passage Monitoring and Evaluation Plan by 2020, to monitor all elements of the Long-term Fish Passage Program including adult reintroduction locations, techniques, survival, distribution, spawning, and production; and juvenile rearing, migration, recollection, and survival. The objective is to gather sufficient biological and technical information to assess the relative effectiveness of the program elements and determine the feasibility of long-term passage alternatives. Annual reports shall be submitted to NMFS by September 30 of each year.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

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NMFS	11.2.2: Action V: NF 1	Active	By December 2009, Reclamation shall establish, chair and staff the Interagency Fish Passage Steering Committee. The Committee shall be established in consultation with and the approval of NMFS and shall include senior biologists and engineers with experience and expertise in fish passage design and operation, from Reclamation, NMFS, DWR, CDFG, and USFWS. The Steering Committee also shall include academic support by including at least one academic member from a California University with and established fishery program. The committee shall be limited to agency membership unless otherwise approved by Reclamation and NMFS. Steering committee membership shall include on lead member and one alternate.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	11.2.2: Action V: NF 2	Active	Beginning in January 2010 and continuing through January 2012, Reclamation, shall conduct habitat evaluations to quantify and characterize the location, amount, suitability, and functionality of existing and/or potential spawning and rearing habitat for listed species above the project reservoirs. Reclamation shall obtain the Steering Committee's assistance in designing and implementing the habitat evaluations. Evaluations shall be conducted using established field survey protocols such as the USFS Region 5 Stream Condition Inventory, Field Intensive and Field Extensive protocols; and habitat models including the Salmon Habitat Integrated Resource Analysis (Shiraz) in combination with the Distributed Hydrology Soil Vegetated Model (DHSVM) or RIPPLE. Shiraz is a life-cycle model that incorporates stream flow and temperature inputs from DHSVM to develop future projections of salmon population sizes. Ripple uses digital terrain information with aquatic habitat and biological data to identify habitat limitations that affect salmon production. Both modeling approaches have been applied in the Washington and Oregon assess the value of providing passage to salmonids to historically available habitat.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

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N		11.2.2: Action V: NF 3	Active	From January 2010 through January, 2011, Reclamation, with assistance from the Steering Committee, shall complete a 3-year plan for the Fish Passage Pilot program. The plan shall include: (1) a schedule for implementing a 3-year Pilot Passage program on the American River above Nimbus and Folsom dams, and on the Sacramento River above Keswick and Shasta dams; and (2) a plan for funding the passage program. This plan and its annual revisions shall be implemented upon concurrence by NMFS that it is in compliance with ESA requirements.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
N		11.2.2: Action V: NF 4	Active	From January 2012 through 2015, Reclamation shall begin to implement the Pilot Reintroduction Program (see specific actions below). The Pilot Program will, in a phased approach, provide for pilot reintroduction of winter-run and spring-run to habitat above Shasta Dam in the Sacramento River, and CV steelhead above Folsom Dam in the American River. This interim program will be scalable depending on source population abundance, and will not impede the future installation of permanent facilities, which require less oversight and could be more beneficial to fish. This program is not intended to achieve passage of all anadromous fish that arrive at collection points, but rather to phase in passage as experience with the passage facilities and their benefits is gained.	\$0.00	\$0.00	\$0.00	\$212,566.00	\$107,538.57	\$31,057.54	\$0.00

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NMFS	11.2.2: Action V: NF 4.1	Active	Reclamation and partner agencies shall incorporate NMFS' Fish Screening Criteria for Anadromous Salmonids (NMFS 1997a) and the best available technology. During the design phase, Reclamation and partner agencies shall coordinate with NMFS to determine if the design should accommodate possible later connection to improved facilities, if necessary in years beyond 2015. Reclamation and partner agencies shall complete all interim steps in a timely fashion to allow them to meet the following deadlines for completing construction and beginning operation of the facilities listed below. These steps may include completing plans and specifications. Reclamation and partner agencies shall give NMFS periodic updates on their progress. The order in which these facilities are completed may be modified with NMFS' concurrence, based on interim analyses and biological priorities. 1) Sacramento River Fish Facility – Collection facility shall be operational no later than March 2012. 2) American River Fish Facility – Collection facility shall be operational no later than March 2012.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	11.2.2: Action V: NF 4.2	Active	Reclamation shall provide for the safe, effective, and timely release of adult fish above dams and juvenile fish below dams. The Fish Passage Plan must identify and release sites. Fish transport and release locations and methods shall follow existing State and Federal protocols. With assistance from the Steering Committee, and in coordination with applicable landowners and stakeholders, Reclamation shall complete construction of all selected sites by March 2012.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

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N		11.2.2: Action V: NF 4.3	Active	By March 2012, Reclamation shall implement upstream fish passage for adults via "trap and transport" facilities while it conducts studies to develop and assess long-term upstream and downstream volitional fish passage alternatives. At least one fish facility must be in place at terminal upstream passage points for each river that is subject to this measure. Facilities to capture adults currently exist at or below Keswick and Nimbus Dams, though these may need to be upgraded. The Pilot Program is a first step in providing anadromous fish passage to historical habitat above Project dams but will not be sufficient by itself. The number of fish that shall be relocated is expected to vary depending on the source population, source population size, and the results of fish habitat evaluations and modeling of carrying and production capacity. The Steering Committee will work in consultation with the NMFS Southwest Fishery Science Center to develop adult relocation source populations and abundance targets. The Steering Committee shall evaluate the use of wild and hatchery sources and develop strategies that minimize risk to existing wild populations. NMFS considers volitional passage via a fish ladder or other fishway to be the preferable alternative in most circumstances. In the short term, upstream passage can be provided with fish trap and transport mechanisms, while Reclamation evaluates program effectiveness and passage alternatives.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Agenc	y Action Title (BiOP-ITP Requirement)	Action Status	Action Description	2018 Actual Expenditure	2019 Projected	2020 Projected	2018 Obligations (Contract)	2018-Actual Expenditures (Contract + Labor)	2019-Actual & Projected (Actual Exp Contract + Actual Exp Labor + Obligated Contract + Projected Contract + Projected Labor)	2020-Projected (Contract + Labor)
NMFS	11.2.2: Action V: NF 4.4	Active	Beginning in 2012, following the emergence of the first year class of reintroduced fish, and until permanent downstream passage facilities are constructed or operations are established at Project dams, Reclamation shall carry out interim operational measures to pass downstream migrants as safely and efficiently as possible through or around Project reservoirs and dams under current dam configurations and physical and operational constraints, consistent with authorized Project purposes. Near-term operating alternatives shall be identified, evaluated, and implemented if determined to be technically and economically feasible and biologically justified by Reclamation and partner agencies, within the framework of the Annual Operating Plan updates and revisions, and in coordination with the Fish Passage Plan Steering Committee. Interim devices shall be constructed to collect emigrating juvenile salmonids and emigrating post-spawn adult steelhead from tributaries, main stems above project reservoirs, or heads of reservoirs. Fish shall be safely transported through or around reservoirs as necessary and released below currently impassible dams. Reclamation and partner agencies shall evaluate potential interim measures that require detailed environmental review, permits, or Congressional authorization as part of the Fish Passage Plan. Reclamation shall complete this component of the Plan by April 30, 2011, including seeking authorization (if necessary) and completing design or operational implementation plans for the selected operations. Measures to be evaluated include, but are not limited to, partial or full reservoir drawdown during juvenile outmigration period, modification of reservoir refill rates, and using outlets, sluiceways, and spillways that typically are not opened to pass outflow.		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

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NMFS	11.2.2: Action V: NF 4.5	Active	Beginning in January, 2010, with input from the CVP/SWP operations Fish Passage Steering Committee, Reclamation shall plan, design, build, and evaluate a prototype head-of-reservoir juvenile collection facility above Shasta Dam. Construction shall be complete by September 2013. Because the head-of-reservoir fish collection concept is virtually untested, it would be imprudent to require such facilities without prior field studies, design, and prototype testing to validate the concept. For more information this process, refer to the NMFS Biological Opinoin. Possible options include, among others: (1) floating collectors in the reservoir near the mouths of tributaries, (2) use of curtained or hardened structures near mouths of tributaries, that block surface passage into reservoirs, (3) fish collection facilities on tributaries above the reservoir pools, and (4) a combination of the above to maximize collection in high flow and low flow conditions. By the end of 2010, Reclamation, with assistance from the Fish Passage Steering Committee and concurrence by NMFS, shall identify a preferred location(s) and design(s) for construction of the prototype(s). Construction of the prototype facility(s) must be completed in time to conduct two years of biological and physical evaluations of the head-of-reservoir prototype collection facilities by the end of 2016. The Fish Passage Steering Committee shall have opportuity to comment on study proposals and a draft report, including recommendations for installing full-scale head-of-reservoir facilities at this and other reservoirs. By December 31, 2016, after receiving concurrence from NMFS and USFWS on the draft report, Reclamation and partner agencies shall make necessary revisions to the draft report and issue a final.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	11.2.2: Action V: NF 4.6	Active	From 2012 to 2015, Reclamation shall study, and provide annual reports on, the elements of the pilot program, including adult reintroduction locations, techniques, survival, distribution, spawning, and production; and juvenile rearing, migration, recollection, and survival. The objective is to gather sufficient biological and technical information to assess the relative effectiveness of the program elements and determine the feasibility of long-term passage alternatives. A final summary report of the 5-year pilot effort shall be completed by December 31, 2015.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

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NMFS	11.2.2: Action V: NF 4.7	Active	By March 31, 2011, Reclamation shall develop a plan to obtain information needed to evaluate options for fish passage on the Stanislaus River above Goodwin, Tulloch and New Melones Dams and shall submit this plan to NMFS for review. This plan shall identify reconnaissance level assessments that are needed to support a technical evaluation of the potential benefits to CV steelhead that could be achieved with passage above the dams, a general assessment of logistical and engineering information needed, and a schedule for completing those assessments by December 31, 2016. Reclamation is encouraged to use information developed for the American and Sacramento Rivers in Action NF 3 above, when also applicable for the Stanislaus River. By December 31, 2016, Reclamation shall submit a report, including the results of the assessments and proposed options for further consideration, to NMFS. By December 31, 2018, Reclamation shall include recommendations for fish passage on the Stanislaus River in the Comprehensive Feasibility Report (Action NF 6.) The report will outline the costs of potential projects, their biological benefits and technical feasibility, potential alternatives, and steps necessary to comply with all applicable statutes and regulations.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00
NMFS	11.2.2: Action V: NF 5	Active	By December 31, 2016, Reclamation shall prepare a Comprehensive Fish Passage Report. The Report shall include preliminary determinations by Reclamation and partner agencies regarding the feasibility of fish passage and other related structural and operational alternatives. The report should include specific recommendations for improvements to highest priority sub-basins and/or features and to include recommendations for major operational changes. It will also include identification and evaluation of high priority actions and may suggest modifying the scope or timelines of these high priority actions, based on the predicted outcome of long-term efforts.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	13.3 (1) Reasonable & Prudent Measures (RPM) 1.	Active	Reclamation and DWR shall monitor the extent of incidental take of winter-run, spring-run, green sturgeon, and CV steelhead, associated with the operation of the CVP's Jones and SWP's Harvey Banks pumping facilities. (p 781)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

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NMFS	13.3 (2) 13.4 (2 a)		NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize take of winter-run, spring-run, CV steelhead, and the Southern DPS of green sturgeon. 2. Reclamation shall seek to develop an alternative technique to quantify incidental take of listed anadromous salmonid species at the Federal and State export facilities. 2. Reclamation shall seek to develop an alternative technique to quantify incidental take of listed anadromous salmonid species at the Federal and State export facilities. a. In coordination with NMFS, Reclamation shall select and fund an independent contractor to determine the best technique to quantify incidental take of winter-run, spring-run, CV steelhead, and the Southern DPS of green sturgeon at the Federal and State export facilities. Reclamation shall submit a final report to NMFS by December 31, 2010, summarizing the recommendations for quantifying incidental take, with the selection of a proposed technique. The technique for quantifying take shall be implemented immediately upon NMFS' concurrence. In the event that this measure is not implemented immediately and reflected in the annual report per term and condition 3.a. below, take authorization for CV steelhead shall cease on December 31, 2011. Incidental take, especially for CV steelhead, but for the other listed anadromous fish species as well, may be adjusted based on the application of the new technique to quantify incidental take at the Federal and State export facilities.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

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NMFS	13.3 (4) Reasonable & Prudent Measures (RPM) 4. 13.4 (1 a) Terms & Conditions (T&C)	Active	 Reclamation and DWR shall monitoring all incidental take associated with CVP and SWP operations. (p 782) Reclamation and DWR must comply or ensure compliance by their contractor(s) with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary. Reclamation and DWR shall monitor the extent of incidental take of winter-run, spring-run, green sturgeon, and CV steelhead, associated with the operation of the CVP's Jones and SWP's Harvey Banks pumping facilities. Reclamation and DWR shall calculate winter-run, spring-run, CV steelhead, and Southern DPS of green sturgeon loss at the Jones and Banks pumping plants on a real-time basis from October 1 through June 30 each year. Loss and salvage shall be computed using formulas developed in consultation with CDFG and USFWS and approved by NMFS. (p782) 	\$0.00	\$0.00	\$0.00	\$278,497.00	\$482,115.93	\$1,603,373.00	\$1,455,000.00
NMFS	13.3 (5) Reasonable & Prudent	Active	5. Reclamation and DWR shall annually report to NMFS the incidental take resulting from the implementation of the Proposed Action. (p 782)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	13.4 (1 b)	Active	b. Reclamation and DWR shall monitor the loss of juvenile winter-run at the CVP and SWP Delta pumping facilities and will use that information to determine whether the anticipated level of loss is likely to exceed the authorized level of 2 percent, cumulatively, of the estimated number of juvenile winter-run entering the Delta annually. (p 782)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	13.4 (1 c)	Active	c. Reclamation and DWR shall monitor the loss of identified spring-run surrogate release groups at the CVP and SWP Delta pumping facilities and use that information to determine whether the cumulative estimated level of loss is expected to exceed 1%. (p 782)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Agency	Action Title (BiOP-ITP Requirement)	Action Status	Action Description	2018 Actual Expenditure	2019 Projected	2020 Projected	2018 Obligations (Contract)	2018-Actual Expenditures (Contract + Labor)	2019-Actual & Projected (Actual Exp Contract + Actual Exp Labor + Obligated Contract + Projected Contract + Projected Labor)	2020-Projected (Contract + Labor)
NMFS	13.4 (1 d)	Active	d. Reclamation and DWR shall monitor the salvage of CV steelhead at the CVP and SWP Delta pumping facilities and use that information to determine whether the cumulative estimated level of salvage is expected to exceed 3,000 unclipped steelhead (juveniles and adults combined) at the CVP and SWP Delta pumping facilities. Incidental take of CV steelhead shall be reported as salvage and calculated loss. (p 782)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	13.4 (1 e)	Active	e. Reclamation and DWR shall monitor the loss of juvenile green sturgeon at the CVP and SWP Delta pumping facilities and use that information to determine whether the cumulative estimated level of loss is expected to exceed 110 juveniles annually (previous 10-year average). (p 782)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	13.4 (1 f)	Active	f. If the estimated rate of loss approaches the incidental take level anticipated for any of the anadromous fish species at the SWP Harvey Banks pumping facility combined with the estimated take at the CVP Jones pumping facility is exceeded, Reclamation and DWR shall immediately convene the WOMT to explore additional measures which can be (missing text in document). (p 782)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	13.4(1 h)	Active	h. DNA tissue samples and CWT samples from juvenile winter-run, spring-run, and steelhead at the Tracy and Skinner fish collection facilities shall be collected by DWR or CDFG for genetic analysis or tag removal/reading pursuant to the sampling protocols established by the IEP Salmon Genetics Project Work Team. Tissues shall be stored at the CDFG tissue bank at Rancho Cordova for subsequent analysis by Oregon State University or similar lab approved by NMFS. Whole fish or heads for CWT processing and identification shall be stored at the USFWS Bay/Delta Office in Stockton. All samples shall be clearly marked according to office protocol and a log maintained at each storage facility.	\$310,000.00	\$310,000.00	\$310,000.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	13.4 (4 a) Terms & Conditions (T&C)	Active	4. Reclamation and DWR shall monitor all incidental take associated with CVP and SWP operations. (p 785) a. Reclamation shall implement all aspects of RPA section 11.2.1.3	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Agency	Action Title (BiOP-ITP Requirement)	Action Status	Action Description	2018 Actual Expenditure	2019 Projected	2020 Projected	2018 Obligations (Contract)	2018-Actual Expenditures (Contract + Labor)	2019-Actual & Projected (Actual Exp Contract + Actual Exp Labor + Obligated Contract + Projected Contract + Projected Labor)	2020-Projected (Contract + Labor)
NMFS	14.0 (1)	Active	Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. NMFS thinks the following conservation recommendations are consistent with these obligations, and therefore, should be implemented by Reclamation: 1. In proposing the SRWRP for a future section 7 consultation, Reclamation should first ensure that Shasta Reservoir storage and cold water pool requirements are met, as provided in RPA Action I.2.2, and that all construction-related and operational impacts of the SRWRP, both upstream and in the Delta, are analyzed in consideration of the operations and effects on listed species and critical habitats of the CVP and SWP that were analyzed in this consultation.	\$0.00	\$0.00	\$0.00	\$3,555,119.51	\$846,516.65	\$6,718,990.53	\$2,765,404.23
NMFS	14.0 (3)	Active	Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. NMFS thinks the following conservation recommendations are consistent with these obligations, and therefore, should be implemented by Reclamation: 3. Reclamation should continue to fund CALFED ERP restoration actions, consistent with previous commitment and funding levels, and to fulfill CALFED ROD commitments. DWR should support continued state funding to CDFG to further implementation of the CALFED ERP.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Agency	Action Title (BiOP-ITP Requirement)	Action Status	Action Description	Expenditure		2020 Projected	2018 Obligations (Contract)	2018-Actual Expenditures (Contract + Labor)	2019-Actual & Projected (Actual Exp Contract + Actual Exp Labor + Obligated Contract + Projected Contract + Projected Labor)	2020-Projected (Contract + Labor)
USFWS	RPA Component 3: Action 4	Active	Subject to adaptive management as described below and in Action 4 in Attachment B (more detials available in the USFWS Biological Opinion), during September and October in years when the preceeding precipitation and runoff period was wet or above normal as defined by the Sacramento Basin 40-30-30 index, Reclamation and DWR shall provide sufficient Delta outflow to maintain monthly average X2 no greater than 74 km (from the Golden Gate) in Wet WYs and 81 km in Above Normal WYs. The monthly X2 target will be separately achieved for the months of September and October. During any November when the preceding all inflow into CVP/SWP reservoirs in the Sacramento Basin shall be added to reservoir releases in November to provide an additional increment of outflow from the Delta to augment Delta outflow up to the fall X2 of 74 km for Wet WYs or 81 km for Above Normal WYs, respectively. The Service shall oversee and direct the implementation of a formal adaptive management process (refer to Attachment B). In accordance with the adaptive management plan, the Service will review new scientific information when provided and may make changes to the action when the best available scientific information warrants. For example, there may be other ways to achieve the biological goals of this action, such as a Delta outflow target, that will be evaluated as part of the study. This action may be modified by the Service consistent with the intention of this action based on information provided by the adaptive management program in consideration of the needs of other listed species. The Service shall implement a performance evaluation, and peer review of the performance measures and evaluation that are described in steps (1) through (3) of Attachment B. The Service shall conduct a comprehensive review of the outcomes of the Action and the effectiveness of the adaptive management program ten years from the signing of the biological opinion, or sooner if circumstances warrant. This review shall entail an independent peer review of the	\$1,291,705.83	\$1,291,705.83	\$1,291,705.83	\$196,355.00	\$120,620.79	\$537,934.47	\$276,630.80

Agency	Action Title (BiOP-ITP Requirement)	Action Status	Action Description	2018 Actual Expenditure	2019 Projected	2020 Projected	2018 Obligations (Contract)	2018-Actual Expenditures (Contract + Labor)	2019-Actual & Projected (Actual Exp Contract + Actual Exp Labor + Obligated Contract + Projected Contract + Projected Labor)	2020-Projected (Contract + Labor)
USFWS	RPA Component 5	Active	Monitoring and Reporting Reclamation and DWR shall ensure that information is gathered and reported to ensure: 1) proper implementation of these actions, 2) that the physical results of these actions are achieved, and 3) that information is gathered to evaluate the effectiveness of these actions on the targeted life stages of delta smelt so that the actions can be refined, if needed. (p 284)	\$0.00	\$0.00	\$0.00	\$13,696,193.00	\$5,470,734.41		\$11,236,488.05
USFWS	RPM 3: T&C 3 (1)	Active	The following reasonable and prudent measures are necessary and appropriate to minimize the effect of the proposed action on the delta smelt: RPM 3: Obtain real time data on the abundance and distribution of delta smelt in the Bay-Delta. (p 294) T&C 3 (1): The following Terms and Conditions implement Reasonable and Prudent Measures three (3): 1. During the months of December through July, when water is being diverted, Reclamation and DWR shall ensure that the frequency of sampling for delta smelt at Banks and Jones will be at least 25 percent of the time.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
USFWS	RPM 3: T&C 3 (2)	Active	The following reasonable and prudent measures are necessary and appropriate to minimize the effect of the proposed action on the delta smelt: RPM 3: Obtain real time data on the abundance and distribution of delta smelt in the Bay-Delta. T&C 3 (2): Reclamation and DWR shall develop a methodology for quantitative larval monitoring at Banks and Jones to help refine the triggers for the Actions in the RPA. An interim plan shall be submitted to the Service for approval within 30 days of the issuance of this biological opinion so the monitoring can be implemented this year. A more detailed plan shall be developed and approved bythe Service within one year. (p 295)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

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USFWS	RPM 4: T&C 4	Active	The following reasonable and prudent measures are necessary and appropriate to minimize the effect of the proposed action on the delta smelt: RPM 4: Minimize adverse effects of Banks and Jones on delta smelt. T&C 3 (2): The following Term and Condition implements Reasonable and Prudent Measures four (4): 1. Reclamation will develop within 30 days a methodology for dealing with transitions in operations after changes in OMR flow requirements. 4. Minimize Adverse Effects of Banks and Jones on smelt	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
USFWS	Monitoring Requirements	Active	Monitoring requirements in accordance with section 402.14(i)(3) of the implementing regulations for section 7 of the Act have been included as part of the RPA and must be implemented by Reclamation and DWR . (p 295)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
USFWS	Reporting Requirements	Active	Reclamation or DWR shall immediately report to the Service any information about take or suspected take of federally-listed species not authorized in this biological opinion. Reclamation or DWR must notify the Service within 24 hours of receiving such information. Notification must include the date, time, and location of the incident or of the finding of a dead or injured delta smelt. Any killed delta smelt that have been taken should be properly preserved in accordance with Natural History Museum of Los Angeles County policy of accessioning (10 percent formalin in quart jar or freezing). Information concerning how the fish was taken, length of the interval between death and preservation, the water temperature and outflow/tide conditions, and any other relevant information should be written on 100 percent rag content paper with permanent ink and included in the container with the specimen(p 295)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Agency	Action Title (BiOP-ITP Requirement)	Action Status	Action Description	2018 Actual Expenditure	2019 Projected	2020 Projected	2018 Obligations (Contract)	2018-Actual Expenditures (Contract + Labor)	2019-Actual & Projected (Actual Exp Contract + Actual Exp Labor + Obligated Contract + Projected Contract + Projected Labor)	2020-Projected (Contract + Labor)
NMFS	11.2.2: Action I.6.3	Active	Lower Putah Creek Enhancements By December 31, 2015, Reclamation and/or DWR shall develop and implement Lower Putah Creek enhancements as described in Appendix 2-C, including stream realignment and floodplain restoration for fish passage improvement and multi-species habitat development on existing public lands. By September 1 of each year, Reclamation and/or DWR shall submit to NMFS a progress report towards the successful implementation of this action. This action shall not result in stranding or migration barriers for juvenile salmon. Objective: This action shall not result in stranding or migration barriers for juvenile salmon. Note: This is part of the Solano Project, and not the Central Valley Project. This is not a shared cost of Reclamation's CVP contractors.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NMFS	14.0 (2) Conservation Recommendation s	Complete	Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. NMFS thinks the following conservation recommendations are consistent with these obligations, and therefore, should be implemented by Reclamation: 2. Reclamation and DWR should continue to work with the BDCP process to develop a scientifically-based, alternative conveyance program for the Delta that conserves all ESA-listed anadromous fish species in the Central Valley. This effort should evaluate a new point of diversion in the Sacramento River without adding new stressors to listed fish and their critical habitats. If NMFS determines that locations and operations are available which minimize adverse effects to all listed species and designated critical habitats, then Reclamation and DWR should pursue alternative locations and operations for Delta diversions. (p 786)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

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	11.2.2: Action IV.6 RPM 1: T&C 1 Reasonable & Prudent Measures (RPM) Terms & Conditions (T&C)	Active	The following reasonable and prudent measures are necessary and appropriate to minimize the effect of the proposed action on the delta smelt: RPM 1. Minimize adverse effects of the operations of the Permanent Operable Gates**. In order to be exempt from the prohibitions of section 9 of the Act, Reclamation shall ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary. (p 294) T&C 1: The following Term and Condition implements Reasonable and Prudent Measures one (1) 1. The Service shall have the final decision on the operations of the Permanent Gates. The members of the GORT can provide suggestions to operate the gates, but the ultimate decision on how to operate the gates to protect delta smelt will be made by the Service. *** NOTE: The referenced Permanent Operable Gates were never constructed, thereby this requirement currently does not apply to either USBR or DWR. Per meeting with DWR and USBR on 11/4/2016, this requirement is shared USBR/DWR due to several factors and longstanding conditions	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Ag	ency	Action Title (BiOP-ITP Requirement)	Action Status	Action Description	2018 Actual Expenditure	2019 Projected	2020 Projected	2018 Obligations (Contract)	2018-Actual Expenditures (Contract + Labor)	2019-Actual & Projected (Actual Exp Contract + Actual Exp Labor + Obligated Contract + Projected Contract + Projected Labor)	2020-Projected (Contract + Labor)
		BiOP Remand Litigation		Reclamation began formal consultation in 2008 with the Service and NMFS on the coordinated, longterm operation of the CVP and the SWP pursuant to Section 7 of the ESA. The BiOps issued by the Service and NMFS (collectively, the Services) were remanded by the U.S. District Court for the Eastern District of California and both agencies were ordered to issue new BOs. In addition, Reclamation was ordered by the court to comply with NEPA prior to accepting and implementing the action described in the new BiOps to be issued by the Services. Because the BiOps will address the operation of the SWP, it is expected that the remand process will support development of a Consistency Determination under the California ESA for the operation of the SWP in coordination with the CVP. Reclamation has determined that the California DWR qualifies as an "applicant" within the meaning of Section 7 of the ESA. Accordingly, Reclamation will work in partnership with DWR to successfully complete the remand process. DWR will also be a cooperating agency in the NEPA process. In addition to working closely with and seeking information from DWR throughout the remand and NEPA processes, Reclamation will also undertake the Remand Stakeholder Engagement (RSE) process described in this paper. DWR, as the applicant, will participate in the RSE process. The impetus for the RSE process was the discussions held in the fall of 2011 between certainnparties in the Consolidated Salmonid Cases and Consolidated Delta Smelt Cases. Reclamation, Service, and NMFS must meet the deadlines ordered by the court.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Agency	Action Title (BiOP-ITP Requirement)	Action Status	Action Description	2018 Actual Expenditure	2019 Projected	2020 Projected	2018 Obligations (Contract)	2018-Actual Expenditures (Contract + Labor)	2019-Actual & Projected (Actual Exp Contract + Actual Exp Labor + Obligated Contract + Projected Contract + Projected Labor)	2020-Projected (Contract + Labor)
	CAMT 0.1		The CSAMP relies on a combination of agency staff and contractor support to conduct its work, including program planning and science investigations. It is estimated that CSAMP participants contributed approximately 4.5 full-time equivalents (FTEs) in the form of in-kind staff commitments to the Program in 2015. In addition to existing staff resources, approximately \$1.3 million was expended in 2015 for contracted support, including funds for technical studies. Program activities are generally classified according to the following: 1. Management and Facilitation: Includes: (a) management and facilitation of Policy Group meetings, CAMT meetings, and Scoping Team meetings; (b) management of contracts for CAMT support and technical investigations; and (c) planning and coordination, including development of annual work plans and budgets. 2. Sponsored Participants: Provides funding for contractors representing NGOs and PWAs on CAMT and scoping teams, including the Salmon Scoping Team cochairs. 3. Technical Studies: Represents investigations developed based on extensive dialogue within the CAMT Delta Smelt Scoping Team (DSST) and Salmon Scoping Team (SST). 4. Peer Review: Includes coordinating with and funding independent peer reviews through the Delta Science Program (DSP).	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	CAMT 2.1 - 2.5		Another high-priority 2014 Workplan element for Delta Smelt involved looking at the importance of fall outflow. The DSST prepared a scope of work in the summer of 2014 and engaged an independent team of technical experts to prepare a detailed proposal. In 2015, the Fall outflow investigative team delivered a detailed proposal which was subsequently subjected to an independent peer review coordinated by the DSP. Based on results of the review, the team met with the DSST to discuss potential revisions to the proposal and prepared a detailed response to comments. The Department of Water Resources and the Delta Science Program have committed funding to implement the study and are currently contracting for the work which will begin in 2016. A summary of the study is provided in Attachment B.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Agency Action (BiOP-Require	TP Statu		2018 Actual Expenditure	2019 Projected	2020 Projected	2018 Obligations (Contract)	2018-Actual Expenditures (Contract + Labor)	2019-Actual & Projected (Actual Exp Contract + Actual Exp Labor + Obligated Contract + Projected Contract + Projected Labor)	2020-Projected (Contract + Labor)
ITP Settler Agreement	nent	2. Longfin Science Program. a. The Parties have collaboratively developed and agree to implement in good faith the multi-year longfin science program more particularly described in Exhibit "I" attached hereto and incorporated herein by this reference ("Longfin Science Program"). b. The Longfin Science Program encompasses a series of studies to be undertaken over the course of several years by DFW, DWR, the Contractors and their consultants. A technical team comprised of one designated representative with decision-making authority from each of the Parties ("Technical Team") will monitor the implementation, progress and outcomes of these studies. For more information the Technical Team refer to the ITP Settlement Agreement. c. If any of the studies within the Longfin Science Program cannot be implemented in whole or in part, or if the schedule for conducting any study is changed by one year or more from the generalized schedule described in Exhibit 1. d. DFW has reviewed the requirements of Permit Condition 8.4 and has determined that the effectiveness and performance monitoring program for the Roaring River Diversion Structure (RRDS) and the Sherman Island Diversion Structures (SIDS) does not require the inclusion of impingement or entrainment studies. e. Subject to Section 2(d), DWR shall fund and the Contractors shall reimburse DWR for the reasonable, expected and typical costs associated with implementing the Longfin Science Program. For more information on funding, refer to the ITP Settlement Agreement. f. In any future California Endangered Species Act permitting regarding the SWP and Longfin, DFW shall consider the results of the Longfin Science Program in connection with its review of the best scientific and other information reasonably available at the time. g. Each Party agrees to perform further acts and deliver any further documents necessary to the IEP or other entities for scientific review and comment related to the Longfin Science Program to continue for its full five-year term.		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00