7 Funding

Section 2081(b) requires that the impacts of the authorized take are minimized and fully mitigated, and that the applicant "ensure adequate funding to implement the measures required … and for monitoring compliance with, and effectiveness of, those measures" (Fish & Game Code Section 2081(b)(4)). This chapter describes the estimated costs and the funding sources to implement the measures of the proposed project to minimize and fully mitigate the impacts of take of species listed under the California Endangered Species Act (see 14 CCR Section 783.2(a)(10)). Estimated costs are summarized first, followed by funding sources.

7.1 Cost

Costs to implement the mitigation program are given in Table 7-1. These costs were estimated to determine the funding needs over the term of the 2081b permit. Restoration c~~C~~osts were estimated based largely on ~~the detailed cost estimates of relevant conservation measures and other program elements from the 2013 Bay Delta Conservation Plan (BDCP) Public Draft and from Exhibit E Budget and Schedule of the January 2016 Design and Construction Enterprise (DCE) Agreement~~analysis of comparable restoration work currently in progress or recently completed within the Bay-Delta region[1], with costs expressed in 2014 dollars. Costs of all mitigation measures supporting mitigation for state listed species are included. The costs of construction and operation of the proposed water conveyance facility are not included in these cost estimates. Similarly, the cost of all general avoidance and minimization measures cannot be estimated as separate line items because they are subsumed within construction and operational costs, are therefore excluded from this estimate. Costs to implement mitigation measures for resource impacts other than those related to impacts to state listed species are also excluded from these estimates; these are included in the water facility construction budget (e.g., air quality offsets, water quality measures, etc.). The largest share of the mitigation costs are related to program management and monitoring; each accounts for approximately 19% of total program costs.

~~[1] Available: http://cms.capitoltechsolutions.com/ClientData/CaliforniaWaterFix/uploads/Draft_Final_DCE_Agreement_Combined.pdf~~

Table 7-1. Estimated Species Mitigation Costs for State Listed Species[2]

[2] ~~See Attachment 7-1 for updated and further detailed costs.~~

Cost Item[1]	Land (acres)	Present Value (2014 dollars)	Cumulative Cost (over 25 years)	Avg. Annual Cost
Delta Smelt and Longfin Smelt Tidal Perennial Habitat[2]	1,841	$38,243,805	$40,701,177	$1,628,047
Winter-Run Chinook, Spring-Run Chinook	-	-	-	-
Tidal Perennial Habitat[2]	1,841	$38,243,805	$40,701,177	$1,628,047
Channel Margin Habitat[3]	52	$35,769,323	$37,611,662	$1,504,466
Non-Physical Fish Barrier	n/a	$20,375,116	$30,620,359	$1,224,814
Swainson's Hawk	-	-	-	-
Foraging habitat[4]	3769	$52,230,802	$56,174,228	$2,246,969
Nesting habitat[5]	22	$304,018	$325,299	$13,012
Tricolored Blackbird	-	-	-	-
Foraging habitat – breeding[4]	2063	$28,589,054	$30,747,528	$1,229,901
Foraging habitat – nonbreeding[4]	1774	$24,584,092	$26,440,191	$1,057,608
Nesting[6]	48	$1,753,584	$1,876,335	$75,053
Roosting[6]	40	$1,461,320	$1,563,612	$62,544
Giant garter snake	-	-	-	-
Aquatic[6]	615	$17,330,700	$18,543,849	$741,754
Upland[4]	1710	$23,697,180	$25,486,317	$1,019,453
California tiger salamander[7]	150	$25,725,000	$27,525,750	$1,101,030
Mason's lilaeopsis[8]	0.6	$4,896	$5,239	$210
Management[9]	n/a	$86,452,000	$102,496,000	$4,100,000
Monitoring (Non-Construction)[10]	n/a	$89,165,392	$133,398,319	$5,335,933
Monitoring (Construction)	n/a	$74,392,353	$74,392,353	n/a
Mitigation of Temporary Impacts Associated With Geotechnical Exploration and Transmission Line Construction[11]	4	$655,737	$655,737	n/a

NOTES

[1] Costs reflect total cost per line item, and depending on the specific restoration actions, may overlap with other costs. Since costs may not be additive, a total cost is not provided. All per-acre restoration costs (except those stated in Note 3 below) are derived from costs estimated in Spring 2017 based on studies of recent comparable restoration efforts in the Delta, except as stated in notes below.

[2] This restoration is applicable to both smelt species and to both salmon species.

[3] Acreage is sufficient to perform 4.3 linear miles of restoration.

[4] Based on grassland natural community restoration costs.

[5] Based on riparian natural community restoration costs.

[6] Based on managed marsh natural community restoration costs.

[7] Based on purchase of credits at an established mitigation bank.

[8] Acreage based on 800 linear feet of restoration with a site width of 30 feet.

[9] Costs related to management of the implementation and monitoring of the mitigation associated with CESA listed species do not include costs associated with DFW's management of the elements of the 2081(b) permit.

[10] Terrestrial species monitoring is estimated at approximately $350,000 per year, on average, for 25 years. Aquatic species monitoring and collaborative science to support adaptive management assumes an average cost of $5.0 million per year for 25 years. Excludes construction monitoring costs which are included in the cost of the water facility construction.

[11] Includes costs of land acquisition, restoration, and monitoring for 1 acre giant garter snake and/or California tiger salamander aquatic habitat, 2 acres grassland (habitat for giant garter snake, Swainson's hawk, and tricolored blackbird), and 1 acre riparian Swainson's hawk habitat, as well as preparation of vegetation restoration plans for the affected areas, and associated management costs.

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~~Table 7-2~~

7.1.1 Mitigation Cost Estimate Methods

A cost model was developed for the proposed species mitigation that incorporates all of the major cost categories of mitigation: land acquisition, habitat restoration, other species mitigation measures (e.gi.e., localized reduction of predatory fish, nonphysical fish barrier), mitigation program administration, and monitoring and directed research. Assumptions used in this cost estimate were the same as those in BDCP Chapter 8, includinged the following:

- A 10% contingency was used for land acquisition, and a minimum of 20% for restoration construction.
- An inflation rate of 2.5%, nominal discount rate of 6.0%, and real discount rate of 3.41%.
- The cost of conservation easements were assumed to be 80% of fee title costs; agricultural or flood easement costs were assumed to be 60% of fee title.
- Land transaction costs were assumed to be, on average, 10% of the land sale price.
- Per acre land management costs were estimated based on actual management costs of National Wildlife Refuges throughout the western U.S. (see below for methods summary).

The cost estimate for reserve management is based on a review of land management costs for a sample of 18 National Wildlife Refuges in the western United States. Using data on annual expenditures for land management and total acreage under management, a statistical model of land management cost per acre was estimated. The statistical model, which explains approximately 85% of the variation in per acre land management costs for the sample, was used to estimate the average management cost per acre as a function of total acreage under management. The estimated average cost per acre ranges from a high of just over $400 per acre at the beginning of the permit period, when the total area under management is under 2,000 acres, to just about $80 per acre by the twelfth permit year, when the mitigation sites (i.e., the sum of sites protected and restored) reach their final target size of almost 15,000 acres.

Monitoring costs were developed to implement the monitoring and adaptive management actions described in Chapter 6 of this permit application. Compliance monitoring costs are subsumed within program administration costs for mitigation and the water conveyance facility construction costs. Therefore, the cost estimates focus on effectiveness monitoring and the collaborative science needed for adaptive management. Effectiveness monitoring and collaborative science costs for the listed fish were estimated based on actual costs for similar monitoring efforts being conducted by the Interagency Ecological Program (IEP), U.S. Geological Survey (USGS), Reclamation, and others and that overlap with the expected monitoring needs of the mitigation program. Basic monitoring and collaborative science costs for the listed fish were estimated at an average of $5.0 million annually in 2014 dollars. Initial monitoring program costs are expected to be higher than this average due to additional project start-up costs. These estimates assume that existing IEP monitoring surveys for listed fish will continue and that the additional monitoring and collaborative science provided by this mitigation

program will build on that existing work. Monitoring costs for terrestrial species and restoration sites are estimated at an annual average of $500,000. Initial costs for terrestrial species monitoring would be lower than this average because mitigation lands will be acquired and restoration projects implemented over the course of the construction period for the proposed project.

Program administration costs were estimated using data from three regional conservation plans in northern California with a similar scale and scope to the mitigation program for this project, the East Contra Costa County HCP/NCCP, Natomas Basin HCP, and Yolo HCP/NCCP. Actual costs of the first two plans were used based on an average annual expenditure of the last five fiscal year budgets (2010-2014). Estimated annual program administration costs from the Yolo HCP/NCCP were used for that plan based on their 2015 Administrative Draft (ICF 2015). The average of these three values was used to develop the estimate for this proposed project's program administration costs, rounded to the nearest $100,000. A 20% contingency was also included to account for uncertainty.

New Delta conveyance facilities are required to offset loss of local property tax and assessment revenues resulting from location, construction, mitigation, or operation of water conveyance facilities (Water Code 85089). Although not legally required to do so, DWR will also offset the loss of local property tax and assessment revenue resulting from fee-title acquisition of land for mitigation sites. An assessment rate of 1.5% per dollar of assessed value is used to estimate property tax and assessment revenue impacts. The assessment rate is based on an analysis by DHCCP (2010) which examined property tax and assessment burdens on parcels expected to be inside the conveyance facility footprint. Total assessment rate varied by county, ranging between 1.25% and 1.75% of assessed value. The cost estimate uses the midpoint of the range.

The cost estimate for mitigation of temporary impacts was based upon review of costs for similar work performed recently in the Bay/Delta area, with management costs proportional to level of effort within the context of the overall proposed mitigation program. See Attachment 7.A *Temporary Impacts Mitigation Costs* for a detailed analysis of costs to mitigate temporary impacts.

7.2 Funding

The following sections describe, first, funding that would occur during water facility construction; and next, funding that would occur starting after project construction and continuing in perpetuity.

Payment of the costs of constructing and operating the State Water Project, including associated mitigation projects, is assured by DWR's long term water supply contracts and applicable state law[3]. DWR is a party to a long term water supply contract with each of its 29 water supply customers, who are generally referred to as "Contractors". These contracts are the foundation of

[3] For example, Water Code section 11651 directs any "agency which contracts to purchase from the department any water, use of water, water storage, electric power, or other service shall provide for the punctual payment to the department of all amounts which become due under the contract."

the State Water Project's fiscal strength[4]. The Department has not experienced payment delinquencies or defaults by Contractors that have had a materially adverse effect on the operation or maintenance of the State Water Project, or the ability of the Department to pay its obligations when due.

The existing contracts will begin to expire in 2035 with the last contract expiring in 2042. In May, 2013, the Department and the Contractors began negotiations to extend the term of the long term water supply contract. In June 2014, the negotiators for the Department and the Contractors reached a general agreement on principles for such an amendment (the "Agreement in Principle"). Under the Agreement in Principle the term of the long term water supply contract for each Contractor that signs an amendment would be extended until December 31, 2085. Environmental review pursuant to CEQA will be part of the contract extension amendment process before any contract amendment is adopted. In August 2016, the Department released for public comment a draft EIR for the proposed contract extension amendment. The public comment period on the draft EIR is scheduled to close on October 17, 2016.

7.2.1 Current Process for Funding Mitigation Associated With the SWP

SWP costs fall into two general categories. Construction costs and certain major O&M costs (e.g. facility refurbishment) are capitalized and are financed by the issuance of short and long term debt. Based upon the payment history and the provisions of the long term water supply contracts, long term debt issued by the Department is rated AAA by S&P Global Ratings Services and Aa1 by Moody's Investor Service. The costs of debt service are recovered by the Department from the Contractors in two semiannual payments based upon estimates developed by the Department and delivered to the Contractors in July of the preceding year. Other costs, such as routine operation and maintenance (e.g. power supply), and monitoring (e.g. monitoring of mitigation sites) are not financed, but are instead paid in monthly installments in the calendar year incurred based upon estimates developed by the Department and delivered to the Contractors in July of the preceding year.

SWP construction projects, and major maintenance, and mitigation projects that are capitalized, are often funded in the short term through issuance of a short-term debt instrument known as commercial paper. When the short term debt outstanding approaches DWR's maximum

[4] The quality, and hence reliability, of the Department's revenue bonds has been recognized by the California Debt and Investment Advisory Commission, as well as two globally recognized ratings agencies familiar with SWP finances. The California Debt and Investment Advisory Board stated in its report on the affordability and financing considerations for the proposed water facility (California Debt and Investment Advisory Commission 2014):
SWP contractors that contract with DWR to pay for the operation, maintenance, planning and capital costs of the State Water Project are subject to a number of important requirements under the terms of their water supply contracts, which provide the security for DWR's revenue bonds. For example, the contracts include a so-called "take or pay" provision. This requirement ensures that revenues to cover bond debt service are available regardless of whether water deliveries are reduced because of drought or other conditions. In addition to a take-or-pay requirement, these contracts include provisions that require DWR to charge amounts sufficient to repay all project costs and produce net revenues at least equal to 1.25 times annual debt service on DWR's bonds plus the amount needed for operation and maintenance costs. Most contracts also include so called "step-up" provisions whereby DWR can increase amounts billed to other contractors by up to 25% if needed if another contractor defaults on a payment. These and other provisions of the DWR contracts have resulted in very strong credit ratings of AAA/Aa1 on DWR's bonds, enabling DWR to borrow at low interest rates.

commercial paper capacity available, long term debt is incurred through issuance of long term revenue bonds[5] to pay off the commercial paper, which allows for a longer term amortization and cost recovery period for SWP capital project costs. As discussed above, the Department's bonds are rated AAA by S&P Global Ratings Services and Aa1 by Moody's Investor Services, in each case in recognition of the Contractors' record of reliably paying SWP charges for the past half century and the strong default provisions of the long term water supply contracts themselves.

7.2.2 Funding of Proposed Project Construction, including CESA Mitigation

The proposed water conveyance facilities will be built and owned by the state. All construction costs of the proposed project, including the costs of mitigation and monitoring activities described in Section 7.1, *Cost*, will be paid by DWR and charged to SWP contractors and, as appropriate, CVP contractors.[6] DWR and/or one or more of the SWP contractors will likely issue revenue bonds,[7] as generally described above, to fund the portion of the construction [and property acquisition] costs accruing to SWP contractors.[8] Capital costs associated with

[5] The reliability of State Water Project revenue bonds has been recognized by the California Debt and Investment Advisory Commission, as well as two globally recognized ratings agencies familiar with SWP finances. The California Debt and Investment Advisory Board stated in its report on the affordability and financing considerations for the proposed water facility (California Debt and Investment Advisory Commission 2014):
SWP contractors that contract with DWR to pay for the operation, maintenance, planning and capital costs of the State Water Project are subject to a number of important requirements under the terms of their water supply contracts, which provide the security for DWR's revenue bonds. For example, the contracts include a so-called "take or pay" provision. This requirement ensures that revenues to cover bond debt service are available regardless of whether water deliveries are reduced because of drought or other conditions. In addition to a take-or-pay requirement, these contracts include provisions that require DWR to charge amounts sufficient to repay all project costs and produce net revenues at least equal to 1.25 times annual debt service on DWR's bonds plus the amount needed for operation and maintenance costs. Most contracts also include so called "step-up" provisions whereby DWR can increase amounts billed to other contractors by up to 25% if needed if another contractor defaults on a payment. These and other provisions of the DWR contracts have resulted in very strong credit ratings of AAA/Aa1 on DWR's bonds, enabling DWR to borrow at low interest rates.

[6] Costs for existing jointly developed facilities are shared by both the SWP and Central Valley Project (CVP). For example, in 1961 the federal government entered into an agreement with the state to construct and operate San Luis Unit joint-use facilities, including San Luis Reservoir. These facilities are owned by the federal government, but costs are shared approximately 55% by the state and 45% by the federal government. Other existing agreements have been developed over the years to provide for sharing of costs and obligations between the SWP and CVP, including the 1986 Coordinated Operation Agreement. The Delta Reform Act (Water Code Section 85089) requires that, construction of the CWF cannot commence until the SWP and CVP contractors "have made arrangements or entered into contracts to pay for … the costs of the environmental review, planning, design, construction, and mitigation … required for the construction, operation, and maintenance." Therefore, an agreement will be developed where SWP and CVP contractors will commit to share the cost of the proposed water conveyance facility, its operation, and associated mitigation prior to construction.

[7] Seven of the SWP contractors have two AA/Aa or higher category credit ratings themselves, including MWD which carries ratings of AA+/AAA/Aa1 on over $4.2 billion of outstanding revenue bonds. According to the California Debt and Investment Advisory Commission report more than half of the assumed financial responsibility for the conveyance facility is expected from SWP contractors that have two AA/Aa or higher category ratings by Standard & Poor's (S&P), Fitch Ratings (Fitch) or Moody's Investor Service (Moody's).

[8] The issuance of water system revenue bonds is a mechanism used by DWR to obtain financing for construction of SWP facilities. Water system revenue bonds are secured by a pledge of revenues received by DWR from state water contractors. Over the past five decades, DWR has issued water system revenue bonds in excess of $8 billion (California Department of Water Resources 2014). A revenue bond is a municipal bond secured by the revenue from a specific project (e.g., a power plant). Unlike state general obligation bonds, revenue bonds are secured by specified

mitigation required by the2081b permit would also be funded in this manner. The contracts between DWR and the participating state water contractors will be amended to provide for the payment debt service and ongoing operation and maintenance costs, including all mitigation and monitoring costs incurred during construction, operation, maintenance and monitoring associated with the project, including CESA mitigation.

7.2.3 Funding CESA Mitigation and Monitoring During and After Water Facility Construction

Implementation of the CESA mitigation associated with the proposed project, including purchase of mitigation bank credits, land purchase for restoration/mitigation sites, and construction of those restoration projects, may be financed in the manner generally described above. As described in Chapters 5 and 6, all mitigation sites will be managed and monitored in perpetuity to mitigate both the permanent impacts of water facility construction and, where applicable, on-going impacts from SWP operations. Funding for the long-term management and monitoring of the mitigation sites will be paid by DWR and charged to SWP and CVP contractors.[9] DWR will recover the portion of these costs accruing to SWP contractors through the amended long-term water supply contracts between it and the SWP contractors (see 7.2.2 above).

In accordance with the Delta Reform Act (Water Code Section 85089), all mitigation costs associated with the construction of the proposed project (including the CESA mitigation requiring land purchase and construction of the mitigation sites), as well as mitigation costs related with the long term operation, maintenance, and monitoring of the CESA-required mitigation sites, will be a part of the agreement that SWP and CVP contractors enter into as a condition precedent to the commencement of any construction activities associated with the proposed project. In addition, DWR expects to enter into a Memorandum of Agreement with DFW to specify appropriate coverage of all costs associated with the CESA mitigation.

7.3 References

California Debt and Investment Advisory Commission. 2014. The Bay Delta Conveyance Facility: Affordability and Financing Considerations. Report prepared by Blue Sky Consulting Group.

California Department of Water Resources. 2014. *State of California Department of Water Resources Official Statement Relating to its $161,445,000 Central Valley Project Water System Revenue Bonds Series AR.*

Delta Habitat Conservation and Conveyance Program. 2010. Status of the Local Government Property Tax Revenue Reduction Cost Analysis. February 2010 memorandum from Natalie Smith and Richard Hunn to Jim Watson.

revenues rather than the state general fund. The amount of funding that can be raised is limited by the projected revenue pledged to repayment of the bonds, and market conditions.

[9] As with facility construction, the respective funding shares that will be provided by the state and federal water contractors for on-going facility operation costs, including the costs of the mitigation measures described in Chapters 5 and 6, will be determined in 2016 prior to final project approvals.

Delta Habitat Conservation and Conveyance Program Engineering. 2010. Conceptual Engineering Report—All Tunnel Option. (called the Pipeline/Tunnel Option in the 2013 Bay Delta Conservation Plan Public Draft), dated March 2010 as modified by addendum in August 2010. Not released.