




DATE: November 5, 2019

TO: Commissioner, Ann Moller Caen, President
Commissioner, Francesca Vietor, Vice President
Commissioner, Anson Moran
Commissioner, Sophie Maxwell
Commissioner, Tim Paulson

FROM: Harlan L. Kelly, Jr., General Manager 

RE: WSIP Regional Projects Quarterly Report
1st Quarter / Fiscal Year 2019-2020

Enclosed please find the Water System Improvement Program (WSIP) Regional Projects Quarterly Report for the 1st Quarter (Q1) of Fiscal Year (FY) 2019-2020. The primary intent of the report is to provide the San Francisco Public Utilities Commission (“Commission”), stakeholders, and the public with a status summary of the program’s regional projects for the period of July 1, 2019 through September 30, 2019.

In their April 3, 2018 letter, the Bay Area Water Supply and Conservation Agency (BAWSCA) requested additional information be included in the WSIP Quarterly reports. On June 5, 2018 SFPUC representatives met with BAWSCA and agreed that beginning with the Q1FY2018-2019 report, the SFPUC will (1) add a section to the cover letter for the WSIP Quarterly Report to highlight the use of contingency, (2) provide documentation on the sufficiency of the contingency to deliver WSIP within budget, and (3) highlight, and provide in the cover letter documentation regarding, work force reduction and other efficient practices and procedures to control soft costs as the program is completed. This information can be found in the sections below entitled “Status on Use of Construction Contingency” and “Status on Workforce Reduction and Other Efficient Practices to Control Soft Costs”.

STATUS AND PERFORMANCE SUMMARY

Overall, WSIP regional projects are 98.2% complete as of September 30, 2019. As of the end of the reporting period, planning, environmental, design, and construction activities are 99.8%, 99.8%, 97.9%, and 98.7% complete, respectively. The following table shows the number of WSIP Regional projects and the total approved value of these projects that are active in various project phases.

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- Tim Paulson**
Commissioner
- Harlan L. Kelly, Jr.**
General Manager



Status of WSIP Regional Projects (as of September 30, 2019)

Project Phase	No. of Projects	Percent by No. of Projects	Total Project Value (\$M)¹	Percent by Project Value
Planning	0	0%	\$0	0%
Design	1	2%	\$35	1%
Bid & Award	0	0%	\$0	0%
Construction	6	12%	\$1,021	27%
Close-Out	1	2%	\$96	3%
Completed	42	81%	\$2,619	69%
Not Applicable ²	2	4%	\$32	1%
Total	52	100%	\$3,803	100%

Notes: (1) "Total Project Value" for various phases includes proportional allocation of approved program management budget. Projects active in multiple phases are counted as being in the phase with the greatest amount of project activities.

(2) "Not Applicable" category is for the two projects that do not include construction: Long-Term Mitigation Endowment and Watershed and Environmental Improvement Program.

PROGRAM UPDATE

As of the end of the reporting period, six (6) regional projects with a total value of \$1,021M are in construction and forty-three (43) projects with a total value of \$2,715M are in close-out or have been completed. Forty-one (41) out of forty-three (43) Regional WSIP projects with specific Level of Service (LOS) goals have achieved their LOS goals to date. Besides the WSIP Closeout Projects, the one Regional project remaining in pre-construction is the Alameda Creek Recapture Project.

As of the end of the reporting period, the forecasted total program cost (regional and local projects) is \$4,787.8M, which is the same as the current Commission Approved Budget. As of the end of the reporting period, all approved change orders (COs) on active construction contracts total \$437.51M, and the current remaining construction contingency is \$19.23M. Also, as of the end of the reporting period, all pending and potential COs, and trends total \$9.82M. Therefore, if all pending and proposed COs and trends become approved COs, the current forecasted remaining construction contingency is \$9.41M.

The current forecasted date to complete the overall WSIP is June 2022, which is 6 months beyond the current approved completion date of December 2021.

UPDATE ON PROJECTS IN PRE-CONSTRUCTION

Alameda Creek Recapture

During this quarter, the screen check draft of the recirculated administrative draft EIR was completed and comments were returned for incorporation. The anticipated publication date for re-circulation of the draft EIR is December 2019. The project schedule will be re-evaluated once the re-circulated draft EIR is published and comments are received.

WSIP Closeout Projects

Steady progress was made on WSIP Closeout Projects for each of the San Joaquin, Sunol Valley, Bay Division, and Peninsula Regions in the reporting quarter.

In the San Joaquin Region, the project team has completed design for the Solar Panel work and anticipates getting Job Order Contract (JOC) contractors on board in the next reporting quarter.

In the Sunol Valley Region, the contractor has completed the erosion repairs at Pond F3 East as part of the WD-2855 contract. For the New Irvington Tunnel (NIT) Portal Water Quality Equipment Relocation project, all the work has been completed. For the Sunol Valley Water Treatment Plant (SVWTP) Polymer Feed Facility (aka Basin 5), the JOC contractor has been preparing the site to restart the existing Mobile Pilot Plant. CalState has completed SABPL Water Carrier System Modification Phase 1. Design for Phase 2 has also been completed. In the next quarter, a supplemental Task Order will be issued to CalState to complete Phase 2 work while the project team is completing the design for the repair of the Hydrofluoric Acid System.

In the Bay Division Region, the project team is continuing to negotiate with Power Engineering on the cost proposal for installation of a V-ditch and for BDPL 3 pipe coating work.

In the Peninsula Region, (1) Lower Crystal Springs Dam (LCSD) Stilling Basin Connecting Channel construction is 50% complete. (2) LCSD Bridge Replacement (joint project with San Mateo County) has a few warranty issues that are being addressed. (2.1) JOC 76R-01 North Parapet Wall Extension is being scoped to close a gap between the LCSD north parapet wall and the new bridge abutment, with a forecasted start date for construction in November 2019. (2.2) To close out the Memorandum of Agreement with San Mateo County, a new PRO.0076A task order LCSD Security Assessment has been scoped for the area around the dam/bridge. (2.3) The SFPUC completed design for repair of the drainage channel atop the south side of LCSD.

Several JOC task orders have been initiated for the Harry Tracy Water Treatment Plant (HTWTP) facility, with status as follows: 1) JOC 59-01 – Electrical & Mechanical Piping Modifications. Training and programming work still required is currently being scoped with the generator vendor. 2) Equalization Basin Mixers – Four of the mixers were replaced this quarter, and the remaining four mixers will be replaced next quarter.

UPDATE ON PROJECTS IN CONSTRUCTION

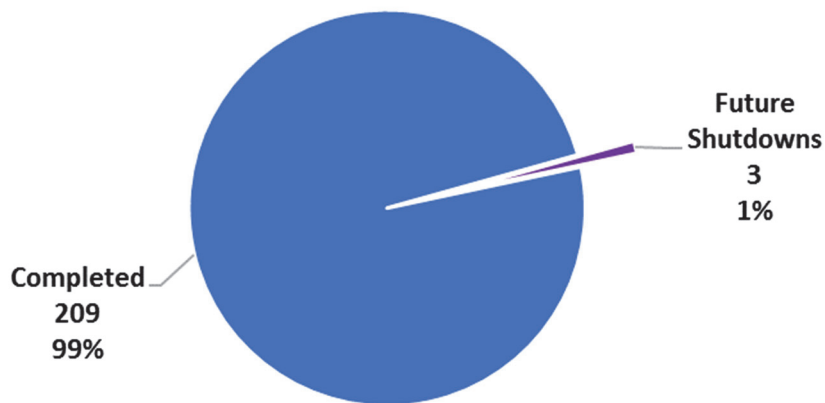
Steady progress was reported on the ongoing WSIP construction activities. As of the end of September 2019, WSIP regional construction contracts (including active, completed, and future contracts) are 98.7% complete overall.

A review of the construction work hours recorded over the last five (5) years shows continued ramping down of construction activities, with monthly workhours peaking at 206,400 in August 2012, compared to a total of 64 work hours recorded in September 2019. The monthly average workhours in the reporting quarter was 1,077, a significant decrease compared to the 33,334 monthly average workhours for the same period in 2018.

As of the end of September 2019, monitored exposure hours on WSIP regional projects totaled 9.8 million construction person-hours. Since the implementation of the WSIP Safety Approach in April 2009, the total lost time incidence rate remains at 0.52, compared to the U.S. Bureau of Labor Statistics (BLS) industry average rate (2016) of 1.7.

During this quarter only one partial shutdown was performed in the Peninsula Closeout project. To date, 209 out of 212 (99%) of the planned shutdowns and hot taps have been completed. Currently, there are no active shutdowns/hot taps and three (3) future planned shutdowns.

WSIP Shutdowns & Hot Taps



The following is a summary of the progress made, issues encountered, and/or milestones achieved on the key WSIP regional projects currently active in construction.

Calaveras Dam Replacement

Calaveras Dam Replacement Project is 100% complete. During this quarter, the contractor reached Final Completion on July 12, 2019 and completed all the contract activities on site. The contractor has been working on warranty items and closeout documentation, and staff anticipates that in October 2019 the Commission will resolve to approve close out of the contract.

Regional Groundwater Storage and Recovery

Overall progress on the Regional Groundwater Storage and Recovery Phase 1 construction contract (Contract B) is reported at 98.7% as of the end of the quarter. This value is 0.4% above the value reported during the previous quarter. Although Substantial Completion was achieved on December 31, 2017, there is still key construction work being implemented, including modification of transmission line flowmeters and changes to chemical treatment, which delays the contract and

increases delivery and construction costs. In addition, the contractor is still working on change order work related to access modification, chemical injection, and other miscellaneous items. The Regional Groundwater Storage and Recovery Phase 2 subproject is in the Planning phase and is 16% complete. The draft Conceptual Engineering Report has been issued.

Fish Passage Facilities within the Alameda Creek Watershed (Sub-project to Calaveras Dam Replacement)

The Fish Passage Facilities within the Alameda Creek Watershed construction is 96% complete as of the end of this quarter. During this quarter, the contractor completed almost all of the punch list items and also demobilized from the site. The contractor is working on closeout documentation and on coordinating repairs to the debris rake/rack system which is expected to take place in Spring/Summer 2020. Furthermore, the additional wet testing that needs to be completed is being planned for Winter 2019/2020 provided enough flow is available in Alameda Creek to conduct the testing. As a result of these two remaining issues, final construction completion is now forecast for September 2020, and final administrative project closeout is forecast for December 2020.

MAJOR PROGRAM TRENDS AND RISKS

Actual and potential impacts to the cost and schedule of WSIP projects are identified and tracked using change orders (COs), trends, and risks. COs and trends are managed using the Construction Management Information System (CMIS), while risks are managed using Active Risk Manager (ARM). Active COs on the WSIP are categorized based on their status as follows: Approved COs are changes that have been negotiated, have been certified by the City Controller, and are now part of the contract (exact magnitude of change is known); Pending COs are changes that have been negotiated but have yet to be certified by the City Controller (exact magnitude of change is known); and Potential COs are changes that have been proposed by either the SFPUC or the contractor but are still being negotiated (magnitude of change is unknown). Any known issue with a probable impact to the approved schedule and/or contract amount that has yet to be proposed as a Potential CO is captured as a trend. In addition, project teams assess and quantify conceivable risks to their projects with the goal to mitigate the conditions which might cause them to materialize.

WSIP Management submits to the Commission on a quarterly basis a separate report on the status of Change Orders. This section summarizes the major program trends and risks being tracked as of September 30, 2019.

The trends for the WSIP Active Regional construction contracts totaled \$5.3M as of the end of the reporting period, a decrease of \$6.4M during the period. Approximately 55% of the total trends at the end of September 2019 belong to the Fish Passage Facilities Project, and 45% to the Regional Groundwater Storage & Recovery Project. The following table lists the trend totals for active projects:

WSIP Active Regional Projects Trend Totals (as of September 30, 2019)

Project	Trends (\$ Million)	Percent Completion ¹
Fish Passage Facilities at ACDD	\$2.9	96%
Regional Groundwater Storage & Recovery (Contract B)	\$2.4	98.7%

1. Refers to percent completion of the current construction contract (including all Approved COs).

The WSIP Risk Management System ranks risks based on a combination of likelihood of occurrence and potential cost impact to the SFPUC. As of September 30, 2019, the Regional Groundwater Storage and Recovery project is the only active construction project with remaining risk, and this contract, with a total of eight (8) remaining risks, is now 98.7% complete. All the construction risks for Calaveras Dam Replacement project and its subproject, Fish Passage Facilities within the Alameda Creek Watershed, have now expired.

Fish Passage Facilities within the Alameda Creek Watershed

This project is currently reporting on fifteen (15) active trends that total \$2.9M, a decrease of \$1.6M from the value reported last quarter. The current largest trend concerns the contractor's overhead due to numerous construction change orders and required resequencing of the construction work. The second largest trend relates to additional costs to recover schedule. Other smaller trends include the cost of a second season winterization, additional work associated with the control/treatment of runoff and dewatering operations, and additional waterproofing material used at expansion joints. As noted above, this contract has no remaining construction risks.

Regional Groundwater Storage and Recovery

This project is currently reporting on fifteen (15) active trends that total \$2.4M, a decrease of \$1.1M during the quarter. The largest trend at the end of the period is for the repairs and/or replacement of flowmeters. The second largest trend addresses the budget for access modification. The third highest trend relates to miscellaneous plumbing and chemical changes. Other high value trends include costs for startup testing; for changing use of aqueous ammonia to use of liquid ammonium sulfate; for rental of generators to provide temporary power during commissioning; for installation of PG&E power for the Lake Merced Golf Club, Treasure Island, and Funeral Home sampling stations; for new injection quill, water quality supplies, and equipment; and for commissioning.

Other relevant trends include the potential of requiring revisions to the Programmable Logic Control (PLC) programming and the need for resetting of the security system.

The 80% risk confidence level as of the end of the reporting period is estimated at \$1.9M, which is the same value reported last quarter. Since this is the only WSIP contract in construction, all the WSIP risks now come from this project. The risks are ranked based on likelihood of occurrence and potential cost impact. This contract has a total of eight (8) risks. The current largest risk

addresses the change of chemical use (during implementation) from aqueous ammonia to ammonium sulfate. The second highest risk considers challenges in meeting water quality requirements. Additional risks include design errors and omissions, challenges in meeting regulatory and operational requirements (testing), delays in finalizing permanent easements (including with utilities), turnover of key personnel, and delay caused by failures either to respond to submittals/RFIs or to issue change orders in a timely manner.

Calaveras Dam Replacement

All the trends for this contract have been closed. As noted above, this contract has no remaining risk.

STATUS ON USE OF CONSTRUCTION CONTINGENCY

The following table shows the status of approved construction contingency for projects that are in active construction as of the end of the reporting period. The forecast remaining contingency shown in the table for each project is after accounting for all approved, pending, and potential change orders as well as all current trends.

Contract	Final Construction Completion	Current Approved Contingency	Current Approved, Pending, and Potential Change Orders Plus Trends	Remaining Contingency	% Completion
CUW37401 Calaveras Dam Replacement (WD-2551)	7/12/19	\$313.4M	\$308.2M	\$5.2M	100.0%
CUW37401 Alameda Creek Diversion Dam Fish Passage Facility (WD-2729)	11/29/19	\$15.5M	\$15.5M	\$0M	96.0%
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	3/6/20	\$19.3M	\$19.3M	\$0M	98.7%

As can be seen in the table, the Calaveras Dam Replacement construction contract has remaining construction contingency of \$5.2 million.

The Fish Passage Facilities at Alameda Creek Diversion Dam is currently estimated to have used all approved contingency for change orders in process and forecasted trends as of the end of the reporting period. Since this project is a sub-project of the Calaveras Dam Replacement, the remaining unused contingency in the larger contract may be made available to cover any additional contingency needs for the smaller contract.

The Regional Groundwater Storage and Recovery (Contract B) is currently estimated to have used up all approved contingency for all change orders in process and forecasted trends as of the end of the reporting period. The remaining risk, estimated at \$1.9 million (at the 80% risk confidence level) means that it is likely some additional contingency may be needed for this construction contract. Funding is available from the remaining Director's Reserve, currently at \$19 million for the entire WSIP, to satisfy such additional contingency needs for this project.

STATUS ON WORKFORCE REDUCTION AND OTHER EFFICIENT PRACTICES TO CONTROL SOFT COSTS

As has been the practice since the program was established, the WSIP Director will continue to meet with project teams in order to review status of every budget line item at least twice quarterly. As a result of these meetings, staffing adjustments are made in real time to ensure project teams work within the existing budgets, and budget forecasts and resources are adjusted as necessary to help ensure successful completion of every project.

The current staff transition plan for the remainder of WSIP is included on page 42 of the attached WSIP Quarterly Report. As can be seen in the chart on that page, the overall staffing levels in June 2018 were approximately 85 full-time equivalents (FTEs), which has decreased to approximately 45 FTEs in September 2019. The decrease is attributable to both City and consultant staff ramping down activities as projects complete construction and close out. Actual staffing levels will continue to be tracked monthly against this plan and appropriate staff adjustments made accordingly to ensure staffing levels stay within the remaining available budget.

In addition, we are continuing to implement our industry best practice Construction Management (CM) Business Processes and Procedures to ensure available funds are used efficiently and effectively, with emphasis on identification of cost savings wherever possible. The primary features of the best practice processes and procedures that facilitate monitoring and control of WSIP construction include: change management, trends management, risk management, claims avoidance, schedule management, program CM project audits, monthly and quarterly project review meetings, and lessons learned reports.

CLOSING

Despite the challenges described above, the WSIP team continues to make steady progress in the delivery of the program as described in the attached WSIP Quarterly Report. It should be noted that the challenges encountered in the field and reported herein are not unusual for infrastructure programs of the size and complexity of the WSIP.

The SFPUC continues to be committed to working collaboratively with other City departments, its Regional Wholesale customers, and all program stakeholders and partners to ensure the successful delivery of the WSIP.

Enclosure



HETCH HETCHY
WATER SYSTEM IMPROVEMENT PROGRAM



QUARTERLY REPORT

Regional Projects
Q1 FY 2019 | 2020
July 2019 — September 2019

Rebuilding Today for a Better Tomorrow

Published: 11/05/2019

Quarterly Report - Q1 FY2019/2020

Water System Improvement Program - Regional Projects

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1. PROGRAM DESCRIPTION

The Water System Improvement Program (WSIP) is a \$4.8 billion, multi-year capital program to upgrade the City of San Francisco's regional and local drinking water systems. The program will deliver improvements that enhance the City's ability to provide reliable, affordable, high quality drinking water to its 26 wholesale customers and regional retail customers in Alameda, Santa Clara, and San Mateo Counties, and to 800,000 retail customers in San Francisco, in an environmentally sustainable manner. The WSIP is structured to cost-effectively meet water quality requirements, improve seismic and delivery reliability, and achieve water supply goals.

Built in the early to mid-1900s, many components of the water system are nearing the end of their working life, with crucial facilities crossing or in close proximity to, three major earthquake faults. The San Francisco Public Utilities Commission (SFPUC) initiated the WSIP to repair, replace, and seismically upgrade the system's deteriorating pipelines, tunnels, dams, reservoirs, pump stations, storage tanks, and treatment facilities.

The program consists of 35 local projects located within San Francisco and 52 regional projects spread over seven different counties from the Sierra foothills to San Francisco. Local projects only benefit San Francisco residents whereas regional projects benefit both City residents and the 26 wholesale agencies that receive water from the SFPUC. The management of regional projects is divided into 6 regions - San Joaquin, Sunol Valley, Bay Division, Peninsula, San Francisco Regional, and Support Projects.

The WSIP is funded through the issuance of revenue bonds. Local Measures A and E, which were approved by San Francisco voters in November 2002, allowed for the financing of improvements to the City's water system using revenue bonds and/or other forms of revenue financing. Increases in the water rates of retail and wholesale customers will be used to pay back the debt service on the bonds.

The program budget and schedule were originally adopted by the San Francisco Public Utilities Commission on March 1, 2003. The program at the time was referred to as the Capital Improvement Program (CIP). The scope of the CIP was changed significantly following the adoption of Level of Service (LOS) goals in early 2005. The program changes were so substantial that the program was renamed the WSIP and a new program budget and schedule were adopted on November 29, 2005. Since the scope of the 2005 Revised WSIP is in general representative of the program being implemented today, the 2005 budget and schedule are considered the "Baseline Budget and Schedule."

Subsequently, the WSIP Baseline Budget and Schedule were revised in 2007, 2009, 2011, 2013, 2014, 2015, 2016, 2017, and 2018, and these revisions were approved by the San Francisco Public Utilities Commission on February 26, 2008, July 28, 2009, July 12, 2011, April 23, 2013, April 22, 2014, December 8, 2015, April 26, 2016, February 14, 2017, and April 10, 2018, respectively. Refer to Appendix A for a scope description of all the regional projects included in the WSIP.

Program Revision	Commission Approval	Budget (\$Million)	Schedule(*)
2003 (Original)	March 1, 2003	\$3,628	03/15/16
2005 (Baseline)	November 29, 2005	\$4,343	06/30/14
2007 (Revised)	February 26, 2008	\$4,392	12/18/14
2009 (Revised)	July 28, 2009	\$4,586	12/04/15
2011 (Revised)	July 12, 2011	\$4,586	07/29/16
2013 (Revised)	April 23, 2013	\$4,640	04/11/19
2014 (Revised)	April 22, 2014	\$4,765	05/24/19
2015 (Revised)	December 8, 2015	\$4,765	05/24/19
2016 (Revised)	April 26, 2016	\$4,845	12/20/19
2017 (Revised)	February 14, 2017	\$4,845	12/20/19
2018 (Latest Approved)	April 10, 2018	\$4,788	12/30/21

* Final Program Completion Date

2. PROGRAM STATUS

This first (1st) Quarterly Report for Fiscal Year (FY) 2019-2020 presents the progress made on the WSIP regional projects between July 1, 2019 and September 30, 2019. The program’s schedule and budget were last approved by the San Francisco Public Utilities Commission (SFPUC or Commission) on April 10, 2018. The progress made on the local projects of the WSIP is presented in a separate quarterly report.

Figure 2.1 shows the total Current Approved Budget for the regional projects remaining in each phase of the program as of September 30, 2019. The number of projects currently active in each phase is shown in parentheses.

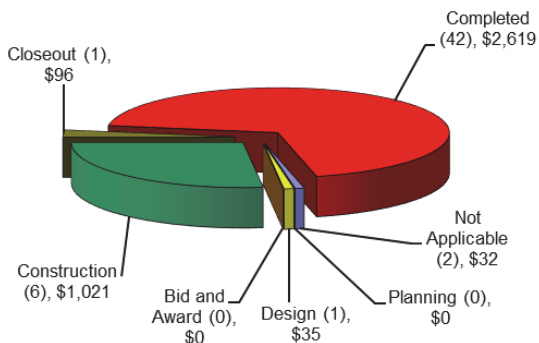


Figure 2.1 Total Current Approved Budget for Projects Active in Each Phase (\$Million)

Figure 2.2 shows the number of regional projects in the following stages of the program as of September 30, 2019: Pre-construction,

Construction, and Post-construction.

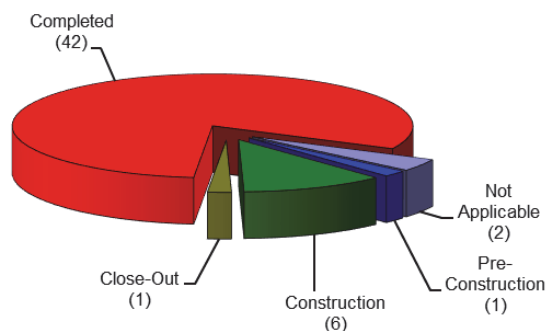


Figure 2.2 Number of Projects in Pre-construction, Construction, and Post-construction

Figure 2.3 summarizes the environmental review and permitting status of the WSIP’s 52 regional projects as of September 30, 2019.

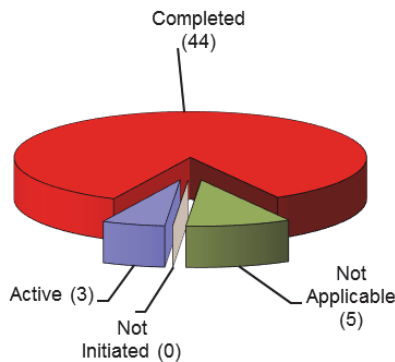


Figure 2.3 Program Environmental and Permitting Status

2.1 Progress Towards Meeting Level of Service (LOS) Goals

The scope of the WSIP is based on the following Level of Service (LOS) goals for the Regional Water System: Seismic Reliability, Delivery Reliability, Water Quality Reliability, and Water Supply Reliability. Each project that reaches construction substantial completion contributes to increasing the overall reliability of the system and achieving progress towards meeting the overall LOS goals for the system.

Table 2.1 lists the projects with their individual Primary (P) and Secondary (S) contributions towards LOS goals, and indicates which projects have met their respective LOS goals. As can be seen in Table 2.1, the actual operational service start dates indicate that 41 of the 43 Regional WSIP projects with specific LOS goals have achieved their LOS goals to date. The other 9 Regional WSIP projects do not have specific LOS goals. The WSIP team remains committed to achieving the overall LOS goals established for the system.

Table 2.1 Progress Towards Meeting LOS Goals ⁽¹⁾

Project No.	Project Name / Construction Contract	Actual / Approved Substantial Completion Date	LOS Goals (P =Primary, S =Secondary)				Actual Operational Service Start	Construction Progress Toward LOS Goals
			Water Quality	Seismic Reliability	Delivery Reliability	Water Supply		
San Joaquin Projects								
CUW36401	Lawrence Livermore Water Quality Improvement <i>(Completed)</i>	08/31/10	P				08/31/10	100%
CUW37301	San Joaquin Pipeline System <i>(Completed)</i> (A) HH935A Crossovers (B) HH935B Western Segment (C) HH935C Eastern Segment	(A) 01/06/12 (B) 05/27/13 (C) 06/21/13			P		(A) 01/06/12 (B) 05/27/13 (C) 06/21/13	100%
CUW37302	Rehabilitation of Existing San Joaquin Pipelines (Roselle Crossover; <i>Completed</i>)	05/13/11			P		05/13/11	100%
CUW38401	Tesla Treatment Facility <i>(Completed)</i> (A) DB116 Tesla Treatment Facility Design-Build Contract (B) HH953 Tesla Portal Protection	(A) 06/24/11 (B) 08/05/13	P	S	S		(A) 06/24/11 (B) 08/05/13	100%
Sunol Valley Projects								
CUW35201	Alameda Creek Recapture	11/30/20				P		0%
CUW35501	Standby Power Facilities - Various Locations <i>(Completed)</i> (A) WD-2553 East Bay - Standby Power Facilities (B) WD-2511 Peninsula - Standby Power Facilities	(A) 09/11/08 (B) 04/15/10		P	S		(A) 09/11/08 (B) 04/15/10	100%
CUW35901	New Irvington Tunnel <i>(Completed)</i>	09/19/15		S	P		02/27/15	100%
CUW35902	Alameda Siphon #4 <i>(Completed)</i>	12/16/11		P	S		12/16/11	100%
CUW37001	Pipeline Repair & Readiness Improvements <i>(Completed)</i> (A) WD-2530 Phase A 8 Pipe Storage Sites (B) WD-2530 Phase B Pipe Rolling Machine Facility @ Sunol Yard	(A) 02/09/07 (B) 07/14/08		P	S		(A) 02/09/07 (B) 07/14/08	100%
CUW37401	Calaveras Dam Replacement (A) WD-2551 Calaveras Dam Replacement (B) WD-2729 Alameda Creek Diversion Dam	(A) 04/12/19 (B) 02/15/19		S	P	S	(A) 04/12/19 (B) 02/15/19	(A) 100% (B) 96%
CUW37402	Calaveras Reservoir Upgrades <i>(Completed)</i>	10/06/05	P				10/06/05	100%
CUW37403	San Antonio Backup Pipeline <i>(Completed)</i>	12/31/14			P		12/31/14	100%
CUW38101	SVWTP Expansion & Treated Water Reservoir <i>(Completed)</i>	05/17/13	P		P		05/17/13	100%
CUW38601	San Antonio Pump Station Upgrade <i>(Completed)</i>	06/30/11			P		06/30/11	100%

WSIP Quarterly Report

Project No.	Project Name / Construction Contract	Actual / Approved Substantial Completion Date	LOS Goals (P =Primary, S =Secondary)				Actual Operational Service Start	Construction Progress Toward LOS Goals
			Water Quality	Seismic Reliability	Delivery Reliability	Water Supply		
Bay Division Projects								
CUW35301	BDPL Nos. 3 & 4 Crossover/Isolation Valves <i>(Completed)</i>	11/15/07		P			11/15/07	100%
CUW35302	Seismic Upgrade of BDPL Nos. 3 & 4 <i>(Completed)</i>	10/26/15		P			06/20/14	100%
CUW36301	SCADA System - Phase II <i>(Completed)</i>	11/29/10			P		11/29/10	100%
CUW36801	BDPL Reliability Upgrade – Tunnel <i>(Completed)</i>	05/20/15		P	S		10/15/14	100%
CUW36802	BDPL Reliability Upgrade – Pipeline <i>(Completed)</i> (A) WD-2541 East Bay (B) WD-2542 Peninsula (C) WD-2665 Cordilleras	(A) 12/09/11 (B) 06/13/12 (C) 03/05/13		P	S		(A) 12/09/11 (B) 06/13/12 (C) 03/05/13	100%
CUW36803	BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2 <i>(Completed)</i>	05/28/10			P		05/28/10	100%
CUW38001	BDPL Nos. 3 & 4 - Crossovers <i>(Completed)</i>	08/15/12		P	S		08/15/12	100%
CUW38901	SFPUC/EBMUD Intertie <i>(Completed)</i>	09/07/07			P		09/07/07	100%
CUW39301	BDPL No. 4 Condition Assessment PCCP Sections <i>(Completed)</i>	02/06/09		P	S		02/06/09	100%
Peninsula Projects								
CUW35401	Lower Crystal Springs Dam Improvements <i>(Completed)</i>	11/20/11			P	S	11/20/11	100%
CUW35601	New Crystal Springs Bypass Tunnel <i>(Completed)</i>	07/14/11		P	S		07/14/11	100%
CUW35701	Adit Leak Repair - Crystal Springs/Calaveras <i>(Completed)</i>	11/30/07			P		11/30/07	100%
CUW36101	Pulgas Balancing - Inlet/Outlet Work <i>(Completed)</i>	02/02/06	P		S		02/02/06	100%
CUW36102	Pulgas Balancing - Discharge Channel Modifications <i>(Completed)</i>	10/23/09			P		10/23/09	100%
CUW36103	Pulgas Balancing - Structural Rehabilitation & Roof Replacement <i>(Completed)</i>	07/26/11	P		S		07/26/11	100%
CUW36105	Pulgas Balancing - Modifications of the Existing Dechloramination Facility <i>(Completed)</i>	08/27/12	P		S		08/27/12	100%
CUW36501	Cross Connection Controls <i>(Completed)</i>	11/26/08	P				11/26/08	100%
CUW36601	HTWTP Short-Term Improvements - Demo Filters <i>(Completed)</i>	01/11/06		P	S		01/11/06	100%
CUW36603	HTWTP Short-Term Improvements - Coagulation & Flocculation/Remaining Filters <i>(Completed)</i>	12/21/09		P	S		12/21/09	100%
CUW36701	HTWTP Long -Term Improvements <i>(Completed)</i>	09/08/15		P	S		09/08/15	100%
CUW36702	Peninsula Pipelines Seismic Upgrade <i>(Completed)</i>	10/30/15		P			10/30/15	100%
CUW36901	Capuchino Valve Lot Improvements <i>(Completed)</i>	02/14/08			P		02/14/08	100%
CUW37101	Crystal Springs/San Andreas Transmission Upgrade <i>(Completed)</i>	06/30/14		P	S		09/02/14	100%
CUW37801	Crystal Springs Pipeline No. 2 Replacement <i>(Completed)</i>	01/31/13		P	S		01/31/13	100%
CUW37901	San Andreas Pipeline No. 3 Installation <i>(Completed)</i>	03/29/11		P	S		03/29/11	100%
CUW39101	Baden & San Pedro Valve Lots Improvements <i>(Completed)</i>	03/31/11		P	S		03/31/11	100%

Project No.	Project Name / Construction Contract	Actual / Approved Substantial Completion Date	LOS Goals (P =Primary, S =Secondary)				Actual Operational Service Start	Construction Progress Toward LOS Goals
			Water Quality	Seismic Reliability	Delivery Reliability	Water Supply		
San Francisco Regional Projects								
CUW30103	Regional Groundwater Storage and Recovery (A) WD-2600 Test Well Drilling (B) WD-2668 Regional Groundwater Storage and Recovery (Phase 1) (C) Regional Groundwater Storage and Recovery (Phase 2)	(A) 07/23/12 (B) 12/31/17 (C) 02/28/21				P	(A) 07/23/12	(A) 100% (B) 99% (C) 0%
CUW35801	Sunset Reservoir - North Basin <i>(Completed)</i>	09/19/08		P	S		09/19/08	100%
CUW37201	University Mound Reservoir - North Basin <i>(Completed)</i>	05/25/11		P	S		05/25/11	100%

Notes:

- 1 Support projects and WSIP Closeout projects are not listed in the table above since these projects do not have specific Level of Service (LOS) goals.

3. PROGRAM COST SUMMARY

Table 3.1 provides an overall program-level cost summary of the WSIP Regional Program. It shows the Expenditures to Date; the 2005 Baseline, 2018 Approved, Current Approved and Q1/FY19-20 Forecasted Budgets; and the Cost Variance between the Current Approved and Forecasted Budgets.

The total Current Approved WSIP Budget (including Regional and Local Programs, Local

Water Supply Projects, and Financing Costs) and Current Forecasted Cost at completion are both \$4,787.8 million. The Current Approved WSIP Budget and Forecasted Cost at completion for the Regional Program (including construction contingency) are both \$3,803.1 million. The Current Approved WSIP Budget and Forecasted Cost at completion for the Local Improvement Projects are the same at \$331.4 million. Refer to Appendix B for a graphical representation of how the WSIP budget and actual expenditures have changed over time.

Table 3.1 Program Cost Summary

Cost Categories	Expenditures To Date (\$ Million) (A)	2005 Baseline Budget (\$ Million) (B)	2018 Approved Budget (\$ Million) (C)	Current Approved Budget ⁽⁷⁾ (\$ Million) (D)	Q1/FY19-20 Forecasted Costs (\$ Million) (E)	Cost Variance (\$ Million) (F = D - E)
Regional Improvement Projects	\$2,981	\$3,181	\$3,081.4	\$3,081.4	\$3,099.4	(\$18.0)
Construction Costs ⁽¹⁾	\$2,014	\$2,322	\$2,065.9	\$2,065.9	\$2,064.9	\$1.0
Program Delivery Costs ⁽²⁾	\$941	\$758	\$984.8	\$984.8	\$987.2	(\$2.4)
Other Costs ⁽³⁾	\$26	\$101	\$30.7	\$30.7	\$47.3	(\$16.6)
Support Projects ⁽⁴⁾	\$222	\$33	\$244.9	\$244.9	\$247.0	(\$2.1)
Construction Contingency for Regional & Support Projects ⁽⁵⁾	\$434	\$193	\$476.8	\$476.8	\$456.7	\$20.1
REGIONAL PROGRAM WITH CONTINGENCY	\$3,636	\$3,407	\$3,803.1	\$3,803.1	\$3,803.1	-
Local Improvement Projects	\$331	\$383	\$331.4	\$331.4	\$331.4	-
Local Water Supply Projects ⁽⁶⁾⁽⁸⁾	\$154	-	\$281.3	\$281.3	\$281.3	-
Finance	\$372(11)	\$552(9)	\$372(10)	\$372.0	\$372.0	-
PROGRAM TOTAL	\$4,493	\$4,343	\$4,787.8	\$4,787.8	\$4,787.8	-

Notes:

- Construction Costs** include the Construction Base Bid and owner-provided equipment/material for all regional and support projects. Those costs do not include any construction contingency. That contingency is reflected as a separate cost category.
- Delivery Costs** include project management, planning, environmental (CEQA, permitting, construction compliance), design, construction management, and engineering support during construction.
- Other Costs** include environmental mitigation, art enrichment, security improvements, and real estate expenses.
- Support Projects** include (1) System Security Upgrades, (2) Programmatic EIR, (3) Bioregional Habitat Restoration, (4) Vegetation Restoration of WSIP Construction Sites, (5) Long Term Mitigation Endowment, (6) Program Management, and (7) Watershed and Environmental Improvement Program. Please note that the cost reflected above for support projects only includes "Delivery" and "Other" costs, and "Construction" cost for these projects is included in "Construction Costs" under the Regional Improvement Projects.
- Expenditures to Date for Construction Contingency for Regional and Support projects correspond to the Total Approved Change Orders on those projects. For projects with ongoing or completed construction, the 2018 Approved Budget for construction contingency includes all change orders and trends as identified at the time of the March 2018 Revised WSIP, as well as additional contingency funding allocated to cover the 80% confidence level risks identified at the time of the March 2018 Revised WSIP. For projects in pre-construction, the 2018 Approved Budget for construction contingency includes 10% of the estimated construction base bid.
- Local Water Supply Projects managed as part of the Water Enterprise Capital Improvement Program (CIP) are (1) Lake Merced Water Level Restoration, (2) San Francisco Groundwater Supply, (3) San Francisco Westside Recycled Water, (4)

- Harding Park Recycled Water, and (5) San Francisco Eastside Recycled Water.
- 7. The budget approved as part of the March 2018 Revised WSIP, plus any additional budget changes approved by the Commission as part of additional contingencies on construction contracts.
- 8. The WSIP Local Water Supply projects underwent a September 2013 re-baseline. Only the original WSIP portion of the re-baselined costs is reported here. The remaining budget is funded under the Water Enterprise CIP and is managed outside the purview of the WSIP.
- 9. The original \$522M estimate of financing cost was based on a memorandum to the Commission dated November 23, 2005.
- 10. The financing cost budget of \$372M that was included in the March 2018 Revised WSIP includes all financing costs appropriated to date.
- 11. The actual financing cost is assumed to match the budgeted financing cost. Final reconciliation of all associated financing costs will occur upon WSIP completion.

Table 3.2 provides the current remaining construction contingency. For each region, it shows the 2018 Approved Construction Contingency; the Total Approved Change Orders prior to the reporting quarter; Change Orders Approved during the reporting quarter; Total Approved Change Orders through the reporting quarter; Project Savings Moved to Contingency/ Funds Moved out of Contingency during the Reporting Quarter; the Q1/FY19-20 Forecasted Construction Contingency; and the Remaining

Contingency as of the end of the reporting quarter. As of September 30, 2019, the Forecasted Construction Contingency is \$456.7 million, and the Current Remaining Contingency is \$19.2 million.

The Change Orders Approved in Q1/FY19-20 are shown in Table 3.2. Table 3.3 provides further information at the construction contract level for all approved change orders during the reporting quarter.

Table 3.2 Current Remaining Construction Contingency

Region	Q4/FY18-19 Forecasted Construction Contingency ⁽¹⁾ (\$ Million) (A)	Total Approved Change Orders as of Q4/FY18-19 ^(2,3) (\$ Million) (B)	Change Orders Approved in Q1/FY19-20 ⁽²⁾ (\$ Million) (C)	Total Approved Change Orders as of Q1/FY19-20 (\$ Million) (D = B+C)	Project Savings or Director's Reserves (+) Moved to Contingency/ Funds (-) Moved out of Contingency during Q1/FY19-20 ⁽⁴⁾ (\$ Million) (E)	Q1/FY19-20 Forecasted Construction Contingency (\$ Million) (F = A + E)	Q1/FY19-20 Remaining Contingency (\$ Million) (G = F - D)
San Joaquin Region	\$0.22	-	-	-	-	\$0.22	\$0.22
Sunol Valley Region	\$374.06	\$356.13	\$2.01	\$358.13	(\$3.60)	\$370.45	\$12.32
Bay Division Region	\$8.25	\$8.06	-	\$8.06	-	\$8.25	\$0.19
Peninsula Region	\$57.38	\$56.79	-	\$56.79	-	\$57.38	\$0.59
San Francisco Regional Region	\$20.54	\$14.04	\$0.61	\$14.64	(\$0.24)	\$20.30	\$5.66
Support Projects	\$1.21	(\$0.12)	-	(\$0.12)	(\$1.07)	\$0.14	\$0.26
Regional Total	\$461.65	\$434.90	\$2.61	\$437.51	(\$4.92)	\$456.73	\$19.23

Notes:

1. Construction Contingency approved as part of the March 2018 Revised WSIP, plus any regional projects' savings moved to contingency.
2. Approved Change Orders are changes that have received all required approvals, including that of the City Controller.
3. This table only reports change orders for the active construction contracts as of this reporting cycle.
4. Values only reflect savings realized following the Commission's adoption of the March 2018 Revised WSIP.

Table 3.3. Details on Transactions Out of and Into Contingency

Project No. - Contract	Transactions Out of Contingency			Transactions Into Contingency		
	Approved Change Orders (\$ Million) (A)	Budget Underrun at Project Completion / Director's Reserve Moved Out of Project (\$ Million) (B)	Sub Total (\$ Million) (C = A + B)	Savings Due to Low Bid (\$ Million) (D)	Budget Overrun at Project Completion / Director's Reserve Moved to Project (\$ Million) (E)	Sub Total (\$ Million) (F = D + E)
Sunol Valley Region	\$2.01	\$3.80	\$5.80	-	\$0.19	\$0.19
CUW37401 Calaveras Dam Replacement WD-2551	\$1.52	\$3.80	\$5.32	-	-	-
CUW37401 Calaveras Dam Other Construction WD-2729	\$0.48	-	\$0.48	-	-	-
CUWSVI0101 WSIP Closeout - Sunol Valley	-	-	-	-	\$0.19	\$0.19
San Francisco Regional	\$0.61	\$0.24	\$0.84	-	-	-
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	\$0.61	\$0.24	\$0.84	-	-	-
Support Projects	-	\$1.07	\$1.07	-	-	-
CUW36302 System Security Upgrade WD-2707	-	\$1.07	\$1.07	-	-	-
Regional Total	\$2.61	\$5.11	\$7.72	-	\$0.19	\$0.19

Table 3.4 Forecasted Remaining Construction Contingency

Region	Q1/FY19-20 Remaining Construction Contingency ⁽¹⁾ (\$ Million) (A)	Pending Change Orders as of Q1/FY19-20 ⁽²⁾ (\$ Million) (B)	Potential Change Orders as of Q1/FY19-20 ⁽³⁾ (\$ Million) (C)	Trends as of Q1/FY19-20 ⁽⁴⁾ (\$ Million) D	Q1/FY19-20 Forecasted Remaining Construction Contingency (\$ Million) (E = A-B-C-D)
San Joaquin Region	\$0.22	-	-	-	\$0.22
Sunol Valley Region	\$12.32	(\$0.89)	-	\$6.11	\$7.10
Bay Division Region	\$0.19	-	-	-	\$0.19
Peninsula Region	\$0.59	-	-	-	\$0.59
San Francisco Regional Region	\$5.66	\$1.18	\$1.06	\$2.36	\$1.05
Support Projects	\$0.26	-	-	-	\$0.26
Regional Total	\$19.23	\$0.29	\$1.06	\$8.47	\$9.41

Notes:

1. Same as Column G in Table 3.2.
2. Pending Change Orders are changes that have been negotiated and approved by the SFPUC but have to be approved by the City Controller.
3. Potential Change Orders are changes that have been requested and entered into CMIS but are still being negotiated.
4. Trends are any expected impact that the CM team believes has a high probability of becoming a change but are yet to be entered into CMIS as a Potential Change

Table 3.4 provides the forecasted remaining construction contingency. For each region as of Q1/FY19-20, it shows the Remaining Construction Contingency, Pending Change Orders, Potential Change Orders, Trends, and Forecasted Remaining Construction Contingency. As of September 30, 2019, the Total Forecasted Remaining Construction Contingency is \$9.4 million. This amount does not include funds that are currently held in Director's Reserve.

The Program Management project includes programmatic activities that span multiple regions and benefit several WSIP projects (Table 3.5). The project provides funding for the following functions and resources: SFPUC Staff assigned to the management of the overall program; consultants supporting SFPUC staff at the program level (program, project and pre-construction management consultant, program

construction management consultant, program control consultant); labor relations, including management of the project labor agreement; communication and public outreach; programmatic legal support; real estate acquisitions; program controls, including the tracking and reporting of all WSIP efforts; and program-level construction management activities associated with quality assurance, risk management, the Supplier Quality Surveillance (SQS) Program, operations assistance, safety, and training.

The activities under the Program Management project are organized into five categories that are tracked and monitored on a monthly basis. These categories are Management Support, Project Labor Agreement, Planning and Project Development, Program Control, and Program Construction Management.

Table 3.5 Status of Program Management Project Cost Breakdown

Category	Expenditures To Date (\$ Million) (A)	2018 Approved Budget (\$ Million) (B)	Current Approved Budget (\$ Million) (C)	Q1/FY19-20 Forecasted Cost* (\$ Million) (D)	Cost Variance (\$ Million) (E = C-D)
Management Support	\$37.3	\$42.8	\$42.8	\$42.8	-
Project Labor Agreement	\$3.7	\$3.8	\$3.8	\$3.8	-
Planning and Project Development	\$18.0	\$18.3	\$18.3	\$18.3	-
Program Controls	\$19.9	\$19.8	\$19.8	\$19.8	-
Program Construction Management	\$27.7	\$28.0	\$28.0	\$28.0	-
Program Management Total	\$106.6	\$112.7	\$112.7	\$112.7	-

The spending pattern for the project is very similar from month to month as the project primarily funds program-level positions occupied by both SFPUC staff and consultants. The Current Approved and the Forecasted Total Program Management Cost are \$112.7 million.

4. PROGRAM SCHEDULE SUMMARY

Figure 4.1 and Table 4.1 compare the 2005 Baseline, 2018 Approved, Current Approved, and Q1/FY19-20 Forecasted Schedules for the WSIP Regional Program. Refer to the “Cost and Schedule Status” notes in Section 5 for the criteria associated with the three color-coded Forecast Status levels in Figure 4.1 - Meet Requirements, Need Attention, and Exceed Limits. The Current Approved and Forecasted Schedule completion for the overall WSIP (including Regional and Local Programs) are in December 2021 and June 2022, respectively (6 months behind schedule). Refer to Appendix C for a graphical presentation of the WSIP Approved Project-Level Schedule.

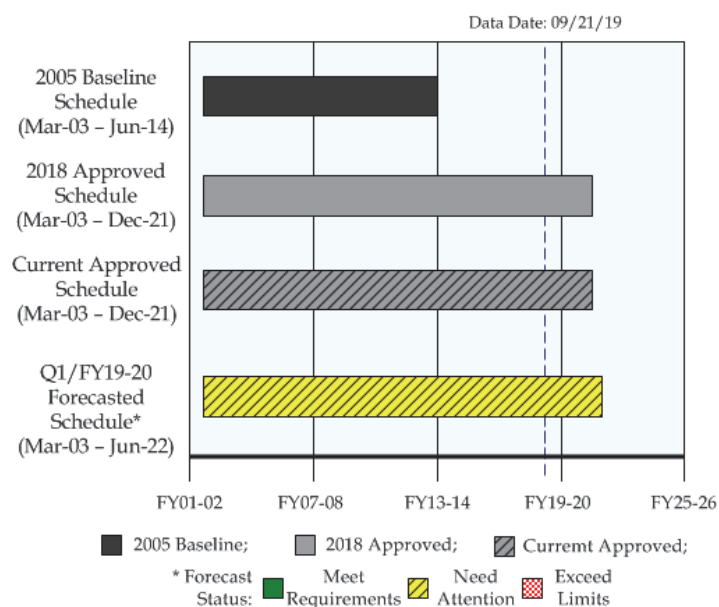


Figure 4.1 Program Schedule Summary

Table 4.1 2018 Approved vs. Q1/FY19-20 Forecasted Schedule Dates

Category	2005 Baseline Start	2018 Approved Start	Current* Approved Start	Actual Start	2005 Baseline Finish	2018 Approved Finish	Current* Approved Finish	Q1/FY19-20 Forecasted Finish	Schedule Variance (Months)
Regional Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/30/14	12/30/21	12/30/21	06/30/22	6.0 (Late)
Local** Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/28/13	7/31/18	7/31/18	12/31/19	17.0 (Late)
Overall WSIP	03/01/03	03/01/03	03/01/03	03/01/03✓	06/30/14	12/30/21	12/30/21	06/30/22	6.0 (Late)

* The budget and schedule approved as part of the March 2018 Revised WSIP, plus any additional budget and schedule changes approved by the Commission as part of additional contingencies on construction contracts.

** Excluding Local Water Supply Projects

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5. PROJECT PERFORMANCE SUMMARY*

All costs are shown in \$1,000s as of 09/21/19

Project Name	Active Phase (**)	2005 Baseline Budget (a)	2018 Approved Budget (b)	Current Approved Budget (c)	Q1/FY19-20 Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f= c - d)	Cost Status (+)	2005 Baseline Completion (g)	2018 Approved Completion (h)	Current Approved Completion (i)	Q1/FY19-20 Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
San Joaquin Region															
CUWSJI0101 - WSIP Closeout - San Joaquin	CN		\$ 4,376	\$ 4,376	\$ 3,876	\$ 638	\$ 500	★		12/20/19	12/20/19	12/18/20	12.0 mo. Late	●	See Section 6
Sunol Valley Region															
CUW35201 - Alameda Creek Recapture Project	DS	\$ 18,809	\$ 34,000	\$ 34,000	\$ 34,000	\$ 12,789	-	★	05/25/12	11/03/21	11/03/21	11/03/21	-	★	See Appendix E
CUW37401 - Calaveras Dam Replacement	CN	\$ 256,511	\$ 823,092	\$ 823,092	\$ 815,984	\$ 771,010	\$ 7,108	★	05/25/12	12/20/19	12/20/19	12/31/20	12.4 mo. Late	●	See Section 6
CUWSVI0101 - WSIP Closeout - Sunol Valley	CN		\$ 5,990	\$ 5,990	\$ 5,990	\$ 2,368	-	★		06/30/21	06/30/21	06/30/21	-	★	See Appendix E
Bay Division Region															
CUWBDP0101 - WSIP Closeout - Bay Division	CN		\$ 4,399	\$ 4,399	\$ 3,801	\$ 2,185	\$ 598	★		06/30/20	06/30/20	06/30/20	-	★	See Appendix E
Peninsula Region															
CUWPW10101 - WSIP Closeout - Peninsula	CN		\$ 13,580	\$ 13,580	\$ 13,580	\$ 6,819	-	★		05/19/21	05/19/21	08/05/21	2.6 mo. Late	⚠	See Section 6
San Francisco Regional Region															
CUW30103 - Regional Groundwater Storage and Recovery	CN	\$ 39,233	\$ 138,793	\$ 138,793	\$ 149,077	\$ 105,382	(\$10,284)	⚠	02/27/14	12/30/21	12/30/21	06/30/22	6.0 mo. Late	●	See Section 6
Support Projects															
CUW38804 - Long Term Mitigation Endowment ++	NA		\$ 12,000	\$ 12,000	\$ 12,000	\$ 0	-	★		09/30/21	09/30/21	09/30/21	-	★	NA
CUW39401 - Watershed and Environmental Improvement Program	NA	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 6,925	-	★	06/28/13	01/08/21	01/08/21	01/08/21	-	★	See Appendix E

* Excludes projects with completed construction and projects that are no longer active (i.e., deleted projects, closed projects, and projects combined with other projects)

**** Phase Status Legend**

PL	Planning	DS	Design	BA	Bid & Award
CN	Construction	NA	Not Applicable		

For projects active in multiple phases, the table shows the phase in which a majority of the works is taking place.

+ Cost and Schedule Status

- ★ Meet Requirements: Forecasted Cost/Schedule is within Current Approved Budget/Schedule.
- ⚠ Need Attention: Forecasted Cost is over Current Approved Budget by greater than 1% and less than 10%. Or Forecasted Schedule is over Current Approved Schedule by greater than 2 months and less than 6 months and less than 10%.
- Exceed Limits: Forecasted Cost is over Current Approved Budget by 10% or more. Or Forecasted Schedule is over Current Approved Schedule by greater than 6 months or 10% or more.







++ The Long Term Mitigation Endowment (LTME) fund provides an initial deposit to secure a source of funds for perpetual monitoring and maintenance of the Bioregional Habitat Restoration sites constructed in the SFPUC watershed, as required by the United States Army Corps of Engineers and California Department of Fish and Wildlife permits. The LTME fund does not involve construction activities to secure land purchases.

6. PROJECTS NOT WITHIN BUDGET AND/OR SCHEDULE

CUWSJI0101 - WSIP Closeout - San Joaquin

Project Description: This project includes miscellaneous improvements to ensure the WSIP Level of Service (LOS) goals and objectives are fully achieved in the San Joaquin Region. The work will be completed by means of two sub-projects: (1) re-evaluation of existing photo-voltaic systems and potential addition of new solar panels to supplement existing solar panels for existing onsite equipment operations at San Joaquin No.4 Junction, at the Throttling Station at Knight’s Ferry, and at Oakdale Portal, eliminating the need for propane generators at these sites; and (2) the installation of an interior concrete slab and drainage improvements at Tesla Portal as the original slab was deleted during the portal construction to allow access for repairs of existing corroded pipelines beneath the slab.

Region: San Joaquin	Project Status: Construction	Environmental Status: Not Applicable
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Project Cost:		Project Schedule:	
Approved 	\$4.38 M	Approved Jun-16 	Dec-19
Forecast* 	\$3.88 M	Forecast* Jun-16 	Dec-20
Actual 	\$0.64 M	Project Percent Complete: 40.7%	
			

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	N/A	N/A	Various	Various

Progress and Status:

During the reporting period, the design team completed the 100% design drawings and specifications for supplementation of existing solar panels at each of the three sites. The project team has also initiated the process to select JOC contractors to perform the work.

Issues and Challenges:

None at this time.









Oakdale Valve House No. 4 Solar Facilities

CUW37401 - Calaveras Dam Replacement

Project Description: The main construction project at Calaveras Reservoir provides for construction of a new 210-foot-high earth and rock fill dam, spillway, stilling basin, and intake tower and shaft to replace the existing facilities. A fish ladder will be added on the right abutment (looking downstream) of the Alameda Creek Diversion Dam (ACDD), a dam which acts to divert water through the Alameda Creek Diversion Tunnel (ACDT) to Calaveras Reservoir.

Region: Sunol Valley	Project Status: Construction	Environmental Status: Completed (EIR)
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Project Cost:		Project Schedule:	
Approved	 \$823.09 M	Approved Sep-02	 Dec-19
Forecast*	 \$815.98 M	Forecast* Sep-02	 Dec-20
Actual	 \$771.01 M	Project Percent Complete: 99.5%	
			

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction+ NTP	Construction+ Final Completion
Current Forecast	01/27/11✓	(A) 01/31/11✓ (B) 01/04/16✓	(A) 08/15/11✓ (B) 04/19/16✓	(A) 07/12/19✓ (B) 09/30/20

+ Project includes multiple construction contracts.

(A) Calaveras Dam Replacement (WD-2551); (B) Alameda Creek Diversion Dam (WD-2729)

Progress and Status:

WD-2551 CDRP: Project reached final construction completion on July 12, 2019. Project team will complete all the closeout deliverables by the end of December 2019 to close out this project. There are a few minor outstanding items that were delayed and could not be completed as part of WD-2551. To avoid delaying the closeout of WD-2551, these items will be handled under the CUWSVI0101 WSIP Sunol Closeout Project.

WD-2729 ACDD: The contractor continued to work on the punch list items, prepare closeout documents, and negotiate with the City on all the remaining change orders. The remaining portion of the wet testing that did not occur in March will be continued in the Winter of 2019/2020.

Issues and Challenges:

WD-2551 CDRP - None.







WD-2729 ACDD - Change order negotiations continue and may require additional time to fully close out the contract. Furthermore, the debris rake/rack system needs adjustments to be made by the contractor to be fully functional and will not be able to be completed until Spring/Summer 2020. Furthermore, the remaining wet testing will need to take place in Winter 2019/2020 provided there is enough flow in Alameda Creek to complete the testing



CDRP Aerial View

CUWPWI0101 - WSIP Closeout - Peninsula

Project Description: This project consists of miscellaneous improvements to ensure the WSIP Level of Service (LOS) goals and objectives are fully achieved in the Peninsula Region. The work will be completed by means of seven sub-projects: (1) the Lower Crystal Springs Dam (LCSD) stilling basin modifications and dissipation structure riprap; (2) valve modifications to accommodate stipulated releases of fresh water into San Mateo Creek for fish passage at the same site; (3) New Crystal Springs Bypass Tunnel electrical modifications due to groundwater intrusion into vaults housing it; (4) closeout of California Division of Safety of Dams permit applications; (5) coordination with San Mateo County for bridge construction over LCSD; (6) Harry Tracy Water Treatment Plant Improvements in automating operations to aid reliability in meeting LOS goals; and (7) Crystal Springs/San Andreas pipeline erosion repairs.

Region: Peninsula	Project Status: Construction	Environmental Status: Not Applicable
Project Cost:		Project Schedule:
Approved  \$13.58 M	Approved Jul-16  May-21	
Forecast*  \$13.58 M	Forecast* Jul-16  Aug-21	
Actual  \$6.82 M	Project Percent Complete: 75.2%	
		

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	N/A	Various	Various	Various

Progress and Status:

Crystal Springs / San Andreas Items: (1) WD-2822R2 - Lower Crystal Springs Dam (LCSD) Stilling Basin Connecting Channel - The Notice to Proceed for Anvil Builders was issued on 4/8/19, and Final Completion (FC) is 11/4/20. Subproject completion is 8/5/21. Construction is 50% complete. Grading at the creek, removal of H-53 valve, and installation of 24-inch waterline were completed. (2) LCSD Bridge Replacement - joint project with San Mateo County. There are a few warranty issues that are being addressed. (2.1) JOC 76R-01 North Parapet Wall Extension is being set up to close a gap between the LCSD north parapet wall and the new bridge abutment, with a forecasted start date for gap repair construction in November 2019. Subproject Completion is 9/2/20. (2.2) To close out the Memorandum of Agreement (MOA) with San Mateo County, a new PRO.76A task order LCSD Security Assessment has been set up for the area around the dam/bridge. Subproject completion is 6/30/20. (2.3) The SFPUC is still working with San Mateo County to repair the drainage channels atop the south side of LCSD. SFPUC completed drainage design. FC is 6/30/20. Subproject Completion is 12/31/20.

Harry Tracy Water Treatment Plant Items: [1] JOC 59-01 Electrical & Mechanical Piping Modifications -











Scope of work for generator integration into SCADA and training is being finalized. Subproject completion is 12/31/19. [2] JOC-59-17 Emergency Generators Filters Upgrades - The filters on the two remaining generators were replaced, tested and commissioned. All construction has been completed. Closeout is in progress. Subproject completion is 10/31/19. [3] Equalization Basin Mixers - Mixers and support rails were delivered and being installed this quarter. Subproject Completion is 12/31/19. [4] Erosion on CSSA Pipeline - completed 4/30/19.

Issues and Challenges:

Crystal Springs / San Andreas Items: (1) The rebid of the WD-2822R2 - LCSD Stilling Basin contract resulted in a three month schedule delay. (2.1) The delay in receiving the cost proposal for JOC 76R-01 North Parapet Wall Extension contract resulted in the delay of the start of construction by four months. (2.2) The six month delay for the PRO.76A LCSD Security Assessment is due to the delay in acquiring a security consultant to perform the assessment.

CUW30103 - Regional Groundwater Storage and Recovery

Project Description: The goal of the project is to provide up to 7.2 million gallons per day (mgd) of dry year water supply over 7.5 years. The original project design included the construction of up to 16 groundwater wells and well stations to be connected to three wholesale customers on the Upper Peninsula and the SFPUC transmission system to achieve the water supply goal. Phase 1 included the installation of 13 well stations to produce approximately 6.2 mgd, and the original scope of Phase 2 included construction of 2 to 3 additional well stations, based upon well yield. Due to difficulties with siting well stations in the central portion of the groundwater basin, Phase 2 has been modified to install up to 3 test wells (Ludeman North, Ludeman South and Centennial Trail), complete the South San Francisco Main well and pipeline, and complete other Phase 1 scope items, including chemical system monitoring, sampling and storage at various sites. The Phase 2 test wells will not be converted to production wells at this time, but will allow for determination as to whether the identified sites could be viable future production wells, and will provide valuable information related to water quality and potential pumping capacities that can be used for future planning and decision making.

Region: San Francisco Regional	Project Status: Construction	Environmental Status: Active (Various)
Project Cost:		Project Schedule:
Approved  \$138.79 M	Approved Jun-03  Dec-21	
Forecast*  \$149.08 M	Forecast* Jun-03  Jun-22	
Actual  \$105.38 M	Project Percent Complete: 77.7%	
 Approved;  Actual Cost; * Forecast Status:  Meet Requirements  Need Attention  Exceed Limits		

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction+ NTP	Construction+ Final Completion
Current Forecast	(A) 09/07/09✓ (B) 08/07/14✓ (C) 07/28/20	(A) 09/07/11✓ (B) 09/22/14✓ (C) 07/29/20	(A) 01/30/12✓ (B) 04/06/15✓ (C) 01/26/21	(A) 09/05/12✓ (B) 03/06/20 (C) 03/22/22

+ Project includes multiple construction contracts.

(A) Test well drilling; (B) Well station construction; (C) Well sites in Millbrae and South San Francisco

Progress and Status:

For Phase 1 (Contract B), completed required groundwater chemical constituent testing for the nine well sites to be operated by SFPUC, training for fluoride saturator and handling, sample station and liquid ammonium sulfate, and survey for the remote sampling site for the Treasure Island well station. Monitoring and calibration of the transmission line flowmeters at several groundwater treatment facilities, and functional testing at Hickey Well and Treatment Facility are ongoing.

For Phase 2 (associated with Contract C), the final draft CER for the South San Francisco Main well station and the carryover work from Contract B was presented to the Steering Committee on 8/20/19. Additional carryover work from Contract B was presented to the Change Control Board on 8/20/19. The project team was directed to include work related to control panels, pressure sensing lines, sample tap, and discharge capacity evaluation as part of Phase 2. The rest of the carryover work from Phase 1 will be

implemented as part of a new project called "Regional Groundwater Treatment Improvements" under the Water Enterprise Capital Improvement Program.

Issues and Challenges:

The variances between the Approved and Forecasted cost and schedule for Phase 1 (Contract B) are due to modifications to the chemical system for groundwater treatment; the retrofit of existing transmission line flowmeters; and other changes to programming, access, and treatment testing. Further monitoring and calibration are needed to acquire more accurate and consistent readings on the transmission line flowmeters. These changes have resulted in delaying the 7-day testing.

The variances between the Approved and Forecasted cost and schedule for Phase 2 (Contract C) are due to additional carryover work from Contract B.

7. On-Going Construction

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion*	Q1/FY19-20 Forecasted Construction Final Completion**	Approved Contract Cost +	Q1/FY19-20 Forecasted Cost++	Schedule (Cal. Days)	Cost	
Sunol Valley Region								
CUW37401 - Alameda Creek Diversion Dam (Contract B)	04/19/16	12/16/18	09/30/20	\$ 36,483,896	\$ 38,346,815	(654)	(\$1,862,919)	96.0%
San Francisco Regional Region								
CUW30103 - Regional GW Storage and Recovery (Contract B)	04/06/15	03/28/19	03/06/20	\$ 57,620,301	\$ 59,865,338	(344)	(\$2,245,037)	98.7%

Program Total for On-Going Construction	Approved Contract Cost	Q1/FY19-20 Forecasted Cost*	Variance	
			Cost	Percent
	\$ 94,104,197	\$ 98,212,153	(\$4,107,956)	(4.4%)

Note:

* Approved Construction Final Completion Date includes approved change orders.
 ** The Forecasted Construction Final Completion Date includes all approved, pending, and potential change orders and trends.

+ Approved Contract Cost includes awarded contract amount and approved change orders.
 ++ The Forecasted Cost includes awarded contract amount and all approved, pending, and potential change orders.

8. PROJECTS IN CLOSE-OUT

Project Title	2005 Baseline Construction Phase Completion	2018 Approved Construction Phase Completion	Current Approved Construction Phase Completion	Actual Construction Phase Completion	2005 Approved Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Forecasted Project Completion	2005 Baseline Construction Phase Budget	2018 Approved Construction Phase Budget	Current Approved Construction Phase Budget	Construction Phase Expenditures To Date
Support Projects												
CUW38802 - Bioregional Habitat Restoration		05/31/18	05/31/18	05/31/18		09/30/21	09/30/21	09/30/21		\$ 52,299,498	\$ 51,636,156	\$ 50,642,722
TOTAL										\$ 52,299,498	\$ 51,636,156	\$ 50,642,722

9. COMPLETED PROJECTS

Project Title	2005 Baseline Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2018 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
San Joaquin Region								
CUW36401 - Lawrence Livermore Water Quality Improvement	11/07/11	07/31/13	07/31/13	07/31/13	\$ 4,235,258	\$ 4,198,247	\$ 4,198,247	\$ 4,198,247
CUW37301 - San Joaquin Pipeline System	03/25/14	03/31/16	03/31/16	03/31/16	\$ 352,732,000	\$ 203,178,014	\$ 203,178,015	\$ 203,178,015
CUW37302 - Rehabilitation of Existing San Joaquin Pipelines	06/30/14	10/31/14	10/31/14	10/31/14	\$ 80,000,000	\$ 21,153,622	\$ 21,153,622	\$ 21,153,622
CUW38401 - Tesla Treatment Facility	07/01/11	01/30/15	01/30/15	01/30/15	\$ 101,643,001	\$ 113,211,607	\$ 113,211,607	\$ 113,211,607
Sunol Valley Region								
CUW35501 - Standby Power Facilities - Various Locations	12/06/10	12/22/10	12/22/10	12/22/10	\$ 9,949,735	\$ 12,950,566	\$ 12,950,566	\$ 12,950,566
CUW35901 - New Irvington Tunnel	09/17/13	03/31/18	03/31/18	03/31/18	\$ 214,650,004	\$ 340,406,358	\$ 340,406,358	\$ 339,893,582
CUW35902 - Alameda Siphon #4	04/14/11	06/28/13	06/28/13	06/28/13	\$ 78,577,000	\$ 64,950,507	\$ 64,950,507	\$ 64,950,507
CUW37001 - Pipeline Repair & Readiness Improvements	03/30/07	04/16/09	04/16/09	04/16/09	\$ 5,591,770	\$ 5,195,381	\$ 5,195,381	\$ 5,195,381
CUW37402 - Calaveras Reservoir Upgrades	02/17/06	07/28/06	07/28/06	07/28/06	\$ 1,740,055	\$ 1,690,552	\$ 1,690,552	\$ 1,690,552
CUW37403 - San Antonio Backup Pipeline	06/29/12	06/30/16	06/30/16	06/30/16	\$ 7,677,000	\$ 53,594,683	\$ 53,594,683	\$ 53,594,683
CUW38101 - SVWIP Expansion & Treated Water Reservoir	07/09/13	10/31/14	10/31/14	10/31/14	\$ 133,108,002	\$ 129,593,674	\$ 129,593,674	\$ 129,593,674
CUW38601 - San Antonio Pump Station Upgrade	12/12/11	06/29/12	06/29/12	06/29/12	\$ 41,854,000	\$ 12,894,592	\$ 12,894,592	\$ 12,894,592
Bay Division Region								
CUW35301 - BDPL Nos. 3 & 4 Crossover/Isolation Valves	09/30/08	07/31/09	07/31/09	07/31/09	\$ 27,600,158	\$ 27,039,149	\$ 27,039,149	\$ 27,039,149
CUW35302 - Seismic Upgrade of BDPL Nos. 3 & 4	10/15/12	07/30/18	07/30/18	07/30/18	\$ 66,792,849	\$ 73,623,296	\$ 73,623,296	\$ 70,542,323
CUW36301 - SCADA System - Phase II	02/24/12	05/28/13	05/28/13	05/28/13	\$ 36,098,999	\$ 9,470,922	\$ 9,470,922	\$ 9,470,923
CUW36801 - BDPL Reliability Upgrade / Tunnel	01/31/14	08/30/16	08/30/16	08/30/16	\$ 572,022,634	\$ 272,364,089	\$ 272,364,089	\$ 271,823,525
CUW36802 - BDPL Reliability Upgrade - Pipeline	-	03/31/16	03/31/16	03/31/16	-	\$ 216,871,156	\$ 216,871,156	\$ 216,722,172
CUW36803 - BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2	-	05/28/10	05/28/10	05/28/10	-	\$ 3,046,981	\$ 3,046,981	\$ 3,046,981
CUW38001 - BDPL Nos. 3 & 4 Crossovers	04/24/13	06/30/14	06/30/14	06/30/14	\$ 36,616,911	\$ 29,910,449	\$ 29,910,449	\$ 29,910,449
CUW38901 - SFPUC/EBMUD Intertie	02/07/07	03/20/14	03/20/14	03/20/14	\$ 8,598,851	\$ 9,167,306	\$ 9,167,306	\$ 9,167,306
CUW39301 - BDPL No. 4 Condition Assessment PCCP Sections	05/01/08	02/06/09	02/06/09	02/06/09	\$ 2,000,000	\$ 1,937,599	\$ 1,937,599	\$ 1,937,599
Peninsula Region								
CUW35401 - Lower Crystal Springs Dam Improvements	08/16/11	12/28/12	12/28/12	12/28/12	\$ 27,752,222	\$ 34,859,040	\$ 34,859,040	\$ 34,859,040
CUW35601 - New Crystal Springs Bypass Tunnel	10/28/10	08/17/12	08/17/12	08/17/12	\$ 83,222,790	\$ 81,466,732	\$ 81,466,732	\$ 81,466,732
CUW35701 - Adit Leak Repair - Crystal Springs/Calaveras	07/03/08	07/31/08	07/31/08	07/31/08	\$ 3,748,452	\$ 2,787,322	\$ 2,787,322	\$ 2,787,322
CUW36101 - Pulgas Balancing - Inlet/Outlet Work	05/11/06	05/11/06	05/11/06	05/11/06	\$ 1,667,532	\$ 1,765,938	\$ 1,765,938	\$ 1,765,938

Project Title	2005 Baseline Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2018 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
Peninsula Region								
CUW36102 - Pulgas Balancing - Discharge Channel Modifications	08/05/13	07/30/10	07/30/10	07/30/10	\$ 8,111,422	\$ 2,910,007	\$ 2,910,007	\$ 2,910,007
CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement	01/29/13	12/28/12	12/28/12	12/28/12	\$ 36,712,846	\$ 20,238,716	\$ 20,238,716	\$ 20,238,716
CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility	-	03/20/13	03/20/13	03/20/13	-	\$ 5,390,031	\$ 5,390,031	\$ 5,390,031
CUW36501 - Cross Connection Controls	05/15/09	04/30/09	04/30/09	04/30/09	\$ 6,111,779	\$ 3,948,944	\$ 3,948,944	\$ 3,948,944
CUW36601 - HTWTP Short-Term Improvements (Demo Filters)	07/03/06	11/14/06	11/14/06	11/14/06	\$ 4,381,375	\$ 3,067,903	\$ 3,067,903	\$ 3,067,903
CUW36603 - HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters	09/08/10	07/28/10	07/28/10	07/28/10	\$ 9,741,617	\$ 18,604,937	\$ 18,604,937	\$ 18,604,937
CUW36701 - HTWTP Long-Term Improvements	04/08/14	12/30/16	12/30/16	12/30/16	\$ 167,570,000	\$ 274,081,969	\$ 274,081,969	\$ 273,833,162
CUW36702 - Peninsula Pipelines Seismic Upgrade	-	07/06/16	07/06/16	07/06/16	-	\$ 38,825,346	\$ 38,825,346	\$ 38,773,912
CUW36901 - Capuchino Valve Lot Improvements	07/24/09	08/19/08	08/19/08	08/19/08	\$ 3,573,782	\$ 2,803,153	\$ 2,803,153	\$ 2,803,153
CUW37101 - Crystal Springs/San Andreas Transmission Upgrade	04/01/14	06/30/15	06/30/15	06/30/15	\$ 148,582,655	\$ 190,309,453	\$ 190,309,453	\$ 189,816,066
CUW37801 - Crystal Springs Pipeline No. 2 Replacement	04/27/12	12/31/14	12/31/14	12/31/14	\$ 93,926,000	\$ 56,070,509	\$ 56,070,509	\$ 56,070,509
CUW37901 - San Andreas Pipeline No. 3 Installation	06/09/11	08/30/12	08/30/12	08/30/12	\$ 42,029,941	\$ 27,495,558	\$ 27,495,558	\$ 27,495,558
CUW39101 - Baden and San Pedro Valve Lots Improvements	10/12/11	03/29/13	03/29/13	03/29/13	\$ 47,319,999	\$ 24,990,803	\$ 24,990,803	\$ 24,990,803
San Francisco Regional Region								
CUW35801 - Sunset Reservoir - North Basin	05/06/09	09/10/10	09/10/10	09/10/10	\$ 61,975,999	\$ 64,270,725	\$ 64,270,725	\$ 64,270,725
CUW37201 - University Mound Reservoir - North Basin	03/10/11	03/29/13	03/29/13	03/29/13	\$ 102,882,610	\$ 43,266,552	\$ 43,266,552	\$ 43,266,552
Support Projects								
CUW36302 - System Security Upgrades	-	09/28/18	09/28/18	04/09/19	-	\$ 15,201,310	\$ 15,201,310	\$ 14,444,836
CUW38801 - Programmatic EIR	06/20/07	06/30/09	06/30/09	06/30/09	\$ 9,271,001	\$ 10,730,684	\$ 10,730,684	\$ 10,730,684
CUW38803 - Vegetation Restoration of WSIP Construction Sites	-	06/30/16	06/30/16	06/30/16	-	\$ 2,111,546	\$ 2,111,546	\$ 2,099,755
TOTAL					\$ 2,640,070,249	\$ 2,531,645,931	\$ 2,531,645,931	\$ 2,525,800,743

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APPENDICES

- A PROJECT DESCRIPTIONS**
- B WSIP BUDGET AND EXPENDITURES HISTOGRAM**
- C WSIP REGIONAL PROGRAM STAFFING PLAN**
- D WSIP APPROVED PROJECT-LEVEL SCHEDULE**
- E PROJECTS WITHIN BUDGET AND SCHEDULE**
- F LIST OF ACRONYMS**

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APPENDIX A. PROJECT DESCRIPTIONS

SAN JOAQUIN REGION

CUW36401 - Lawrence Livermore Water Quality Improvement (Completed)

The project consists of:

- Ultraviolet (UV) disinfection, including two 150-gallon-per-minute, parallel UV units and ancillary facilities. The units will be installed in the existing Thomas Shaft building.
- Two pumps that will pump water from the Coastal Range Tunnel to the new disinfection system.

CUW37301 - San Joaquin Pipeline System (Completed)

The project consists of:

- Pipeline crossover facilities at Emery Road (including 10 valves) and Pelican Road (including 12 valves).
- Installation of a portion of new pipeline, the Western Segment, from the San Joaquin River to the Tesla Portal. The pipeline will be 78-inches in diameter, approximately 10.3 miles in length and will include tunneled crossings of several highways, a railroad, and an irrigation canal. The pipeline will cross over the top of the California Aqueduct.
- Installation of a portion of new pipeline, the Eastern Segment, from the Oakdale Portal to a new connection point approximately 6.7 miles downstream on SJPL No. 3. This segment will also be 78-inches in diameter.
- Installation of valve facilities on SJPL Nos. 3 and 4 along the Eastern Segment to provide for operational needs to divide and isolate segments of these lines for maintenance and to regulate flow and control pressure in the system.
- Security related site improvements at Oakdale Portal.

CUW37302 - Rehabilitation of Existing San Joaquin Pipelines (Completed)

The project scope is to assure that existing San Joaquin Pipelines will meet Delivery Reliability LOS goals by establishing a program of routine maintenance, repair, and replacement activities for long-term implementation and by addressing

the highest priority rehabilitation measures identified during the timeframe of the WSIP:

- Rehabilitation of and security-related site improvements at the existing Roselle Crossover.
- Establishment of a program of pipelines conditions assessment, including upgrading and renewal as required, of pipe coating and lining systems.
- Upgrade of the existing SJPL cathodic protection system.
- Upgrade of the existing SJPL Supervisory Control and Data Acquisition (SCADA) system.

CUW38401 - Tesla Treatment Facility (Completed)

The project consists of:

- Isolation valves and piping to divert SJPL flow to the new treatment facility, large-diameter piping and valves located within the treatment facilities, and a single discharge pipeline to tie back into the existing SJPLs.
- A disinfection building housing 12 UV reactors, cleaning equipment, and ancillary equipment.
- A chemical storage and feed facility for sodium hypochlorite, hydrofluorsilicic acid (i.e., fluoride), and carbon dioxide.
- Office, laboratory, and control facilities, emergency engine generators, and security related site and access road improvements.

CUW38701 - Tesla Portal Disinfection Station

The Tesla Portal Disinfection Facility is located where the San Joaquin Pipelines (SJPLs) converge into the Coast Range Tunnel and provides primary disinfection of the Hetch Hetchy water supply. The facility is one of the key water quality monitoring and compliance locations for the San Francisco Public Utilities Commission (SFPUC). The Tesla Portal Disinfection Station Project includes the planning of a new disinfection facility that will provide reliable disinfection to the Hetch Hetchy water supply.

This project has been combined with the "CUW38401 - Tesla Treatment Facility Project"; therefore, the respective budgets for the Environmental, Design, Bid & Award, Construction, Construction Management, and Close-out Phases have been transferred to the "CUW38401 - Tesla Treatment Facility Project".

Note that this project has been terminated and the remaining scope & budget has been combined with the "CUW38401 - Tesla Treatment Facility" project.

CUWSJI0101- WSIP Closeout - San Joaquin

• **Supplemental Solar Panel Installations** – The CUW37301 San Joaquin Pipeline System, including the western segment, eastern segment and facilities, and crossover pipeline projects, achieved final completion in 2013, 2014 and 2015, respectively. During the initial course of operations it was noted the solar panel arrays designed to provide power for the facility equipment were not sufficient to meet all modes of operational demands. This sub-project will re-evaluate the existing photo-voltaic systems and will provide additional solar panels, if needed, to cover power shortfalls and allow the facility to better meet its water delivery reliability LOS goal. This sub-project consists of three sites: Oakdale, Knight Ferry Throttling Station, and San Joaquin Junction No. 4. The scope of work includes:

- o Re-evaluation of the existing photo-voltaic systems at these three (3) locations before proceeding with modifications to the existing arrays,
- o If determined necessary to meet current power demands, furnish and install new supplemental solar arrays mounted on concrete pads within security fence enclosures,
- o Connection to and integration of the new solar panels into the existing power system and controls, and
- o Installation of batteries for solar power storage on-site.

• **Tesla Portal Facility Interior Floor Slab** – The Tesla Portal Facility, a sub-project of the CUW38401 Tesla Treatment Facility, was completed in January 2015. During construction, the concrete interior floor slab was deleted from the project construction documents to allow easier access to repair corrosion of the existing pipelines discovered during construction beneath the new Tesla Portal Facility. Due to drainage issues at the site, the Operations staff at the facility requested the interior slab be incorporated into the structure with a small access opening for future maintenance and corrosion repairs of the existing buried pipelines. This sub-project will be

constructed through use of a job order contract including:

- o A new interior concrete slab slope to drain to a new catch basin,
- o A new catch basin with grating and sump, and
- o A small sump pump and drain through the slab or existing concrete wall to a discharge point.

SUNOL VALLEY REGION

CUW35201 - Alameda Creek Recapture Project

The planned facilities for this project are based on Alternative 4-1 from the Updated Alternatives Analysis Report (AAR) dated January 30, 2009, with some refinements described below. The planned facilities include the following components: four identical vertical turbine pumps mounted on floating barges located in existing Pond F2 (including a mooring system); four flexible discharge pipelines extending from each pump to a new pipe manifold located on shore; approximately 100-feet of 36-inch pipeline connection between the new pipe manifold and the existing Sunol Pipeline to discharge the recaptured water to the SFPUC system; throttling valves and a flow meter; electrical control building; 1,600 feet of power lines from the existing Hetch Hetchy Water & Power Calaveras Electrical Substation installed on 10 new power poles; and general site improvements. In addition, the scope includes conveyance of the water to various existing storage sites within the Sunol Valley or the Sunol Valley Water Treatment Plant, as necessary. Some minor refinements were made in the March 2016 Notice of Changes to eliminate on-shore booster pumps in favor of a single set of pumps located on barges in Pond F2 and the elimination of the flexibility to allow multiple sources of water from Pond F2 and Calaveras Reservoir to be blended and sent to San Antonio Reservoir (SAR) in the future.

CUW35501 - Standby Power Facilities - Various Locations (Completed)

The project consists of installing standby electrical power facilities at six sites in the East Bay and on the Peninsula. Each site is either provided with an emergency generator or electrical receptacles to accommodate a portable emergency generator.

The five sites are: Alameda West Portal, and San Antonio Reservoir & Dam; Harry Tracy Water Treatment Plant; Millbrae Yard; San Pedro Valve Lot; and Capuchino Valve Lot.

CUW35901 - New Irvington Tunnel (Completed)

This project consists of an 18,660-foot long tunnel in a horseshoe shape with excavated dimensions of approximately 13 feet by 14 feet. The final tunnel lining will be mortar-lined, welded steel pipe, resulting in a finished diameter of 8.5 feet. Extra thick steel liner segments will also be used at low cover areas near the portals and beneath Interstate 680 where the tunnel intersects inactive fault zones, and where the tunnel passes through areas of poor ground conditions.

Major project elements include:

- Conventional mining methods are being used in a westward direction from the Alameda West Portal, in both an eastward and westward direction from an intermediate shaft located near Vargas Road just off Interstate 680, and in an eastward direction from Irvington Portal. Tunneling is being completed by multiple road header tunneling machines and limited, controlled detonation in areas of hard rock. Spoils disposal is being taken to fill sites just north of the San Antonio Pump Station (SAPS) near the intersection of Calaveras Road and Interstate 680. When completed the spoils fills will create a visual barrier to a new quarry operation located near Calaveras Road. Potentially contaminated spoils will be screened, separated, and, if found to contain contaminants, hauled to a permitted landfill.

- At the Irvington Portal, the tunnel connections to Bay Division Pipelines (BDPL) will include control valves directly buried with instrumentation and electrical gear in a small control building. At the Alameda West Portal, the tunnel will be connected to the discharge of the new mixing manifold to be constructed as part of the Alameda Siphons # 4 Project and to the existing overflow shaft. The project includes a new isolation valve between the mixing manifold and the portal.

- The NIT Project will include construction of a new access bridge across Alameda Creek to accommodate temporary construction traffic and

on-going SFPUC Alameda West Portal operations.

- A Groundwater Management Program has been developed that includes two years of pre-construction monitoring of wells, springs, creeks, ponds, and wetlands; environmental habitat construction mitigation measures; and two years of monitoring after construction to minimize the impact to the local groundwater.

- At both the existing Irvington and Alameda West Portal facilities, other security-related site improvements will be constructed, including undergrounding of portal structures and new card access controlled gates and security fences.

CUW35902 - Alameda Siphon #4 (Completed)

This project consists of a 66-inch diameter welded steel pipeline; a 96-inch diameter "blending structure" near the Alameda West Portal that will blend SVWTP and Hetch Hetchy water; new isolation/throttling valves on Alameda Siphons Nos. 3 and 4; new isolation valves on Alameda Siphons Nos. 1 and 2; ventilation improvements at Alameda East Portal; new chemical injection facilities on Siphon No. 4; relocation and extension of the overflow pipe; and road improvements at the intersection with Calaveras Road.

CUW37001 - Pipeline Repair & Readiness Improvements (Completed)

The project consists of three phases for implementation: Phase A (completed) involves the procurement of varied lengths and sizes of welded steel pipe and fitting for stockpiling at seven locations west of the Coast Range Tunnel; Phase B (completed) includes procurement and installation of a pipe rolling facility at the Sunol Yard; Phase C (completed) involves the development of a pipeline repair prioritization plan as well as on-call emergency repair procedures, contracts, and mutual assistance agreements.

CUW37401 - Calaveras Dam Replacement

Project elements primarily include:

- Constructing a new 210-foot high earth and rock fill dam designed to accommodate a maximum credible earthquake on the Calaveras

Fault. The dam will be constructed immediately downstream of the existing dam and will have a crest length of 1,210 feet, a base thickness of 1,180 feet, and a crest thickness of 80 feet. The total volume of the dam will be approximately 2.8 million cubic yards.

- The materials for construction will primarily originate from onsite sources, while surplus excavated material will be placed at disposal sites around the rim of the Calaveras Reservoir, including two in-water disposal sites and several upland disposal sites.

- The existing spillway will be removed, and a new spillway and stilling basin will be constructed. The overflow weir of the new spillway will be 307 feet long. The spillway will vary from 60 to 80 feet wide and will be 1,100 feet long. The stilling basin below the spillway will be 80 feet wide and 155 feet long.

- A new intake tower and shaft will be constructed. The drain line and three adits from the existing facility will be connected to the new shaft. The existing outlet conduit from the tower will be extended 1,250 feet downstream (beneath the replacement dam) and will be equipped with a high capacity fixed-cone discharge valve (relocated from the existing facility) to accommodate water releases from the reservoir. Fish screens will be added to the existing adits of the intake tower.

- The existing dam will largely remain in place. The downstream face will, however, be partially removed and re-graded, and a channel will be excavated through the dam to form the approach to the new spillway.

- A new 525-foot long fish ladder and flow bifurcation systems at Alameda Creek Diversion Dam (ACDD) will be used in conjunction with new low-flow capacity valves to be added at the base of the replacement Calaveras Dam to provide flows downstream of these facilities to support native aquatic resources and future populations of steelhead trout that are being restored to the Alameda Creek Watershed.

- The fish ladder and a total of four new fish protection screens will be added on the right abutment (looking downstream) of the ACDD. In addition, conveyance pipes will be installed to allow water from Alameda Creek to be delivered

to the Calaveras Reservoir via the Alameda Creek Diversion Tunnel (ACDT).

- Landslide A removal beneath the northern half of the left abutment slope located on the left side of the valley (when looking downstream) as well as other associated changes as previously noted in the March 2013 Notice of Change.

- Landslide B removal within the lower left abutment slope as well as other associated change.

- Additional slope reinforcement in Borrow Area B and import of offsite rockfill to supplement rockfill mined from Borrow Area B to mitigate schedule impacts.

- Repairs to a portion of Calaveras Road where a landslide occurred due to unusually wet weather in February 2017.

- Repairs to the West Haul Road which was inundated by the reservoir elevation rise due to unusually wet weather in February 2017.

- For the ACDD fish ladder, to address potential landslide hazard and further protect the fish passage structure, an extension to the contract landslide stabilization wall and an additional reinforced concrete panel wall with tie-backs to reinforce a section of the soil nail wall.

CUW37402 - Calaveras Reservoir Upgrades (Completed)

The project consists of a new hypolimnetic oxygenation system and cryogenic equipment installed near the dam to help maintain reservoir water quality.

CUW37403 - San Antonio Backup Pipeline (Completed)

The SABPL consists of 6,600 feet of 66-inch-diameter steel pipe and extends from the Alameda Siphons at the SAPS to Sunol quarry, SMP-24, near the intersection of Calaveras Road and San Antonio Creek. There are three tie-in facilities with air gap provisions from the SABPL: one connecting to Alameda Siphon No. 3, a second to the SAPL near SAPS, and a third to the SAPL on the west side of Calaveras Road before the SAPL alignment turns and heads west to quarry SMP-24. The alignment of the SABPL parallels that of the existing SAPL, terminating with a control valve and concrete energy

dissipation structure in quarry SMP-24. The project includes new chemical storage, feed, and water-quality-monitoring facilities for de-chlorination and pH adjustment of any discharges through the SABPL, the existing SAPL, and the Alameda East Portal overflow pipe. Water discharged into the SMP-24 quarry pond will be recovered with two submersible pumps and a short section of 24-inch diameter steel pipe which will connect to the existing SAPL to convey water to San Antonio Reservoir. Power to the water recovery pumps will be supplied from the nearby Calaveras Substation, which is owned and operated by Hetch Hetchy Water & Power. Construction of a slurry wall around the quarry pond to minimize groundwater intrusion and to ensure slope stability is also included.

CUW38101 - SVWTP Expansion & Treated Water Reservoir (Completed)

The project consists of a plant expansion which will increase the sustainable capacity to 160 mgd by adding a new flocculation/sedimentation basin, by retrofitting some of the existing filters, by adding a new 17.5-million gallon (MG) circular treated water reservoir (TWR) with a new 3.5-MG rectangular chlorine contact tank on the northern portion of the existing plant site, by adding new chemical storage and feed facilities for disinfection, and by construction of approximately 2,700 feet of 78-in pipe to connect the new TWR to the existing plant.

CUW38102 - SVWTP Calaveras Road

The project consists of safety related improvements to Calaveras Road near the SVWTP access road. The project was deleted because it does not contribute to the WSIP Level of Service goals. This project deletion was approved by the Commission in February of 2008.

CUW38201 - SVWTP Treated Water Reservoir

The project consists of providing improvements to the SVWTP disinfection facilities, including new chemical feed equipment and a 5 MG chlorine contact tank. Additionally, two 8.75 MG balancing reservoirs are planned. These improvements were determined in response to a DOHS requirement.

NOTE THAT THIS PROJECT WAS TERMINATED AND THE REMAINING SCOPE & BUDGET WAS COMBINED WITH PROJECT "CUW38101 - SVWTP EXPANSION & TREATED WATER RESERVOIR."

CUW38601 - San Antonio Pump Station Upgrade (Completed)

The project consisted of:

- Replacement of three 1,000-horsepower electrical pumps.
- Addition of two 1.5-megawatt emergency generators. The generators are sized to power the three electric pumps.
- Seismic retrofit of the pump station, including reinforcement of the walls, foundation improvements, and connection of the roof to the walls.

CUWSVI0101- WSIP Closeout - Sunol Valley

• **AS4 Carrier Water System Modifications** - The CUW35902 Alameda Siphon No. 4 Project was completed in 2013. Since that time, new facilities being brought on-line as well as other changes occurring in water operations have resulted in an apparent drop in water pressure and volume at the Sunol Valley Chloramination Facility. This has reduced the available water needed for the current system to pump the necessary water treatment chemicals into the system. This new sub-project is designed to resolve the deficiency and allow the facility to meet its water delivery reliability LOS goal. This sub-project will be constructed by a job order contract including:

- o Modifications of the current chemical injection system to overcome lack of water system pressure and volume,
- o New supplemental water facilities, including possible new storage tanks, and monitoring and regulating equipment as needed, and
- o Plumbing and control connections between the new facilities and the current system.

• **Erosion Repair at Pond F3 East** - The recently completed CUW37403 San Antonio Backup Pipeline Project included drainage improvements on the east side bank of Quarry Pond F3 East. After completion of construction, it was noted that the rock riprap below a 12-inch drainage pipe had eroded away and undermined the

downstream section of the pipe. This sub-project will repair the erosion with new rockfill and restore the drainage pipe including;

- o Grading to remove loose bank debris and prepare the subgrade slope to receive the riprap,
- o Extension of the existing drain pipe downslope to the water line of the pond,
- o Installation of new rockfill on the east bank of the quarry pond from the current drain pipe to the toe of the bank, and
- o Temporary access improvements at the side bank of the pond for a crane and other equipment to deliver and place rock riprap and other materials into the repair area.

• **Sunol Valley Water Treatment Plant Polymer Feed Facility.** The Sunol Valley Water Treatment Plant Expansion and Treated Water Reservoir Project was completed in 2014 and included addition of a new fifth flocculation sedimentation basin (Basin 5) to the existing four (4) basins at the plant. During operations after completion, it was noted that Basin 5 was not able to achieve the optimal water production goal of 40 million gallons per day consistently. This sub-project was originally scoped to change the flocculation aid composition for Basin 5. The March 2018 scope refinement is to build a polymer feed facility that will serve not only Basin 5, but also the four (4) older basins (Basins 1 to 4), to optimize plant water production, and allow this facility to better meet its water quality and delivery reliability LOS goals. The portion of the facility cost attributed to Basin 5 will be funded under the WSIP; the portion of the facility cost attributed to Basins 1 to 4 will be funded under the Water 10-Year Capital Improvement Program. This sub-project will be constructed by a bid contract including:

- o Addition of new flocculant aid polymer to optimize water production from the four older basins and the new Basin 5
- o Water testing to develop a range of polymer doses for the range of different water quality expected at the plant
- o Construction of new structures and facilities to store, monitor and control the application of the new polymer

• **Miscellaneous Work at AWP, IVP and SABPL.** The CUW35901 New Irvington Tunnel (NIT) was completed in 2017, and the CUW37403 San

Antonio Backup Pipeline (SABPL) was completed in 2016. This subproject will include the following work:

- o Installation of new security doors at Alameda West Portal (AWP) and Irvington Portal (IVP)
- o Installation of new couplings between the valve stem and actuator for the cathodic protection at AWP and IVP
- o Refurbishment of uninterruptible power supply (UPS) and installation of new enclosures for the UPS at AWP and IVP
- o Installation of discharge pipe lateral supports, safety railings, ladder stiffening supports, and sunshades for electrical equipment on SABPL

• **NIT Water Quality Equipment Relocation.** The CUW35901 New Irvington Tunnel (NIT) project installed new water quality monitoring equipment in an underground vault to monitor water quality on Irvington Portal 2 (IP2). After the equipment was installed, problems were noted that related to safe access and water drainage. This sub-project is to relocate the water quality monitoring equipment to Building B10 for Irvington Portal 1 (IP1), and install a new pump to pump water from Irvington Tunnel 2 (IT2) to Irvington Tunnel 1 (IT1) to provide IT2 water for the water quality monitoring.

• **San Antonio Backup Pipeline Carrier Water System Modifications.** The CUW37403 San Antonio Back Pipeline was completed in 2016. Since that time, changes in operations have resulted in an apparent drop in water pressure in the carrier water system for two (2) chemicals including Calcium Thiosulfate for dechlorination and Hydrofluorosilicic acid for pH adjustment. The purpose of this sub-project is to modify the carrier water and chemical injection system to ensure the chemicals will be injected properly.

BAY DIVISION REGION

CUW35301 - BDPL Nos. 3 & 4 Crossover/ Isolation Valves (Completed)

This project is 100 percent complete and has been closed out. The project consists of:

- Two large vaults that are primarily below-ground installations with only the top 30 inches of the structure exposed. Above-ground facilities include security fencing and satellite

communication dishes. The vaults are approximately 2,400 feet apart along the BDPL Nos. 3 and 4.

- Each vault includes four mainline isolation valves and a crossover valve. The isolation valves are hydraulically operated, while the crossover valves are electrically operated.
- The existing BDPL No. 3 is a 78-inch-diameter reinforced concrete pipe, and BDPL No. 4 is a 96-inch-diameter PCCP. At each vault, approximately 170 feet of each pipeline will be replaced with welded steel pipe.
- Each facility will be equipped with connections for portable electric generators, and a battery system will provide immediate emergency power to operate the hydraulic system.
- Valve actuators will have remote monitoring and operating capability through the SFPUC SCADA system.

CUW35302 - Seismic Upgrade of BDPL Nos. 3 & 4 (Completed)

The project primarily consists of:

BDPL No. 3:

- A new 300-foot-long concrete vault will be constructed under Mission Boulevard near the I-680 Interchange where Fault Trace B is located. A new 300-foot segment of 72-inch welded steel BDPL No. 3 will be installed inside the vault. Within the vault and on either end of the fault trace zone, 72-inch-diameter ball joints and slip joints will be installed that will accommodate pipeline displacement during a seismic event.
- For the crossing under I-680 at Trace A, about 400 feet of 78-inch-diameter welded steel pipe will be installed in an existing, unused corrugated metal pipe.
- About 1,450 feet of additional new 78-inch diameter welded steel pipe will connect the existing and new segments between the two vaults, and will be buried.

BDPL No. 4:

- About 400 feet of new 80-inch steel liner will be installed inside BDPL No. 4 at Hayward Fault Trace C.
- BDPL No. 4 will be encased with concrete outside the existing slip joint vault at Hayward Fault Trace B.
- Modifications to the existing slip joint vault will

be made including enlarging BDPL No. 4 pipe penetrations in the vault, new drainage systems, new roof panels, and adjustments to the existing slip joint.

- Modifications to the existing BDPL No. 3 (to be abandoned in place) to collect and divert water from the area and prevent the undermining of the new BDPL No. 3.
- About 400 feet of new 90-inch diameter welded steel pipe will be installed at Trace A of the Hayward Fault.
- Relocation of the following utilities: two Alameda County Water District water pipelines, one Union Sanitary District sewer pipeline, one conduit of AT&T phone lines, and one six-inch diameter PG&E gas pipeline.

CUW36301 - SCADA System - Phase II (Completed)

The project primarily consists of:

- Establish a common software platform and migrate all elements to this platform.
- Connect existing flow meters and new pressure transmitters, and provide communication to SCADA master station at five major Bay Area Water Supply and Conservation Agency (BAWSCA) customer sites.
- Install pressure transmitters, perform piping modifications, and provide communication to SCADA master station at seven existing regulating valves in the City of San Francisco distribution system.
- Install new flow and pressure monitoring devices at 23 key locations in the City distribution system.

CUW36801 - BDPL Reliability Upgrade - Tunnel (Completed)

- The tunnel extends 5 miles under San Francisco Bay and is adjacent to the marshlands between the vicinity of the Ravenswood Valve Lot and the Newark Valve Lot. The tunnel will be constructed with a Tunnel Boring Machine (TBM). The final tunnel lining will consist of a 9-foot diameter welded steel pipeline. The tunnel will terminate on each end with vertical shafts and a connection to the BDPL Nos. 1, 2, and 5 piping manifolds. The two piping manifolds are provided under the BDPL Reliability Upgrade - Pipeline Project. The

tunnel spoils are anticipated to be used as part of the conversion of adjacent salt ponds to marshland. The portion of the existing BDPL Nos. 1 and 2 that are replaced by the tunnel will be capped on each end and will be abandoned in place.

- Two facilities are proposed to be added to the original scope of work and are necessary to ensure the project will meet LOS goals:

1) SCADA Communications system at Newark Valve Lot

This added scope provides for the installation of a SCADA communications system and integrating such system into the existing water quality monitoring equipment located in the Newark Valve Lot Control Building. The work consists of installing communications equipment, telephone line, wires, conduits, and electrical cabinets.

2) 42-inch diameter Bay Division Pipeline No. 2 (BDPL2) Bypass

The supply from the Newark Valve Lot to the City of Hayward is currently being fed from both Bay Division Pipelines (BDPL) No. 1 and No. 2. Upon the completion of the Bay Tunnel Project, Hayward supply will be fed only by BDPL2. BDPL2, built in the mid-1930s, is a mixture of reinforced concrete cylinder pipe and wrought steel pipe. Thus, with the current scope of the Bay Tunnel project, the reliability of the Hayward service line could be reduced when the project is completed.

The scope of work for this change will provide for the installation of 640 linear feet of new 42-inch diameter welded steel pipe, replacing a portion of BDPL2, thereby increasing the reliability of the Hayward service.

CUW36802 - BDPL Reliability Upgrade - Pipeline (Completed)

The project primarily consists of:

- In the East Bay, 7 miles of 72-inch-diameter pipe will be constructed between the Irvington Portal and the Newark Portal of the new Bay Tunnel. On the Peninsula, 9 miles of 60-inch diameter pipe will be constructed between the Ravenswood Portal of the new Bay Tunnel and the portal of the Pulgas Tunnel.

- A seismically resistant crossing of the Hayward Fault will be constructed. The crossing will

include a new crossover valve vault on each side of the fault. The valves will be hydraulically actuated and will include emergency batteries. The pipe between the vaults will be higher strength and will be installed on a special foundation or trench section.

- Isolation valves and an interconnecting pipe manifold will be constructed at each portal of the new Bay Tunnel. The facilities will include new or rehabilitated control buildings with new emergency generators.

- New crossover valves between BDPL Nos. 2 and 5 will be installed at a location in Redwood City. The crossover facility will include a new or rehabilitated control building and connections for a portable emergency generator.

- A new throttling valve will also be added on BDPL No. 5 at the Pulgas Valve Lot. The throttling valve will include a new or rehabilitated control building.

- The project originally included underground concrete vaults for crossover facilities at Newark, Ravenswood, and Redwood City Valve Lots. The current project eliminates the concrete vaults and directly buries the valves with full access to valve actuators at these facilities.

CUW36803 - BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2 (Completed)

This project is 100 percent complete and has been closed out. The project includes relocation of approximately 600 feet of each pipeline (BDPL Nos. 1 and 2) at the BART/railroad crossings. The pipe segments to be relocated will be installed inside new casings that will be placed by the construction contractor doing the other development work in the area. The encased pipes are being installed in accordance with a utility agreement between the City of Fremont and the SFPUC.

CUW38001 - BDPL Nos. 3 & 4 Crossovers (Completed)

The three proposed crossover facilities are located near the Guadalupe River in Santa Clara, near Barron Creek in Palo Alto, and near Bear Gulch in Atherton. The facilities include vaults that are largely below-ground, with only the top 30 inches exposed. They are very similar to one another,

consisting of four mainline valves and a crossover valve. Emergency engine generators will be included as an optional bid item.

CUW38901 - SFPUC/EBMUD Intertie (Completed)

The project primarily consists of:

- Providing new 36-inch-diameter piping and valving at the Newark Turnout to provide an additional connection between BDPL Nos. 1 and 2 to the existing City of Hayward system.
- Using the existing City of Hayward system for conveyance and providing six new valves for isolation.
- Providing 1.3 miles of new 36-inch-diameter pipe to connect the City of Hayward system to the EBMUD system and providing a new pump station along this alignment.

CUW39301 - BDPL No. 4 Condition Assessment PCCP Sections (Completed)

- This project is 100 percent complete and has been closed out. This project includes a detailed condition assessment of the two PCCP segments along BDPL No. 4. The first reach of concern (Reach 1) is 8.6 miles long and 96-inches in diameter. The second reach of concern (Reach 4) is 8.0 miles long and 84-inches in diameter. The condition assessment consists of an electromagnetic survey, seismic risk analysis, corrosion survey, visual inspection, and field investigations.
- The assessment identified six reaches of pipe (144 feet total out of 16 miles) that are potentially distressed. During initial investigations, the condition of one distressed pipe segment (Pipe 1558) was determined visually to be particularly deteriorated, and immediate emergency repair was recommended. The project funded and completed emergency repair using post-tension exterior tendon repair for this segment. For the other five potentially distressed pipe segments that were identified using electromagnetic survey, and determined to be of lower priority, recommendations were made for future excavation to confirm pipe condition in these areas, and repair if needed. A number of future follow-up investigations were recommended, including monitoring of groundwater acidity for a

period of one year in the area of Edgewood Road and additional excavations of lower priority pipe pieces. Any additional required repairs will be scheduled based on urgency and funded through the Water Enterprise's Repair and Replacement (R&R) Program.

CUWBDP0101- WSIP Closeout - Bay Division

- **Site Drainage and Pipe Coating Repairs** - This sub-project will focus on providing a drainage system solely within SFPUC's Right-of-Way to address an erosion issue that developed after the construction of the CUW35302 Seismic Upgrades of BDPL Nos. 3 & 4. In addition, this sub-project will include repairs to coatings on the pipe and pipe supports of the Bay Division Pipeline (BDPL) No. 3 to address issues that developed inside the articulated vault after construction was completed. The sub-project includes design, construction, and management of the drainage system work.

- **Bay Tunnel Warranty Inspection and BDPL 1 & 2 EIR Mitigation** - This sub-project advances the planning for a decommissioning study of the existing BDPL Nos. 1 and 2 until such time that the funding for a new Water 10-Year Capital Improvement Project (CIP) to further study mitigation alternatives and pursue removal of the BDPL Nos. 1 and 2 within the Don Edwards San Francisco Bay National Wildlife Refuge becomes available in FY2020-21.

- **Hydro-seeding at Bay Tunnel Project** - The scope of this sub-project provides for monitoring of hydro-seeded areas, removal of noxious weeds, and potentially re-seeding some of the areas at the tunnel portals in Menlo Park and Newark if the storm water performance objectives are not met.

- **Newark Valve Lot Additional Gravel Placement** - The Bay Tunnel Project design plans call for a portion of the Newark Valve Lot to be landscaped and hydro-seeded. However, Operations staff requested that gravel be placed in this area since it will be a high traffic area during shutdowns and other maintenance work. Accordingly, this sub-project provides for the purchase and placement of the gravel.

- **Corrosion Protection for Valve E50U** - The E50U Valve was installed in 2011 as part of the CUW36802 BDPL Reliability Upgrade - Pipeline

Project. Immediately prior to the Bay Tunnel Project in-service/commissioning date in early Fall 2015, the Bay Tunnel Contractor completed the flanged connection of the manifold to the existing E50U Valve. However, during the installation and testing of the new flanged connection, the Bay Tunnel Contractor discovered an inconsistency in the corrosion protection isolation system of the existing valve E50U (high corrosion potential). It was decided to not authorize a Change Order to fix the corrosion problem of the E50U Valve at that time due to the risk of high cost delays to the Bay Tunnel Project, if leaks were to occur after the solution was implemented. Accordingly, this sub-project includes excavating and shoring the area around the valve, and removal of one bolt at a time for testing, and replacement if necessary. A gasket will be purchased and may be installed if there are leaks that develop after the bolts are removed, cleaned, and replaced.

• **Ventilation and Sump Pump Systems Installation.** This sub-project provides improvements for inspection, monitoring and maintenance associated with the construction of the CUW35302 Seismic Upgrades of BDPL Nos. 3 and 4. The BDPL No. 3 pipe, slip joint, ball joints and pipe supports and seismic monitoring equipment inside the articulated vault require on-going inspection, monitoring and maintenance. The type and frequency of inspection and maintenance were not well defined during the design phase; it is now clear that a fixed ventilation system is required for the BDPL No. 3 vault. Furthermore, the BDPL No. 4 expansion joint vault also requires access for inspection and monitoring; installation of a sump pump is required to remove water from the vault prior to inspections. Accordingly, the scope of this sub-project is to install a fixed ventilation system and a sump pump system to eliminate the need for removing access hatches and installing temporary fans and sump pump prior to accessing the vaults for frequent inspection and maintenance needs.

PENINSULA REGION

CUW35401 - Lower Crystal Springs Dam

Improvements (Completed)

The project consists of:

- Spillway modifications that include widening the spillway, constructing two bridge piers within the spillway to accommodate rebuilding of a San Mateo County Bridge, removing the existing timber stop-log system, constructing a new weir system within the spillway, installing access cat-walks for operation and maintenance, and eliminating water ponding on top of the dam.
- Parapet wall modifications that include increasing the height of the wall that is located on top of the upstream face of the dam and increasing the height of the approach walls to the spillway.
- Stilling basin modifications at the base of the spillway that include removing the existing basin, constructing a new larger basin, and adding downstream riprap protection at the toe of the basin.

CUW35601 - New Crystal Springs Bypass Tunnel (Completed)

The project consists of:

- A 4,200-foot long tunnel with 8-foot diameter welded steel liner.
- Vertical shafts on each end of the tunnel to accommodate a tunnel boring machine and future maintenance. The southern shaft will include a connection to the existing Crystal Springs Bypass Pipeline; the northern shaft will tie into the southern ends of both Crystal Springs Pipeline No. 2 and Sunset Supply Line.
- New isolation valves and valve vaults.
- Standby power near valve vault G40.

CUW35701 - Adit Leak Repair - Crystal Springs/Calaveras (Completed)

The project consists of :

- Crystal Springs Outlet Tower No. 1: repairing leaks inside the tower, blasting and recoating piping and valves, replacing roof, structurally retrofitting the access footbridge, and installing a marine hatch at the tower drain.
- Crystal Springs Outlet Tower No. 2: installing a marine hatch at the tower drain.
- Calaveras Outlet Tower: installing a dewatering pump, replacing a deteriorated valve actuator, and providing ladder fall protection.

- San Antonio Outlet Tower: installing a dewatering pump and repairing leaks inside the tower.

CUW36101 - Pulgas Balancing - Inlet/Outlet Work (Completed)

The project consists of new inlet and outlet piping designed to direct the path of the water in such a manner as to promote better mixing. The shutdowns associated with construction of these improvements provided an opportunity to perform a condition assessment of the reservoir interior that has been used to help identify work associated with CUW36103 - Pulgas Balancing Reservoir - Structural Rehabilitation and Roof Replacement project. This project was successfully completed in May 2006.

CUW36102 - Pulgas Balancing - Discharge Channel Modifications (Completed)

The project consists of raising the channel walls, repairing concrete cracks and exposed reinforcing steel, strengthening and interconnecting the channel floor sections, and strengthening the wall near the Pulgas Tunnel as needed. The project will restore the Discharge Channel capacity for accommodating flow up to 250 mgd.

CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement (Completed)

The project consists of the seismic retrofit of the walls, installation of a new steel frame roof, and repair of concrete cracks and exposed reinforcing steel. The project scope also includes installing a new ventilation system and sampling ports, replacing utility piping, and upgrading the electrical system.

CUW36104 - Pulgas Balancing - Laguna Creek Sedimentation (Completed)

This project consists of the execution of the Laguna Creek Habitat Management and Revegetation Plan. This is a mitigation measure for the Non-WSIP Pulgas Dechlorination Facility Project, which involves the restoration of the Laguna Creek Sedimentation Basin, a 6-8 acre catchment basin that provides habitat for the San Francisco Garter Snake and the California Red Legged Frog. In coordination with regulatory

agencies, a strategy was developed to accomplish this habitat restoration, and to have it measured under the Habitat Reserve Program (HRP). This project was closed in December 2007 and combined with Project CUW38802-Habitat Reserve Program (HRP).

CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility (Completed)

The project consists of various improvements to the dechloramination and pH control facilities that are necessary to address immediate compliance issues. Anticipated improvements include modifications to the flow measurement and control systems, and to the various process control and chemical feed systems.

CUW36501 - Cross Connection Controls (Completed)

The project consists of providing improvements at 304 different sites to address potential cross connections. The work varies from site to site due to specific site conditions. The major work elements typically include: Install air gaps at blow-off locations and at air valves; install backflow prevention devices; reconstruct or raise existing vaults; install new vault covers; replace existing air valves; and/or modify, relocate, or remove existing blow-off facilities.

CUW36601 - HTWTP Short-Term Improvements (Demo Filters) (Completed)

The project consists of retrofitting two filters and performing full-scale performance demonstration testing of the retrofitted filters. The project was successfully completed in November 2006.

CUW36602 - HTWTP Short-Term Improvements - Remaining Filters (Completed)

This project consists of filtration modification to eight of the ten existing filters, replacement of effluent control valves and backwash supply valves, provision for a filter to waste system, installation of new underdrains and media, and seismic retrofit of basin walls. Combined with CUW36603 - HTWTP Short-term Improvements - Coagulation & Flocculation project.

CUW36603 - HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters (Completed)

The project consists of improvements to both the coagulation and flocculation systems. The coagulation improvements include restoring and improving operation of the pumped-jet flash-mix system, increasing capacity of the flash-mix pumps, providing the pumps with variable speed controls to improve efficiency, providing an automated dilution water system, and reconfiguring the chemical injectors to improve performance. Flocculation improvements include reconfiguring the baffling system, adding new mechanical mixers with variable speed controls, and seismically retrofitting the walkways and basin walls.

CUW36701 - HTWTP Long-Term Improvements (Completed)

The project consists of seismic and hydraulic improvements in various treatment units and expansion of the filtration process capacity by the addition of five new filters. In addition, a new 11 million gallon Treated Water Reservoir will be built to replace the two existing treated water reservoirs. The project also includes improvements to the sludge handling and washwater systems and provides a new additional washwater tank to enhance the plant's performance. Additional improvements are also planned for the electrical system, including a new substation, switchgear, and motor control center. The project also includes improvement to key valves and pipelines conveying the raw water supply to the Plant and treated water to the distribution system.

CUW36702 - Peninsula Pipelines Seismic Upgrade (Completed)

The scope of this project includes geotechnical investigations to characterize the Serra Fault in the vicinity of the pipelines and to confirm assumptions about sub-surface conditions along the length of the pipelines (SAPL2 and SAPL3 from HTWTP to San Pedro Valve Lot, SSBPL from HTWTP to Capuchino Valve Lot, and Sunset Supply Pipeline (SSPL) from Capuchino Valve Lot to San Pedro Valve Lot). In addition,

hydraulic modeling has been performed to review system/facility requirements to meet system goals. The objectives of the investigations were: 1) to determine the potential fault offset at the Serra Fault crossings and the potential response from the three pipelines to these offsets, and 2) to determine potential for pipeline rupture due to displacement from liquefaction, landslides, and other seismically-triggered hazards along the pipeline alignments. The extensive geotechnical and modeling analyses performed to date have been carefully reviewed to identify specific project recommendations.

The refined project scope (Phase 1) currently includes the following components at five locations on the San Francisco Peninsula:

- Colma Site - Replacement of an approximately 700-ft segment of SAPL2
- South San Francisco Site - Replacement of an approximately 720-ft segment of SAPL2
- San Bruno North Site - Stabilization of SAPL2 where it extends through a tunnel
- San Bruno South Site - Replacement of an approximately 1,170-ft segment of SAPL2 and an approximately 1,050-ft segment of SAPL3; and
- Millbrae Site - Replacement of an approximately 900-ft segment of SSBPL

A common staging area is planned to be located at SFPUC Baden Valve Lot in South San Francisco on El Camino Real.

Phase 2 of the project will include installation of two new isolation valves near the Baden Valve Lot on SAPL No. 2 and No. 3 in the City of South San Francisco. The WSIP construction contract will include both Phases 1 and 2.

Phase 3 has been identified as a non-WSIP project, and includes condition assessment and improvements to SAPL2, installation of new isolation valves, and the potential addition of flexible connections along the alignment within the City of San Francisco.

CUW36901 - Capuchino Valve Lot Improvements (Completed)

The project consists of replacing two existing isolation valves, providing new electric actuators for valve operation, performing concrete crack repair to prevent water leakage into the vault, providing new instrumentation and control

systems for valve operation and pressure monitoring, and relocating the existing electrical and instrumentation systems outside the vault.

CUW37101 - Crystal Springs/San Andreas Transmission Upgrade (Completed)

The project consists of improvements to facilities necessary to transport water from Upper Crystal Springs Reservoir, through the lower Crystal Springs Reservoir to San Andreas Reservoir, and ultimately, to the Harry Tracy Water Treatment Plant (HTWTP) Raw Water Pump Station. Specifically, improvements will be made to the Upper Crystal Springs Dam discharge culverts, the Lower Crystal Springs outlet structures, the Crystal Springs Pump Station (CSPS), the Crystal Springs/San Andreas Pipeline, and the San Andreas outlet structures.

CUW37801 - Crystal Springs Pipeline No. 2 Replacement (Completed)

The project consists of:

- Seismic reliability improvements, which include replacing or relocating a total of 1.7 miles of pipe at 12 locations, sliplining 3.5 miles of pipe, retrofitting pipe bridge pier supports at two creek crossings, providing a new connection at the Crystal Springs Pump Station, and providing a connecting segment with a blind flange for later connection to the New Crystal Springs Bypass Tunnel.
- Facility improvements, which include installing fences and enclosures for exposed facilities, and concealing exposed portions of pipe.
- Upgrading the cathodic protection system along the length of the pipeline.

CUW37901 - San Andreas Pipeline No. 3 Installation (Completed)

The project consists of installation of 4.4 miles of 36-inch-diameter pipe from San Pedro Valve Lot in Daly City to Merced Manor Reservoir in San Francisco. There will be three jack and bore crossings along 19th Avenue and John Daly Boulevard. Work will also include installation of five customer service connections, a new cathodic protection system along the length of the new pipeline, three interconnections to the San Andreas Pipeline No.2, various valves, and a flow

meter.

CUW39101 - Baden and San Pedro Valve Lots Improvements (Completed)

This project consists of upgrades to valve vaults, valves, and piping in the Baden Valve Lot and the San Pedro Valve Lot. It also includes the installation of a pressure reducing valve and associated system valving to allow transfer of a portion of the flow from the HTWTP high-pressure zone to the low-pressure zone during emergencies.

CUWPWI0101- WSIP Closeout - Peninsula

• LCSD Stilling Basin Modifications & Dissipation Structure Riprap

- This sub-project is provided in response to concerns that fish may be "trapped" in the Lower Crystal Springs Dam (LCSD) stilling basin during low flow summer periods, and that high flow discharges from the new LCSD dissipation structure and potential high water levels in Pool 2 may cause erosion of the bank adjacent to the dissipation structure. The dissipation structure includes 60-inch diameter pipes with a maximum flow of 600 cubic feet per second (cfs) each and two 8-inch diameter pipes with maximum flow of 7 cfs each. During flow testing of the dissipation structure, released water could be observed flowing over the dissipation structure, potentially eroding the bank adjacent to the structure. It was also observed that during summer periods, of low flow in the channel downstream of the stilling basin, fish trapped in the basin were dying due to warm water temperatures. The purposes of this sub-project are to hydraulically connect the stilling basin with Pool 2 in order to allow fish to escape the basin in summer, and to add rip-rap behind the dissipation structure to prevent erosion. Specifically, this sub-project consists of:

- o A new deeper channel between the dissipation structure and the Pool 2, which would prevent fish from being trapped in the stilling basin,
- o Installation of a new SCADA controls to the existing 8-in discharge pipeline and re-routing one line to the stilling basin,
- o Installation of additional rip-rap around the dissipation structure,
- o Installation of a new 24-inch HDPE pipeline

through an existing abandoned 60-inch pipe directed to the stilling basin

- o Coordination and facilitation of access for a piezometer drilling contractor during periods of concurrent work in the stilling basin

- o Deletion of landscaping around the new Crystal Springs Pump Station

- o Addition of tree, shrub and grass plantings along the creek bank in accordance with the approved re-vegetation plan

- **LCSD Valve H53/ Pipeline Investigation & Fisheries Release Valve** - As stipulated by the US Army Corps of Engineers 404 permit and the associated biological opinion by NOAA's National Marine Fisheries Service (NMFS) covering the SFPUC activities at the Crystal Springs Pump Station (CSPS), the SFPUC is to take measures to protect the threatened Central California Coast (CCC) steelhead present in San Mateo Creek at CSPS site. One measure requires the release of fresh water at a rate of 3 to 17 cubic feet per second (cfs) depending on the season in recorded dry and wet years. This sub-project will utilize modification of an existing pipeline to release the required flows to the LCSD stilling basin feeding San Mateo Creek. Specifically, this sub-project consists of:

- o Condition assessment of the existing 60-in diameter pipeline from Valve H-53 to the stilling basin. In addition, valve H-53 will be exposed and visually inspected to determine its condition, requiring excavation and shoring of a pit approximately 20 feet long by 20 feet wide by 20 feet deep.

- o Depending on the verified condition, viable alternatives, including abandonment of the option to use H-53 pipeline, will be evaluated.

- o The approved option will include a SCADA controlled 12-inch valve installed at the discharge end of the pipeline. Depending on the condition of the pipeline, the approved option may also include repairs to the pipeline lining. Options may also include slip-lining the existing line with a smaller diameter pipeline such as 12 to 24-in diameter flexible polypropylene pipe.

- o Use of a temporary pipeline "line stop" and associated shoring upstream of Valve H-53 to allow for potential installation of a permanent blind flange.

- o Replacement of leaking plug valves that discharge from an existing concrete vault to the stilling basin with new knife gate valves.

- o Installation of new flow control valves, isolation valves and appurtenances for Pool 2.

- o Connections to the existing 72-inch pipeline using hot taps.

- o Construction of a new concrete walkway from the access road to the existing stairs at the flow dissipation structure adjacent to the stilling basin.

- **New Crystal Springs Bypass Tunnel Electrical Modifications** - The New Crystal Springs Bypass Tunnel (CUW35601) was commissioned in July 2011, and the project administratively closed in August 2012. Various inspections of the above ground facilities discovered excessive groundwater intrusion and resultant corrosion of equipment and electrical components. This sub-project will develop a thorough documentation of the above ground facilities at the north and south shafts, and design and implement repairs as warranted. Possible repairs may include replacement of damaged equipment and electrical components, water proofing of the affected vaults, and rechanneling of surface runoff as necessary. Preliminary inspections identified the following in the South Shaft: groundwater seepage into the venturi meter and valve G32 vaults through pipe/conduit wall penetrations, resulting in coating failure and localized corrosion. In the North Shaft, preliminary investigations identified surface runoff is entering electrical boxes. In addition, groundwater is seeping through wall penetrations into G36 and G38 vaults. Due to the high moisture, some electrical switches and two actuators failed and required replacement. This sub-project developed a thorough documentation of the above ground facilities at the north and south shafts and designed and implemented repairs as warranted. Repairs included replacement of damaged equipment and electrical components, water proofing of the affected vaults, and rechanneling of surface runoff as necessary. This subproject is 100% complete and has been closed out.

- **Closeout of DSOD Permit Applications for LCSDI and CSSA Projects** - California Department of Water Resources, Division of

Safety of Dams (DSOD) issued Alteration Permits allowing the start of construction of CUW35401, Lower Crystal Springs Dam Improvements (LCSDI) Project (Application No. 10-6) and the construction of CUW37101, Crystal Springs / San Andreas Transmission Upgrade (CSSA) Project (Application No.10-10). In June 2015, DSOD issued an approval of the completed work and requested the SFPUC to submit the final documentation of each project. Under this sub-project, the following information and documents will be extracted from the project files and submitted in a format acceptable to DSOD: affidavit of actual costs of construction and design; full size as-built drawings stamped and signed by a California registered Civil Engineer; and final concrete testing summary reports.

- **Coordination with San Mateo County Bridge Construction over LCSI** - The implementation of the CUW35401 Lower Crystal Springs Dam Improvement (LCSDI) Project required the demolition of an existing San Mateo County (SMC) Bridge that spanned over the LCSD crest. With the completion of the LCSDI Project, SMC awarded the construction contract for the new bridge and gave notice-to-proceed to the construction contractor in January 2016. To support this, SMC and the SFPUC executed a Memorandum of Understanding outlining the roles and responsibilities and expectations of both organizations. Accordingly, this sub-project will support the coordination between the SFPUC and SMC Bridge Project team. Typical activities may include response to relevant Requests for Information (RFI) such as existing site conditions, existing dam design, coordination with SFPUC Operations and Watershed groups; field inspection of placement of the bridge piers over the dam and the construction of the SFPUC funded catwalk; attendance at construction meetings; and activities concerning the water quality in Lower Crystal Springs Reservoir, security measures, and other aspects of SFPUC assets.

- **Harry Tracy Water Treatment Plant (HTWTP) Improvements.** The Harry Tracy Long-Term Improvements Project (CUW36701) was completed in 2014. Since 2014, the following needs were identified to address construction

issues and improve operations at the plant to fully meet the LOS goals and objectives:

- o Automate the 12-inch gate valve at the High Rate Clarifiers' filter to waste manhole to eliminate the need for Operations to manually operate the valve on a frequent basis
- o Modify Sludge Tank No. 1 piping to eliminate cavitation in the washwater pumps
- o Upgrade the filters of three (3) emergency generators from passive filters to active filters to increase the effectiveness of the exhaust filtration and to reduce the need for Operations to constantly clean the filters
- o Repair leaks in the filter gallery channels where stainless steel angle plates were added to support several concrete walls
- o Automate flushing of the sludge transfer pumps and piping to eliminate the need for Operations to manually flush on a frequent basis
- o Replace and relocate failed variable frequency drives (VFDs) for the wash water and sludge transfer pumps to address an over-heating issue
- o Install double containment for the diesel fuel supply lines for the exterior generator to protect against leaks into the environment
- o Provide training and programming modifications to the Raw Water Pump Station switchgear equipment to enable remote SCADA control
- o Install vibration control monitoring system on the electrical panels at the Raw Water Pump Station to replace the existing obsolete system
- o Evaluate/Assess condition of failed mixers in the equalization basin

- **Crystal Springs/San Andreas Pipeline (CSSA) Erosion Repairs.** The heavy winter storms of 2017 exacerbated erosion at two (2) watershed culvert locations, OW-13 and OW-18, along the CSSA Pipeline. Erosion has caused the CSSA Pipeline to be exposed and potentially undermined. The scope of this sub-project is to repair the erosion with systems consistent with the requirements of permitting agencies such as the State Water Resources Control Board.

SAN FRANCISCO REGIONAL REGION

CUW30103 - Regional Groundwater Storage and Recovery

The goal of the project is to provide up to 7.2 million gallons per day (mgd) of dry year water supply over 7.5 years. The original project design included the construction of up to 16 groundwater wells and well stations in the South Westside Basin to be connected to three wholesale customers on the Upper Peninsula and the SFPUC transmission system to achieve the water supply goal. Phase 1 included the installation of 13 well stations to produce approximately 6.2 mgd, and the original scope of Phase 2 included construction of 2 to 3 additional well stations, based upon well yield. Due to difficulties with siting well stations in the central portion of the groundwater basin, Phase 2 has been modified to install up to 3 test wells (Ludeman North, Ludeman South and Centennial Trail), complete the South San Francisco Main well and pipeline, and complete other Phase 1 scope items, including chemical system monitoring, sampling and storage at various sites. The Phase 2 test wells will not be converted to production wells at this time, but will allow for determination as to whether the identified sites could be viable future production wells, and will provide valuable information related to water quality and potential pumping capacities that can be used for future planning and decision making.

CUW35801 - Sunset Reservoir - North Basin (Completed)

This project consists of:

- Seismic rehabilitation, which includes stabilization of the soil dam embankment; a retrofit of the walls and roof using seismic joints, shear walls, diagonal bracing, and struts; and foundation improvements.
- General rehabilitation, which includes repairing deteriorated concrete, replacing part of the reservoir lining material, replacing inlet piping, installing security fencing, upgrading the landscaping, and other miscellaneous site improvements.

CUW37201 - University Mound Reservoir - North Basin (Completed)

This project consists of:

- Seismic rehabilitation of the reservoir walls and roof using seismic joints, shear walls, diagonal

bracing, and struts and foundation improvements. A geotechnical investigation was conducted that verified that the reservoir embankments are not subject to seismically induced failure.

- General rehabilitation, which includes repairing deteriorated concrete; replacing the reservoir lining material; replacing inlet/outlet, drain, and overflow piping; replacing outlet and drain valves; and performing landscaping and other miscellaneous site improvements.

SUPPORT PROJECTS

CUW36302 - System Security Upgrades

The purpose of this project is to develop and integrate security components at critical water system facilities including those identified in previous vulnerability assessments and to ensure that security functions such as deterrence, detection, assessment, delay, and response will be effective. As part of this project, SFPUC Security has evaluated all WSIP projects. The project includes the identification of all necessary security components including security fencing, intrusion detection, and vehicle barriers for applicable WSIP projects. The project provides for the necessary planning and design of these facilities, while the individual WSIP projects will fund the installation and construction of civil security work such as conduit lay out, fencing, and gate installation. This project will fund the furnishing and installation of Access Control and Alarm Monitoring System (ACAMS) and Digital Video Surveillance System (DVSS) equipment, and necessary security systems.

CUW38801 - Programmatic EIR (Completed)

A Program Environmental Impact Report (PEIR) has been prepared for the WSIP under the California Environmental Quality Act (CEQA). The WSIP includes a number of projects that will improve the Regional Water System with respect to water quality, seismic reliability, delivery reliability, and water supply. The PEIR will (1) identify and analyze, at a programmatic level, the potential environmental impacts of proposed system improvements, (2) describe and evaluate feasible alternatives to the proposed program,

and (3) propose mitigation measures.

CUW38802 - Bioregional Habitat Restoration

The Bioregional Habitat Restoration project was created to provide a coordinated and consolidated approach to compensate for habitat impacts that may result from implementation of the WSIP projects in the San Joaquin, Sunol Valley, Bay Division, and Peninsula Regions of the SFPUC Regional Water System. The previously approved scope of the Bioregional Habitat Restoration project included projects to preserve, enhance, restore, or create approximately 2,350 acres of tidal marsh, vernal pools, white alder riparian forest, sycamore alluvial woodland, arroyo willow riparian habitat, oak woodland and savannah, sage scrub habitat, serpentine grasslands, coastal live oak woodland, annual grasslands, and oak riparian forest.

The project includes design, environmental permitting, construction, construction management, maintenance and performance monitoring during a 3-year plant establishment period.

The wide variety of the types of impacts from WSIP projects resulted in the need for development of 18 compensation sites on SFPUC property and for contracting with 7 property owners to secure compensation on property outside the Alameda and Peninsula watersheds. There are 7 compensation sites on SFPUC property in the Alameda watershed with an average size of 250 acres, demonstrating a significant commitment to the continued protection of species habitat. Although the average size of the 11 Peninsula compensation sites is 15 acres, the projects have been strategically placed to best benefit the San Francisco garter snake and the fountain thistle. The increase in habitat compensation addresses mitigation for the fountain thistle and for changes in the Calaveras Dam Replacement Project.

Under the March 2014 Revised WSIP, some scope for the Bioregional Habitat Restoration project associated with Lower Crystal Springs Dam and long term monitoring and maintenance of the compensation sites was reduced. The remaining wetland development at Upper San Mateo Creek and Boat Ramp and most of the oak woodland

compensation for the Lower Crystal Springs Dam Improvement Project has been deferred until the operating elevation of the reservoir has increased, estimated to be around 2020. This work will be completed in the future by SFPUC Water Enterprise.

CUW38803 - Vegetation Restoration of WSIP Construction Sites (Completed)

The Vegetation Restoration of WSIP Construction Sites is a WSIP project that received Commission approval on October 9, 2012. This project is required to comply with the CEQA and resource agency permit requirements to restore and re-vegetate habitat areas temporarily impacted by construction at the various WSIP sites to preconstruction condition.

CUW38804 - Long Term Mitigation Endowment

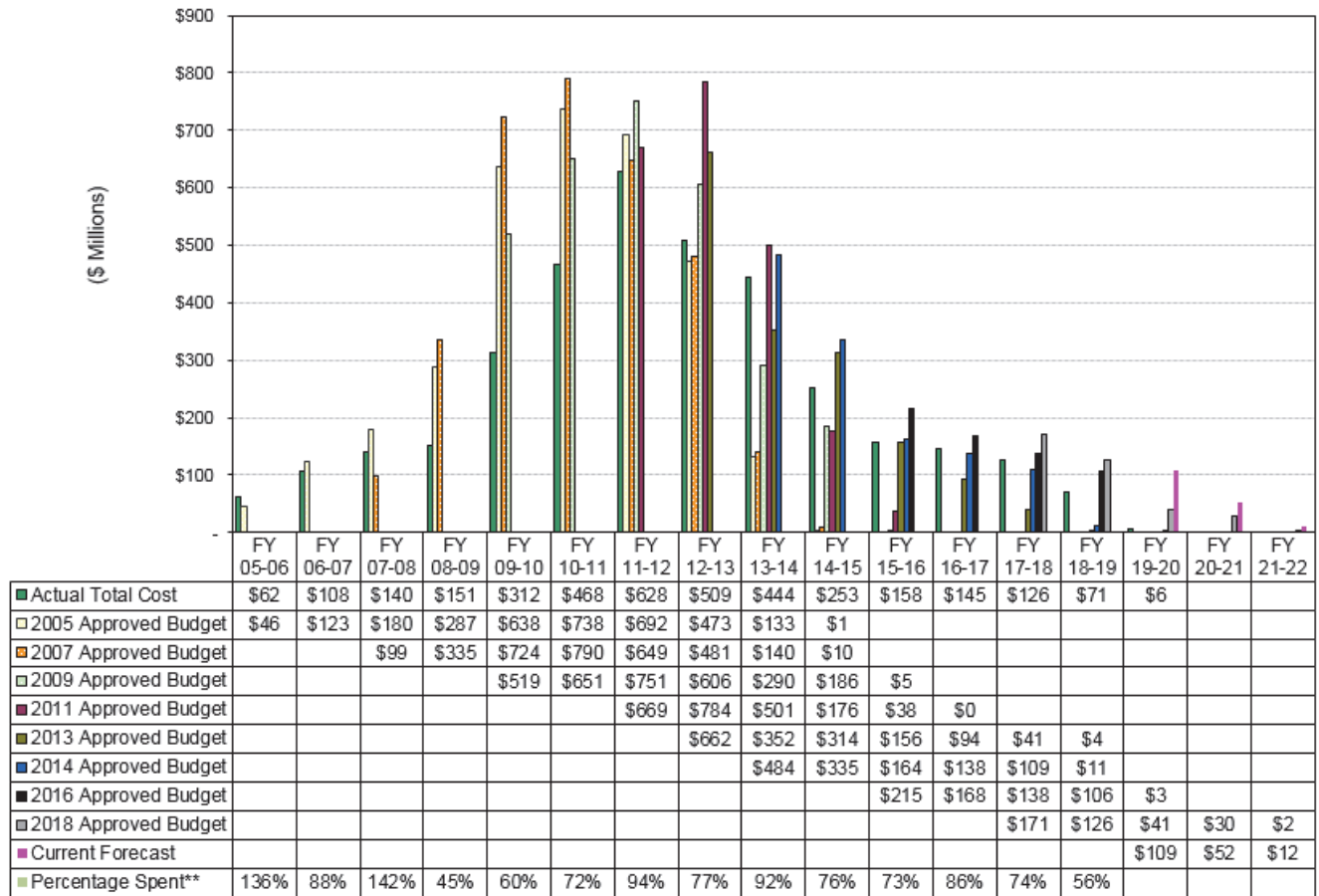
The scope of work and budget for this Long Term Mitigation Endowment was previously included and reported within the WSIP Regional project CUW38802 Bioregional Habitat Restoration; however, the office of the City Controller has established a separate project, specific for this endowment fund, in project CUW38804 Long Term Mitigation Endowment. This perpetual endowment fund, was required by the United States Army Corps of Engineers and California Department of Fish and Wildlife permits issued for WSIP projects. It provides a secure source of funds for the perpetual monitoring and maintenance of the Bioregional Habitat Restoration sites constructed in the SFPUC watershed.

CUW39401 - Watershed and Environmental Improvement Program

The Watershed and Environmental Improvement Program (WEIP) includes the comprehensive identification and protection of critical watershed lands and ecosystem restoration needs within the hydrologic boundaries of the Alameda Creek, Peninsula (San Mateo and Pilarcitos Creeks) and Tuolumne River watersheds, and prioritizes the protection and/or restoration of these lands. Projects under this program will protect source water quality, native species, and their habitat as well as identifying critical watershed lands for

protection through purchase of fee title or perpetual conservation easement. The program also supports projects that enhance public awareness and provide education opportunities related to water quality, water supply, conservation, and environmental stewardship. Consistent with the SFPUC Water Enterprise Environmental Stewardship Policy, a portion of the funding under the WEIP will be allocated to support projects that enhance public awareness and provide education opportunities related to water quality, water supply, conservation, and environmental stewardship issues. Accordingly, construction of the Southern Skyline Boulevard Ridge Trail Extension will be funded using a portion of the WEIP funds.

APPENDIX B. BUDGET AND EXPENDITURE HISTOGRAM*



All costs are shown in \$ Millions.

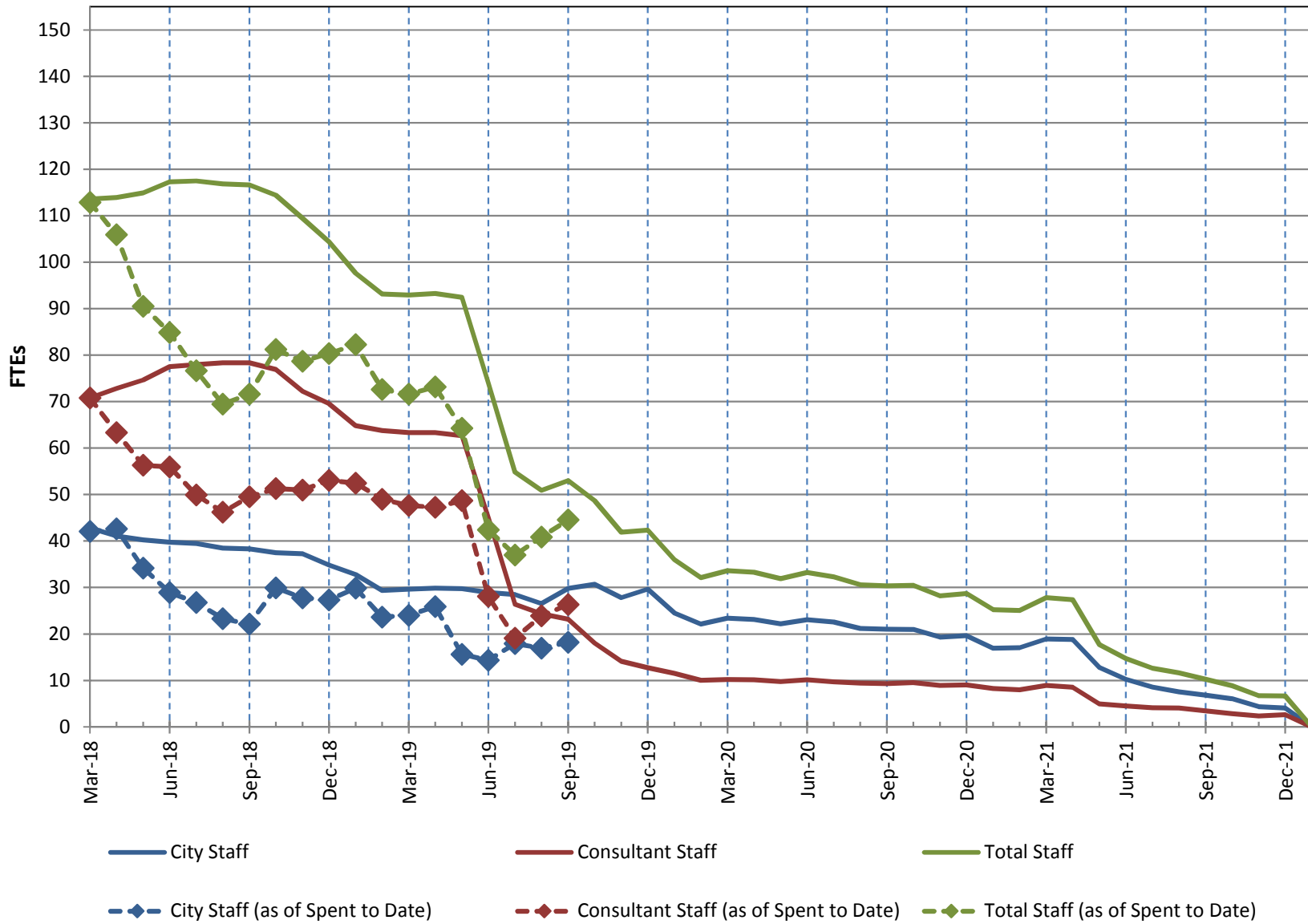
* The histogram does not reflect budget and expenditures prior to FY 2005-2006.

** Percentage Spent calculated as Actual Expenditures over the most current Approved Budget for each individual Fiscal Year.

Figure B: Annual Budgeted Spending Plans vs. Actual Expenditures

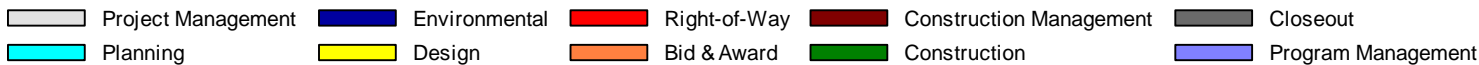
Figure B compares the spending plans associated with the various WSIP Approved Budgets to Actual Expenditures. It shows total annual expenditures from FY05-06 through Q1/FY19-20 and cost projections (Current Forecast) from FY19-20 through program completion currently forecast for June 2022. Actual annual expenditures have ranged from 45% to 142% of planned expenditures

Appendix C. WSIP Regional Program Staffing Plan

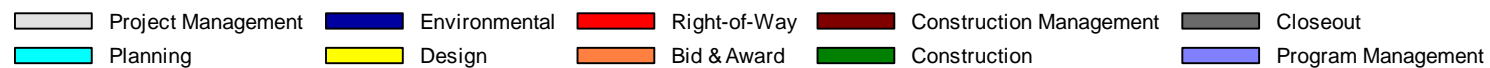
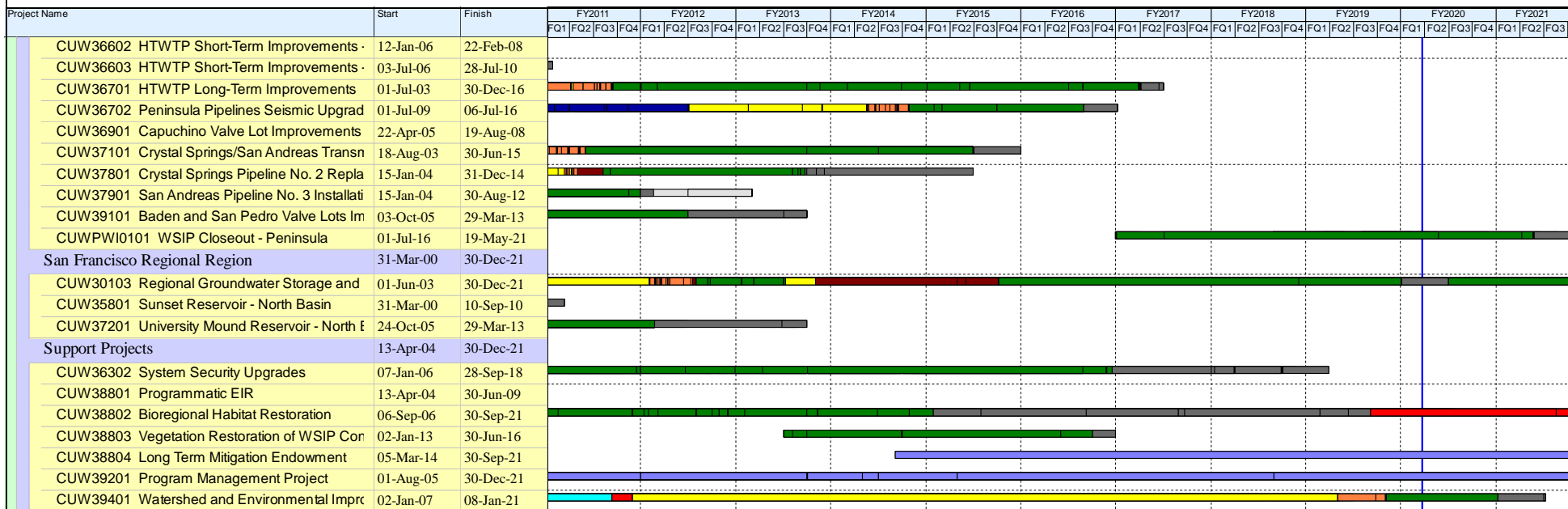


APPENDIX D. WSIP Approved Project-Level Schedule

Project Name	Start	Finish	FY2011			FY2012			FY2013			FY2014			FY2015			FY2016			FY2017			FY2018			FY2019			FY2020			FY2021				
			FQ1	FQ2	FQ3	FQ4	FQ1	FQ2	FQ3	FQ4	FQ1	FQ2	FQ3	FQ4	FQ1	FQ2	FQ3	FQ4	FQ1	FQ2	FQ3	FQ4	FQ1	FQ2	FQ3	FQ4	FQ1	FQ2	FQ3	FQ4	FQ1	FQ2	FQ3	FQ4	FQ1	FQ2	FQ3
Regional Improvement Projects			31-Mar-00			30-Dec-21																															
San Joaquin Region			01-Jul-02			20-Dec-19																															
CUW36401 Lawrence Livermore Water Quality I	02-Feb-04	31-Jul-13	[Gantt bar showing project phases]																																		
CUW37301 San Joaquin Pipeline System	19-Aug-02	31-Mar-16	[Gantt bar showing project phases]																																		
CUW37302 Rehabilitation of Existing San Joaqui	03-Jul-06	31-Oct-14	[Gantt bar showing project phases]																																		
CUW38401 Tesla Treatment Facility	01-Jul-02	30-Jan-15	[Gantt bar showing project phases]																																		
CUW38701 Tesla Portal Disinfection Station	01-Jul-02	29-Jun-07	[Gantt bar showing project phases]																																		
CUWSJI0101 WSIP Closeout - San Joaquin	20-Jun-16	20-Dec-19	[Gantt bar showing project phases]																																		
Sunol Valley Region			19-Dec-01			03-Nov-21																															
CUW35201 Alameda Creek Recapture Project	30-Sep-03	03-Nov-21	[Gantt bar showing project phases]																																		
CUW35501 Standby Power Facilities - Various Lt	11-Jul-02	22-Dec-10	[Gantt bar showing project phases]																																		
CUW35901 New Irvington Tunnel	19-Dec-01	31-Mar-18	[Gantt bar showing project phases]																																		
CUW35902 Alameda Siphon #4	19-Dec-01	28-Jun-13	[Gantt bar showing project phases]																																		
CUW37001 Pipeline Repair & Readiness Improv	21-Apr-03	16-Apr-09	[Gantt bar showing project phases]																																		
CUW37401 Calaveras Dam Replacement	03-Sep-02	20-Dec-19	[Gantt bar showing project phases]																																		
CUW37402 Calaveras Reservoir Upgrades	19-Nov-03	28-Jul-06	[Gantt bar showing project phases]																																		
CUW37403 San Antonio Backup Pipeline	17-Dec-03	30-Jun-16	[Gantt bar showing project phases]																																		
CUW38101 SVWTP Expansion & Treated Water	22-Apr-05	31-Oct-14	[Gantt bar showing project phases]																																		
CUW38102 SVWTP Calaveras Road	01-Feb-07	14-Dec-07	[Gantt bar showing project phases]																																		
CUW38201 SVWTP Treated Water Reservoir	15-Sep-03	02-Mar-07	[Gantt bar showing project phases]																																		
CUW38601 San Antonio Pump Station Upgrade	01-Jul-04	29-Jun-12	[Gantt bar showing project phases]																																		
CUWSVI0101 WSIP Closeout - Sunol Valley	01-Jul-16	30-Jun-21	[Gantt bar showing project phases]																																		
Bay Division Region			19-Dec-01			30-Jun-20																															
CUW35301 BDPL Nos. 3 & 4 Crossover/Isolator	06-Jan-03	31-Jul-09	[Gantt bar showing project phases]																																		
CUW35302 Seismic Upgrade of BDPL Nos. 3 &	22-Oct-04	30-Jul-18	[Gantt bar showing project phases]																																		
CUW36301 SCADA System - Phase II	22-Apr-05	28-May-13	[Gantt bar showing project phases]																																		
CUW36801 BDPL Reliability Upgrade / Tunnel	19-Dec-01	30-Aug-16	[Gantt bar showing project phases]																																		
CUW36802 BDPL Reliability Upgrade - Pipeline	19-Dec-01	31-Mar-16	[Gantt bar showing project phases]																																		
CUW36803 BDPL Reliability Upgrade - Relocatic	24-Apr-06	28-May-10	[Gantt bar showing project phases]																																		
CUW38001 BDPL Nos. 3 & 4 Crossovers	17-Feb-04	30-Jun-14	[Gantt bar showing project phases]																																		
CUW38901 SFPUC/EBMUD Intertie	24-Jun-02	20-Mar-14	[Gantt bar showing project phases]																																		
CUW39301 BDPL No. 4 Condition Assessment I	04-Aug-06	06-Feb-09	[Gantt bar showing project phases]																																		
CUWBDP0101 WSIP Closeout - Bay Division	06-Jul-16	30-Jun-20	[Gantt bar showing project phases]																																		
Peninsula Region			01-Nov-00			19-May-21																															
CUW35401 Lower Crystal Springs Dam Improve	01-Nov-00	28-Dec-12	[Gantt bar showing project phases]																																		
CUW35601 New Crystal Springs Bypass Tunnel	07-Jan-02	17-Aug-12	[Gantt bar showing project phases]																																		
CUW35701 Adit Leak Repair - Crystal Springs/Cr	01-Apr-05	31-Jul-08	[Gantt bar showing project phases]																																		
CUW36101 Pulgas Balancing - Inlet/Outlet Work	15-May-02	11-May-06	[Gantt bar showing project phases]																																		
CUW36102 Pulgas Balancing - Discharge Chanr	01-Apr-05	30-Jul-10	[Gantt bar showing project phases]																																		
CUW36103 Pulgas Balancing - Structural Rehab	03-Apr-06	28-Dec-12	[Gantt bar showing project phases]																																		
CUW36104 Pulgas Balancing - Laguna Creek St	31-Mar-06	31-Dec-07	[Gantt bar showing project phases]																																		
CUW36105 Pulgas Balancing - Modifications of tl	02-Apr-07	20-Mar-13	[Gantt bar showing project phases]																																		
CUW36501 Cross Connection Controls	01-Jul-03	30-Apr-09	[Gantt bar showing project phases]																																		
CUW36601 HTWTP Short-Term Improvements I	04-Sep-02	14-Nov-06	[Gantt bar showing project phases]																																		



APPENDIX D. WSIP Approved Project-Level Schedule








APPENDIX E. PROJECTS WITHIN BUDGET AND SCHEDULE

CUW35201 - Alameda Creek Recapture Project

Project Description: The scope of this project includes conveyance of the water to various existing storage sites within the Sunol Valley to the Sunol Valley Water Treatment Plant by addition of the following:

- Four vertical turbine pumps mounted on floating barges located in existing Pond F2.
- Flexible discharge pipelines which are connected between the new pipe manifold and the existing Sunol Pipeline to discharge the recaptured water to the SFPUC system.
- Throttling valves, a flow meter, and other electrical and general site improvements.

Region: Sunol Valley	Project Status: Design	Environmental Status: Active (EIR)
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Project Cost:		Project Schedule:	
Approved 	\$34.00 M	Approved Sep-03 	Nov-21
Forecast* 	\$34.00 M	Forecast* Sep-03 	Nov-21
Actual 	\$12.79 M	Project Percent Complete: 40.6%	

 Approved;  Actual Cost; * Forecast Status:  Meet Requirements  Need Attention  Exceed Limits

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	TBD	TBD	TBD	TBD

Progress and Status:

A meeting was held with the Alameda Creek Fisheries Workgroup to discuss the results of the third party independent review of the Groundwater/Surface water model and updates to the Recirculated Administrative Draft EIR. The Screencheck draft of the Recirculated Administrative Draft EIR was completed and comments were returned for incorporation.

Issues and Challenges:







The anticipated publication date for re-circulation of the draft EIR is December 2019. The project schedule will be re-evaluated once the re-circulated Draft EIR is published.



Current Condition of Pond F2 Access Road

CUWSVI0101 - WSIP Closeout - Sunol Valley

Project Description: The project includes miscellaneous improvements to ensure WSIP Level of Service (LOS) goals and objectives are fully achieved in the Sunol Valley Region. The work will be completed by means of six sub-projects: (1) JOC-60-14 - AS4 Carrier Water System Modifications will modify the chemical injection system of the Alameda Siphons No.4 Pipeline to overcome lack of water system volume and pressure needed to inject water treatment chemicals; (2) JOC-59-20 - Erosion Repairs at Pond F3 East will repair the existing outfall pipe erosion at Quarry Pond F3 East with new rockfill and restore the drain pipe. The outfall drainage system was originally installed as part of the San Antonio Backup Pipeline; (3) Sunol Valley Water Treatment Plant (SVWTP) Polymer Feed Facility will build a polymer feed facility that will serve all five sedimentation basins to optimize plant water production (only the portion of the facility cost attributable to basin No. 5 will be funded under the WSIP); (4) JOC-54-02 - Miscellaneous Work at Alameda West Portal (AWP), Irvington Portal (IVP), and San Antonio Backup Pipeline (SABPL) will install security doors at AWP, provide cathodic protection at IVP, refurbish uninterruptable power supply (UPS) at AWP and IVP, and install discharge pipe lateral supports, safety railings, ladder stiffening supports, and sunshades for electrical equipment at SABPL; (5) JOC-60-20 - NIT Water Quality Equipment Relocation will relocate water quality monitoring equipment from an underground vault to a dedicated building together with a pump to the building to provide the water for water quality monitoring; (6) JOC-60-23 - San Antonio Backup Pipeline Carrier Water System Modifications will modify the carrier water and chemical injection systems to ensure proper chemical injection.

Region: Sunol Valley	Project Status: Construction	Environmental Status: Completed (Various)
Project Cost:		Project Schedule:
Approved 	\$5.99 M	Approved Jul-16  Jun-21
Forecast* 	\$5.99 M	Forecast* Jul-16  Jun-21
Actual 	\$2.37 M	Project Percent Complete: 67.2%
		

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	Various	Various	Various	Various

Progress and Status:

Subprojects (1) JOC-60-14 and (4) JOC-54-02 were completed.

(2) JOC-59-20 Pond F3 East Erosion Repair - This subproject is part of WD-2855, Turner Dam Spillway Erosion Repair project (a non-WSIP project). During the reporting period, Sukut Construction completed all the work within the Turner Dam spillway. It is anticipated that DSOD will accordingly lift the reservoir restriction for the San Antonio Reservoir. Contractor will start performing the Pond F3E Erosion Repair in the next reporting period. Final Completion (FC) is forecast to be 12/23/19. Subproject Completion on 6/30/20.

(3) SVWTP Polymer Feed Facility - Design drawings to set up the Mobile Pilot Plant (MPP) were completed during the reporting period and were provided to CalState (JOC Contractor). NTP for CalState to start the work is anticipated in the next quarter. Once the MPP has been connected with utilities and repair has been

made, Water Quality Bureau (WQB) will start to perform additional polymer testing. Subproject Completion 6/30/21.

(5) JOC-60-20 - CalState, the JOC Contractor, completed the construction work for the relocation of all the water quality instrumentation and for the valve cathodic protection work. Red-line and as-built drawings will be continued in the next quarter. FC was 7/31/19. Subproject Completion 1/31/20.

(6) JOC-60-23 - Construction for Phase 1 was completed on 9/18/19. NTP has not yet issued to begin Phase 2 work. FC is 12/31/20. Subproject Completion on 6/30/21.







Issues and Challenges:

None at this time.

CUWBDP0101 - WSIP Closeout - Bay Division

Project Description: This project includes miscellaneous improvements to ensure the WSIP Level of Service (LOS) goals and objectives are fully achieved in the Bay Division Region. The work will be completed by means of six sub-projects, including: (1) providing a drainage system to address erosion issues that developed after Seismic Upgrades to Bay Division Pipeline Nos. 1 and 2 was constructed; (2) planning for a decommissioning study of the existing BDPL Nos. 1 and 2 pending funding for removal of the portion within the Don Edwards San Francisco Bay Wildlife Refuge and other mitigation measures; (3) monitoring of hydro-seeded areas at the Bay Tunnel Project; (4) placement of gravel at the Newark Valve Lot; (5) uncovering of previously installed valve E50U to provide for removal, cleaning, and re-installation of bolts for corrosion protection purposes; and (6) installation of a ventilation and sump pump system to improve conditions for inspection and monitoring of the pipe, slip, ball joints, and pipe supports inside the articulated vaults of Bay Division Pipeline Nos. 3 and 4.

Region: Bay Division	Project Status: Construction	Environmental Status: Not Applicable
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Project Cost:		Project Schedule:	
Approved	 \$4.40 M	Approved Jul-16	 Jun-20
Forecast*	 \$3.80 M	Forecast* Jul-16	 Jun-20
Actual	 \$2.18 M	Project Percent Complete: 81.3%	
			

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	N/A	N/A	Various	Various

Progress and Status:

- Subprojects (3) completed on 4/24/17, (4) completed on 7/29/16, and (5) completed on 10/20/2017.
- (1) BDPL 3&4 Site Drainage and Pipe Coating Repairs - The project team has accepted Power Engineering's (JOC Contractor) cost proposal, and anticipates issuing NTP in the next reporting period. Final Completion (FC) on 5/5/2020. Subproject Completion on 6/1/2020.
- (2) BDPL 1&2 EIR Mitigation - The Project team continued to prepare the CER. After CER, remaining work is being performed under the 10-year Water Enterprise Capital Improvement Program (WECIP). Progress and status for the project will be reported under the WECIP. Subproject Completion is on 6/30/2020.
- (6) JOC-60-19 Ventilation and Sump Pump System Installation - During the reporting period, CalState Constructors (CSC) continued to work on the as-builts and the Operation and Maintenance Manual. FC is 9/30/2019. Subproject Completion will be on 4/3/2020.

Issues and Challenges:

None at this time.









Ventilation Fan and Control Panel at the Articulated Vault

CUW39401 - Watershed and Environmental Improvement Program

Project Description: The Watershed and Environmental Improvement Program (WEIP) includes the comprehensive identification of critical watershed lands and ecosystem restoration needs within the hydrologic boundaries of the Alameda Creek, Peninsula (San Mateo and Pilarcitos Creeks), and Tuolumne River watersheds, and prioritizes the protection and/or restoration of these lands. This program will manage watershed activities and resources to protect source water quality, native species, and their habitat and to identify critical watershed lands, key ecosystem restoration needs, and restoration priorities. The program also supports projects that enhance public awareness and provide educational opportunities related to water quality, water supply, conservation, and environmental stewardship issues. Consistent with the SFPUC Water Enterprise Stewardship Policy, a portion of the WEIP funding will be used to fund construction of the Southern Skyline Boulevard Ridge Trail Extension.

Region: Support Projects	Project Status: Not Applicable	Environmental Status: Active (CatEx)
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Project Cost:		Project Schedule:	
Approved	 \$20.00 M	Approved Jan-07	 Jan-21
Forecast*	 \$20.00 M	Forecast* Jan-07	 Jan-21
Actual	 \$6.92 M	Project Percent Complete: 25.9%	
			

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	12/30/19	N/A	N/A	N/A

Progress and Status:

The Commission recently approved the purchase of two properties within the Alameda Creek watershed. A total of 792 acres were purchased at a cost of \$11,240,000. Staff is currently working on purchasing another property, of 164.5-acres, also located in the Alameda Creek watershed. A Phase 1 environmental site assessment and a property boundary survey of the 164.5 acres property will be completed in the next few months. It is anticipated that the sales agreement will go to the Commission for approval by the end of 2019 or early 2020.

Issues and Challenges:

None at this time.



Wool Ranch – Upper Alameda Creek Watershed

APPENDIX F. LIST OF ACRONYMS

AAR	Alternative Analysis Report	JOC	Job Order Contract
AC	Asphalt Concrete	LCSD	Lower Crystal Springs Dam
ACAMS	Access Control and Alarm Monitoring System	LCSDI	Lower Crystal Springs Dam Improvements
ACDD	Alameda Creek Diversion Dam	LOS	Levels of Service
ACDT	Alameda Creek Diversion Tunnel	MG	Million Gallons
AGM	Assistant General Manager	MGD	Million Gallons per Day
ARM	Active Risk Manager	MND	Mitigated Negative Declaration
AWP	Alameda West Portal	MOA	Memorandum of Agreement
BART	Bay Area Rapid Transit	MOU	Memorandum of Understanding
BAWSCA	Bay Area Water Supply and Conservation Agency	MPP	Mobile Pilot Plant
BDPL	Bay Division Pipeline	N/A	Not Applicable
BHR	Bioregional Habitat Restoration	NEG DEC	Negative Declaration (also shown as ND)
CATEX	Categorical Exemption	NEPA	National Environmental Policy Act
CCSF	City and County of San Francisco	NIT	New Irvington Tunnel
CDD	City Distribution Division	NMFS	National Marine Fisheries Service (under NOAA)
CDRP	Calaveras Dam Replacement Project	NOAA	National Oceanic and Atmospheric Agency
CEQA	California Environmental Quality Act	NTP	Notice to Proceed
CER	Conceptual Engineering Report	O&M	Operation and Maintenance
CIP	Capital Improvement Program	PCCP	Pre-stressed Concrete Cylinder Pipe
CM	Construction Management	PEIR	Program Environmental Impact Report
CMB	Construction Management Bureau	PG&E	Pacific Gas and Electric Company
CMIS	Construction Management Information System	PLC	Programmable Logic Control
CO	Change Order	PV	Photovoltaic
CPI	Cost Performance Index	RFI	Request For Information
CSPS	Crystal Springs Pump Station	ROW	Right-of-Way
CSSA	Crystal Springs/San Andreas	SABPL	San Antonio Backup Pipeline
DB	Design, Build	SAPL	San Antonio Pipeline
DSOD	Division of Safety of Dams (State of California)	SAPS	San Antonio Pump Station
DVSS	Digital Video Surveillance System	SCADA	Supervisory Control and Data Acquisition
EBMUD	East Bay Municipal Utility District	SFPUC	San Francisco Public Utilities Commission
EIR	Environmental Impact Report	SJPL	San Joaquin Pipeline
EIS	Environmental Impact Statement	SMC	San Mateo County
EV	Earned Value	SMP	Surface Mining Permit
EVM	Earned Value Management	SPI	Schedule Performance Index
FC	Final Completion	SQS	Supplier Quality Surveillance
FTE	Full-Time Equivalent	SSBPL	Sunset Supply Branch Pipeline
FY	Fiscal Year	SSPL	Sunset Supply Pipeline
HH	Hetch Hetchy	SVWTP	Sunol Valley Water Treatment Plant
HHWP	Hetch Hetchy Water and Power		
HTWTP	Harry Tracy Water Treatment Plant		
IVP	Irvington Portal		


WSIP Quarterly Report

TBD	To be determined
TBM	Tunnel Boring Machine
TM	Technical Memorandum
TWR	Treated Water Reservoir
UM	University Mound
UPS	Uninterruptable Power Supply
UV	Ultra Violet
VFD	Variable Frequency Drive
WECIP	Watershed Environmental Improvement Program
WEIP	Water Enterprise Capital Improvement Program
WSIP	Water System Improvement Program
WSTD	Water Supply and Treatment Division



DATE: February 4, 2020

TO: Commissioner, Ann Moller Caen, President
 Commissioner, Francesca Vietor, Vice President
 Commissioner, Anson Moran
 Commissioner, Sophie Maxwell
 Commissioner, Tim Paulson

FROM: Harlan L. Kelly, Jr., General Manager 

RE: WSIP Regional Projects Quarterly Report
 2nd Quarter / Fiscal Year 2019-2020

Enclosed please find the Water System Improvement Program (WSIP) Regional Projects Quarterly Report for the 2nd Quarter (Q2) of Fiscal Year (FY) 2019-2020. The primary intent of the report is to provide the San Francisco Public Utilities Commission (“Commission”), stakeholders, and the public with a status summary of the program’s regional projects for the period of October 1, 2019 through December 31, 2019.

In their April 3, 2018 letter, the Bay Area Water Supply and Conservation Agency (BAWSCA) requested additional information be included in the WSIP Quarterly reports. On June 5, 2018 SFPUC representatives met with BAWSCA and agreed that beginning with the Q1FY2018-2019 report, the SFPUC will (1) add a section to the cover letter for the WSIP Quarterly Report to highlight the use of contingency, (2) provide documentation on the sufficiency of the contingency to deliver WSIP within budget, and (3) highlight, and provide in the cover letter documentation regarding, work force reduction and other efficient practices and procedures to control soft costs as the program is completed. This information can be found in the sections below entitled “Status on Use of Construction Contingency” and “Status on Workforce Reduction and Other Efficient Practices to Control Soft Costs”.

STATUS AND PERFORMANCE SUMMARY

Overall, WSIP regional projects are 98.3% complete as of December 31, 2019. As of the end of the reporting period, planning, environmental, design, and construction activities are 99.8%, 99.8%, 97.9%, and 98.7% complete, respectively. The following table shows the number of WSIP Regional projects and the total approved value of these projects that are active in various project phases.

- London N. Breed**
Mayor
- Ann Moller Caen**
President
- Francesca Vietor**
Vice President
- Anson Moran**
Commissioner
- Sophie Maxwell**
Commissioner
- Tim Paulson**
Commissioner
- Harlan L. Kelly, Jr.**
General Manager



Status of WSIP Regional Projects (as of December 31, 2019)

Project Phase	No. of Projects	Percent by No. of Projects	Total Project Value (\$M)¹	Percent by Project Value
Planning	0	0%	\$0	0%
Design	1	2%	\$35	1%
Bid & Award	0	0%	\$0	0%
Construction	6	12%	\$1,021	27%
Close-Out	1	2%	\$96	3%
Completed	42	81%	\$2,619	69%
Not Applicable ²	2	4%	\$32	1%
Total	52	100%	\$3,803	100%

Notes: (1) "Total Project Value" for various phases includes proportional allocation of approved program management budget. Projects active in multiple phases are counted as being in the phase with the greatest amount of project activities.

(2) "Not Applicable" category is for the two projects that do not include construction: Long-Term Mitigation Endowment and Watershed and Environmental Improvement Program.

PROGRAM UPDATE

As of the end of the reporting period, six (6) regional projects with a total value of \$1,021M are in construction and forty-three (43) projects with a total value of \$2,715M are in close-out or have been completed. Forty-one (41) out of forty-three (43) Regional WSIP projects with specific Level of Service (LOS) goals have achieved their LOS goals to date. Besides the WSIP Closeout Projects, the one Regional project remaining in pre-construction is the Alameda Creek Recapture Project.

As of the end of the reporting period, the forecasted total program cost (regional and local projects) is \$4,787.8M, which is the same as the current Commission Approved Budget. As of the end of the reporting period, all approved change orders (COs) on active construction contracts total \$435.59M, and the current remaining construction contingency is \$20.56M. Also, as of the end of the reporting period, all pending and potential COs, and trends total \$10.48M. Therefore, if all pending and proposed COs and trends become approved COs, the current forecasted remaining construction contingency is \$10.08M.

The current forecasted date to complete the overall WSIP is May 2023, which is 17 months beyond the current approved completion date of December 2021.

UPDATE ON PROJECTS IN PRE-CONSTRUCTION

Alameda Creek Recapture

During this quarter, the recirculated Administrative Draft EIR (ADEIR) was published. The public comments on the document are due in the next reporting quarter. The redesign work is on-going and includes revisions to meet the latest design code updates and changes to the pumping and electrical design to accommodate a revised pond operation procedure.

WSIP Closeout Projects

Steady progress was made on WSIP Closeout Projects for each of the San Joaquin, Sunol Valley, Bay Division, and Peninsula Regions in the reporting quarter.

In the San Joaquin Region, two Job Order Contract (JOC) contractors came on board. Due to the long lead time for acquisition of the new batteries at each site, approximately 30 weeks, construction will not begin until Fall.

In the Sunol Valley Region, the contractor has completed all the utilities connections for the Mobile Pilot Plant for the Sunol Valley Water Treatment Plant (SVWTP) Polymer Feed Facility (aka Basin 5) project. The Mobile Pilot Plant is now being used by the SFPUC to support the project. For the SABPL Water Carrier System Modification Phase 2, a supplemental Task Order was issued to CalState, and construction work will begin in the next quarter.

In the Bay Division Region, the project team received final cost proposal from Power Engineering for the installation of a V-ditch and for BDPL 3 pipe coating work. Work will begin sometime in the next quarter depending on the schedule for the BDPL 3 shutdown.

In the Peninsula Region, (1) Lower Crystal Springs Dam (LCSD) Stilling Basin Connecting Channel construction is 75% complete. 2) LCSD Bridge Replacement (joint project with San Mateo County) has a few warranty issues that are being addressed. (2.1) JOC 76R-01 North Parapet Wall Extension work is to close a gap between the LCSD north parapet wall and the new bridge abutment, with a forecasted start date for gap repair construction in February 2020. (2.2) To close out the Memorandum of Agreement with San Mateo County, a draft LCSD Security Assessment report was completed, and is under review. Subproject completion is 6/30/20. (2.3) The SFPUC received a permit from San Mateo County for use of the bridge during repair of the drainage channel atop the south side of LCSD. Final completion is on 6/30/20, and subproject completion is on 12/31/20.

Several JOC task orders have been initiated for the Harry Tracy Water Treatment Plant (HTWTP) facility, with status as follows: 1) JOC 59-01 – Electrical & Mechanical Piping Modifications. Training and programming work has been cancelled, and the project is in closeout. 2) Equalization Basin Mixers – All mixers were replaced, and the project is in closeout.

UPDATE ON PROJECTS IN CONSTRUCTION

Steady progress was reported on the ongoing WSIP construction activities. As of the end of December 2019, WSIP regional construction contracts (including active, completed, and future contracts) are 99.9% complete overall, an increase of 0.1% during the quarter.*

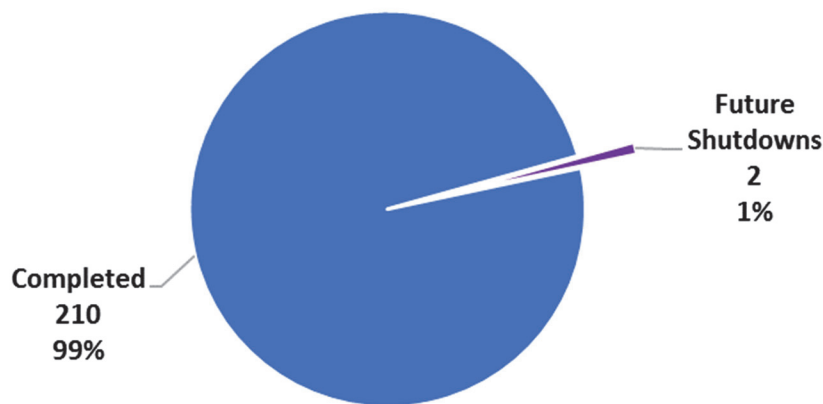
A review of the construction work hours recorded over the last five (5) years shows continued ramping down of construction activities, with monthly workhours peaking at 206,400 in August 2012, compared to a total of 1,288.5 work hours recorded in December 2019. The monthly average workhours in the reporting quarter was 1,363, a significant decrease compared to the 23,269 monthly average workhours for the same period in 2018.

As of the end of December 2019, monitored exposure hours on WSIP regional projects totaled 9.8 million construction person-hours. Since the implementation of the WSIP Safety Approach in April 2009, the total lost time incidence rate is at 0.51, compared to the U.S. Bureau of Labor Statistics (BLS) industry average rate (2016) of 1.7.

During this quarter only one shutdown was performed, in the Peninsula Closeout project. To date, 210 out of 212 (99%) of the planned shutdowns and hot taps have been completed. Currently, there are no active shutdowns/hot taps and two (2) future planned shutdowns.

The following is a summary of the progress made, issues encountered, and/or milestones achieved on the key WSIP regional projects currently active in construction.

WSIP Shutdowns & Hot Taps



* The updated percentage complete for end of September 2019 was 99.8%, a continuation of the same percentage complete as reported for end of June 2019, but was inadvertently reported incorrectly in the Q1FY2019-20 Report.

Regional Groundwater Storage and Recovery

Overall progress on the Regional Groundwater Storage and Recovery Phase 1 construction contract (Contract B) is reported at 97% as of the end of the quarter. This value is 1.7% below the value reported during the previous quarter. The reduction of the percent completion is due to additional approved change orders increasing the size of the contract during the quarter. Although Substantial Completion was achieved on December 31, 2017, key additional construction work is still being implemented, including modifications to multiple pump systems at several locations due to sand, decline of pump performance, electrical interference, and/or corrosion; chemical system modifications for groundwater treatment; retrofit of transmission line flowmeters; and other changes to programming, access, and testing. The Regional Groundwater Storage and Recovery Phase 2 subproject is in the Planning phase and is 20% complete. The Conceptual Engineering Report for the Antoinette Lane Well (South San Francisco Main Area Well Station) and the initial follow up work from Contract B are being finalized.

Fish Passage Facilities within the Alameda Creek Watershed (Sub-project to Calaveras Dam Replacement)

Construction of the Fish Passage Facilities within the Alameda Creek Watershed is 99% complete as of the end of this quarter. The contractor is submitting closeout documentation. During this quarter, the contractor completed all but two items of the punch list. The two items are coordinate repairs to the debris rake/rack system, which is expected to take place in Spring/Summer 2020, and additional wet testing when there is sufficient flow in Alameda Creek. Wet testing is being planned for Winter 2019/2020 provided enough flow is available. As a result of these two remaining issues, final construction completion remains forecast for September 2020, and final administrative project closeout is forecast for December 2020.

MAJOR PROGRAM TRENDS AND RISKS

Actual and potential impacts to the cost and schedule of WSIP projects are identified and tracked using change orders (COs), trends, and risks. COs and trends are managed using the Construction Management Information System (CMIS), while risks are managed using Active Risk Manager (ARM). Active COs on the WSIP are categorized based on their status as follows: Approved COs are changes that have been negotiated, have been certified by the City Controller, and are now part of the contract (exact magnitude of change is known); Pending COs are changes that have been negotiated but have yet to be certified by the City Controller (exact magnitude of change is known); and Potential COs are changes that have been proposed by either the SFPUC or the contractor but are still being negotiated (magnitude of change is unknown). Any known issue with a probable impact to the approved schedule and/or contract amount that has yet to be proposed as a Potential CO is captured as a trend. In addition, project teams assess and quantify conceivable risks to their projects with the goal to mitigate the conditions which might cause them to materialize.

WSIP Management submits to the Commission on a quarterly basis a separate report on the status of Change Orders. This section summarizes the major program trends and risks being tracked as of December 31, 2019.

The trends for the WSIP Active Regional construction contracts totaled \$2.0M as of the end of the reporting period, a decrease of \$3.2M during the period. This is because all of Fish Passage Facilities Trends at ACDD have been closed. All of the remaining trends belong to the Regional Groundwater Storage & Recovery Project. The following table lists the trend totals for active projects:

WSIP Active Regional Projects Trend Totals (as of December 31, 2019)

Project	Trends (\$ Million)	Percent Completion ¹
Regional Groundwater Storage & Recovery (Contract B)	\$2.1	97%

1. Refers to percent completion of the current construction contract (including all Approved COs).

The WSIP Risk Management System ranks risks based on a combination of likelihood of occurrence and potential cost impact to the SFPUC. As of December 31, 2019, the Regional Groundwater Storage and Recovery project is the only active construction project with remaining risk, and this contract, with a total of nine (9) remaining risks, is now 97% complete.

Regional Groundwater Storage and Recovery

This project is currently reporting on fifteen (15) active trends that total \$2.1M, a decrease of \$0.3M during the quarter. The largest trend addresses the budget for well access modification. The second largest trend at the end of the period is for Sierra Bowl Pump decline in performance. The third highest trend relates to miscellaneous plumbing and chemical changes. Other high value trends include costs for; startup testing; repairs and/or replacement of flowmeters; change from use of aqueous ammonia to use of liquid ammonium sulfate; rental of generators to provide temporary power during commissioning; installation of PG&E power for the Lake Merced Golf Club, Treasure Island, and Funeral Home sampling stations; new injection quill, water quality supplies, and equipment; and commissioning. Other relevant trends include the potential for revisions to the Programmable Logic Control (PLC) programming and for resetting of the security system.

The 80% risk confidence level as of the end of the reporting period is estimated at \$2.0M, an increase of \$0.1 since last quarter. Since this is the only WSIP contract in construction, all the WSIP risks are now from this project. The risks are ranked based on likelihood of occurrence and potential cost impact. This contract has a total of nine (9) risks. The current largest risk is due to the change of chemical to be used for water treatment during operation from aqueous ammonia to ammonium sulfate. The second highest risk is associated with multiple water quality challenges. Additional risks include design errors and omissions, challenges in meeting regulatory and operational requirements during testing, delays in finalizing permanent easements (including with utilities), and other unexpected challenges that may arise during testing.

STATUS ON USE OF CONSTRUCTION CONTINGENCY

The following table shows the status of approved construction contingency for projects that are in active construction as of the end of the reporting period. The forecast remaining contingency shown in the table for each project is after accounting for all approved, pending, and potential change orders as well as all current trends.

Contract	Final Construction Completion	Current Approved Contingency	Current Approved, Pending, and Potential Change Orders Plus Trends	Remaining Contingency	% Completion
CUW37401 Calaveras Dam Replacement (WD-2551)	7/12/19	\$309.6M	\$308.2M	\$1.4M	100.0%
CUW37401 Alameda Creek Diversion Dam Fish Passage Facility (WD-2729)	9/30/20	\$15.5M	\$14.5M	\$1.0M	99%
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	3/7/21	\$19.5M	\$19.5M	\$0M	97%

As can be seen in the table, the Calaveras Dam Replacement construction contract has remaining construction contingency of \$1.4 million.

The Fish Passage Facilities at Alameda Creek Diversion Dam is currently estimated to have remaining construction contingency of \$1.0 million as of the end of the reporting period. Since this project is a sub-project of the Calaveras Dam Replacement, the remaining unused contingency in the larger contract may be made available to cover any additional contingency needs for the smaller contract.

The Regional Groundwater Storage and Recovery (Contract B) is currently estimated to have used up all approved contingency for all change orders in process and forecasted trends as of the end of the reporting period. The remaining risk, estimated at \$2.0 million (at the 80% risk confidence level) means that it is likely some additional contingency may be needed for this construction contract. Funding is available from the remaining Director's Reserve, currently at \$19 million for the entire WSIP, to satisfy such additional contingency needs for this project.

STATUS ON WORKFORCE REDUCTION AND OTHER EFFICIENT PRACTICES TO CONTROL SOFT COSTS

As has been the practice since the program was established, the WSIP Director will continue to meet with project teams in order to review status of every budget line item at least twice quarterly. As a result of these meetings, staffing adjustments are made in real time to ensure project teams work within the existing budgets, and budget forecasts and resources are adjusted as necessary to help ensure successful completion of every project.

The current staff transition plan for the remainder of WSIP is included on page 48 of the attached WSIP Quarterly Report. As can be seen in the chart on that page, the overall staffing levels in June 2018 were approximately 85 full-time equivalents (FTEs), which has decreased to approximately 54 FTEs in December 2019. The decrease is attributable to both City and consultant staff ramping down activities as projects complete construction and close out. Actual staffing levels will continue to be tracked monthly against this plan, and appropriate staff adjustments made accordingly, to ensure staffing levels stay within the remaining available budget.

In addition, we are continuing to implement our industry best practice Construction Management (CM) Business Processes and Procedures to ensure available funds are used efficiently and effectively, with emphasis on identification of cost savings wherever possible. The primary features of the best practice processes and procedures that facilitate monitoring and control of WSIP construction include: change management, trends management, risk management, claims avoidance, schedule management, program CM project audits, monthly and quarterly project review meetings, and lessons learned reports.

CLOSING

Despite the challenges described above, the WSIP team continues to make steady progress in the delivery of the program as described in the attached WSIP Quarterly Report. It should be noted that the challenges encountered in the field and reported herein are not unusual for infrastructure programs of the size and complexity of the WSIP.

The SFPUC continues to be committed to working collaboratively with other City departments, its Regional Wholesale customers, and all program stakeholders and partners to ensure the successful delivery of the WSIP.

Enclosure



HETCH HETCHY
WATER SYSTEM IMPROVEMENT PROGRAM



QUARTERLY REPORT

Regional Projects

Q2 FY 2019 | 2020

October 2019 — December 2019

Rebuilding Today for a Better Tomorrow

Published: 02/04/2020

Quarterly Report - Q2 FY2019/2020

Water System Improvement Program - Regional Projects

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- 7. On-Going Construction**
- 8. Projects In Close-Out**
- 9. Completed Projects**

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- C. WSIP Regional Program Staffing Plan**
- D. WSIP Approved Project-Level Schedule**
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1. PROGRAM DESCRIPTION

The Water System Improvement Program (WSIP) is a \$4.8 billion, multi-year capital program to upgrade the City of San Francisco's regional and local drinking water systems. The program will deliver improvements that enhance the City's ability to provide reliable, affordable, high quality drinking water to its 26 wholesale customers and regional retail customers in Alameda, Santa Clara, and San Mateo Counties, and to 800,000 retail customers in San Francisco, in an environmentally sustainable manner. The WSIP is structured to cost-effectively meet water quality requirements, improve seismic and delivery reliability, and achieve water supply goals.

Built in the early to mid-1900s, many components of the water system are nearing the end of their working life, with crucial facilities crossing or in close proximity to, three major earthquake faults. The San Francisco Public Utilities Commission (SFPUC) initiated the WSIP to repair, replace, and seismically upgrade the system's deteriorating pipelines, tunnels, dams, reservoirs, pump stations, storage tanks, and treatment facilities.

The program consists of 35 local projects located within San Francisco and 52 regional projects spread over seven different counties from the Sierra foothills to San Francisco. Local projects only benefit San Francisco residents whereas regional projects benefit both City residents and the 26 wholesale agencies that receive water from the SFPUC. The management of regional projects is divided into 6 regions - San Joaquin, Sunol Valley, Bay Division, Peninsula, San Francisco Regional, and Support Projects.

The WSIP is funded through the issuance of revenue bonds. Local Measures A and E, which were approved by San Francisco voters in November 2002, allowed for the financing of improvements to the City's water system using revenue bonds and/or other forms of revenue financing. Increases in the water rates of retail and wholesale customers will be used to pay back the debt service on the bonds.

The program budget and schedule were originally adopted by the San Francisco Public Utilities Commission on March 1, 2003. The program at the time was referred to as the Capital Improvement Program (CIP). The scope of the CIP was changed significantly following the adoption of Level of Service (LOS) goals in early 2005. The program changes were so substantial that the program was renamed the WSIP and a new program budget and schedule were adopted on November 29, 2005. Since the scope of the 2005 Revised WSIP is in general representative of the program being implemented today, the 2005 budget and schedule are considered the "Baseline Budget and Schedule."

Subsequently, the WSIP Baseline Budget and Schedule were revised in 2007, 2009, 2011, 2013, 2014, 2015, 2016, 2017, and 2018, and these revisions were approved by the San Francisco Public Utilities Commission on February 26, 2008, July 28, 2009, July 12, 2011, April 23, 2013, April 22, 2014, December 8, 2015, April 26, 2016, February 14, 2017, and April 10, 2018, respectively. Refer to Appendix A for a scope description of all the regional projects included in the WSIP.

Program Revision	Commission Approval	Budget (\$Million)	Schedule(*)
2003 (Original)	March 1, 2003	\$3,628	03/15/16
2005 (Baseline)	November 29, 2005	\$4,343	06/30/14
2007 (Revised)	February 26, 2008	\$4,392	12/18/14
2009 (Revised)	July 28, 2009	\$4,586	12/04/15
2011 (Revised)	July 12, 2011	\$4,586	07/29/16
2013 (Revised)	April 23, 2013	\$4,640	04/11/19
2014 (Revised)	April 22, 2014	\$4,765	05/24/19
2015 (Revised)	December 8, 2015	\$4,765	05/24/19
2016 (Revised)	April 26, 2016	\$4,845	12/20/19
2017 (Revised)	February 14, 2017	\$4,845	12/20/19
2018 (Latest Approved)	April 10, 2018	\$4,788	12/30/21

* Final Program Completion Date

2. PROGRAM STATUS

This second (2nd) Quarterly Report for Fiscal Year (FY) 2019-2020 presents the progress made on the WSIP regional projects between October 1, 2019 and December 31, 2019. The program’s schedule and budget were last approved by the San Francisco Public Utilities Commission (SFPUC or Commission) on April 10, 2018. The progress made on the local projects of the WSIP is presented in a separate quarterly report.

Figure 2.1 shows the total Current Approved Budget for the regional projects remaining in each phase of the program as of December 31, 2019. The number of projects currently active in each phase is shown in parentheses.

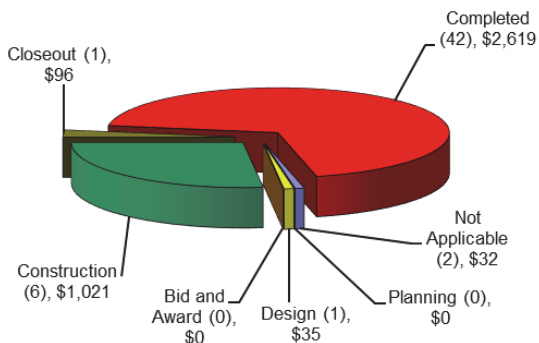


Figure 2.1 Total Current Approved Budget for Projects Active in Each Phase (\$Million)

Figure 2.2 shows the number of regional projects in the following stages of the program as of December 31, 2019: Pre-construction,

Construction, and Post-construction.

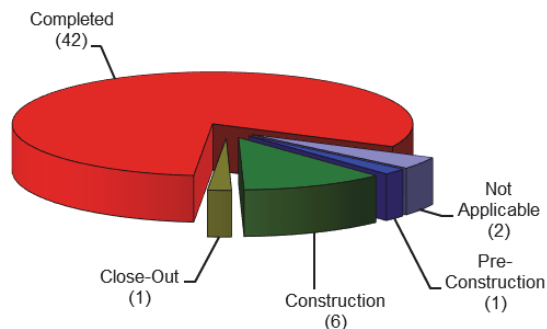


Figure 2.2 Number of Projects in Pre-construction, Construction, and Post-construction

Figure 2.3 summarizes the environmental review and permitting status of the WSIP’s 52 regional projects as of December 31, 2019.

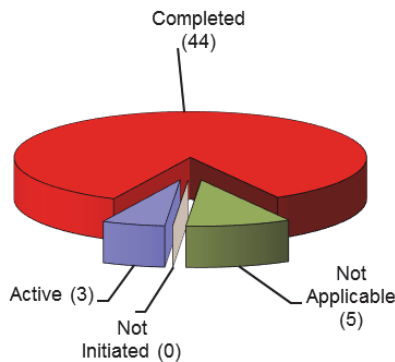


Figure 2.3 Program Environmental and Permitting Status

2.1 Progress Towards Meeting Level of Service (LOS) Goals

The scope of the WSIP is based on the following Level of Service (LOS) goals for the Regional Water System: Seismic Reliability, Delivery Reliability, Water Quality Reliability, and Water Supply Reliability. Each project that reaches construction substantial completion contributes to increasing the overall reliability of the system and achieving progress towards meeting the overall LOS goals for the system.

Table 2.1 lists the projects with their individual Primary (P) and Secondary (S) contributions towards LOS goals, and indicates which projects have met their respective LOS goals. As can be seen in Table 2.1, the actual operational service start dates indicate that 41 of the 43 Regional WSIP projects with specific LOS goals have achieved their LOS goals to date. The other 9 Regional WSIP projects do not have specific LOS goals. The WSIP team remains committed to achieving the overall LOS goals established for the system.

Table 2.1 Progress Towards Meeting LOS Goals ⁽¹⁾

Project No.	Project Name / Construction Contract	Actual / Approved Substantial Completion Date	LOS Goals (P =Primary, S =Secondary)				Actual Operational Service Start	Construction Progress Toward LOS Goals
			Water Quality	Seismic Reliability	Delivery Reliability	Water Supply		
San Joaquin Projects								
CUW36401	Lawrence Livermore Water Quality Improvement <i>(Completed)</i>	08/31/10	P				08/31/10	100%
CUW37301	San Joaquin Pipeline System <i>(Completed)</i> (A) HH935A Crossovers (B) HH935B Western Segment (C) HH935C Eastern Segment	(A) 01/06/12 (B) 05/27/13 (C) 06/21/13			P		(A) 01/06/12 (B) 05/27/13 (C) 06/21/13	100%
CUW37302	Rehabilitation of Existing San Joaquin Pipelines (Roselle Crossover; <i>Completed</i>)	05/13/11			P		05/13/11	100%
CUW38401	Tesla Treatment Facility <i>(Completed)</i> (A) DB116 Tesla Treatment Facility Design-Build Contract (B) HH953 Tesla Portal Protection	(A) 06/24/11 (B) 08/05/13	P	S	S		(A) 06/24/11 (B) 08/05/13	100%
Sunol Valley Projects								
CUW35201	Alameda Creek Recapture	11/30/20				P		0%
CUW35501	Standby Power Facilities - Various Locations <i>(Completed)</i> (A) WD-2553 East Bay - Standby Power Facilities (B) WD-2511 Peninsula - Standby Power Facilities	(A) 09/11/08 (B) 04/15/10		P	S		(A) 09/11/08 (B) 04/15/10	100%
CUW35901	New Irvington Tunnel <i>(Completed)</i>	09/19/15		S	P		02/27/15	100%
CUW35902	Alameda Siphon #4 <i>(Completed)</i>	12/16/11		P	S		12/16/11	100%
CUW37001	Pipeline Repair & Readiness Improvements <i>(Completed)</i> (A) WD-2530 Phase A 8 Pipe Storage Sites (B) WD-2530 Phase B Pipe Rolling Machine Facility @ Sunol Yard	(A) 02/09/07 (B) 07/14/08		P	S		(A) 02/09/07 (B) 07/14/08	100%
CUW37401	Calaveras Dam Replacement (A) WD-2551 Calaveras Dam Replacement (B) WD-2729 Alameda Creek Diversion Dam	(A) 04/12/19 (B) 02/15/19		S	P	S	(A) 04/12/19 (B) 02/15/19	(A) 100% (B) 99%
CUW37402	Calaveras Reservoir Upgrades <i>(Completed)</i>	10/06/05	P				10/06/05	100%
CUW37403	San Antonio Backup Pipeline <i>(Completed)</i>	12/31/14			P		12/31/14	100%
CUW38101	SVWTP Expansion & Treated Water Reservoir <i>(Completed)</i>	05/17/13	P		P		05/17/13	100%
CUW38601	San Antonio Pump Station Upgrade <i>(Completed)</i>	06/30/11			P		06/30/11	100%

WSIP Quarterly Report

Project No.	Project Name / Construction Contract	Actual / Approved Substantial Completion Date	LOS Goals (P =Primary, S =Secondary)				Actual Operational Service Start	Construction Progress Toward LOS Goals
			Water Quality	Seismic Reliability	Delivery Reliability	Water Supply		
Bay Division Projects								
CUW35301	BDPL Nos. 3 & 4 Crossover/Isolation Valves <i>(Completed)</i>	11/15/07		P			11/15/07	100%
CUW35302	Seismic Upgrade of BDPL Nos. 3 & 4 <i>(Completed)</i>	10/26/15		P			06/20/14	100%
CUW36301	SCADA System - Phase II <i>(Completed)</i>	11/29/10			P		11/29/10	100%
CUW36801	BDPL Reliability Upgrade – Tunnel <i>(Completed)</i>	05/20/15		P	S		10/15/14	100%
CUW36802	BDPL Reliability Upgrade – Pipeline <i>(Completed)</i> (A) WD-2541 East Bay (B) WD-2542 Peninsula (C) WD-2665 Cordilleras	(A) 12/09/11 (B) 06/13/12 (C) 03/05/13		P	S		(A) 12/09/11 (B) 06/13/12 (C) 03/05/13	100%
CUW36803	BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2 <i>(Completed)</i>	05/28/10			P		05/28/10	100%
CUW38001	BDPL Nos. 3 & 4 - Crossovers <i>(Completed)</i>	08/15/12		P	S		08/15/12	100%
CUW38901	SFPUC/EBMUD Intertie <i>(Completed)</i>	09/07/07			P		09/07/07	100%
CUW39301	BDPL No. 4 Condition Assessment PCCP Sections <i>(Completed)</i>	02/06/09		P	S		02/06/09	100%
Peninsula Projects								
CUW35401	Lower Crystal Springs Dam Improvements <i>(Completed)</i>	11/20/11			P	S	11/20/11	100%
CUW35601	New Crystal Springs Bypass Tunnel <i>(Completed)</i>	07/14/11		P	S		07/14/11	100%
CUW35701	Adit Leak Repair - Crystal Springs/Calaveras <i>(Completed)</i>	11/30/07			P		11/30/07	100%
CUW36101	Pulgas Balancing - Inlet/Outlet Work <i>(Completed)</i>	02/02/06	P		S		02/02/06	100%
CUW36102	Pulgas Balancing - Discharge Channel Modifications <i>(Completed)</i>	10/23/09			P		10/23/09	100%
CUW36103	Pulgas Balancing - Structural Rehabilitation & Roof Replacement <i>(Completed)</i>	07/26/11	P		S		07/26/11	100%
CUW36105	Pulgas Balancing - Modifications of the Existing Dechloramination Facility <i>(Completed)</i>	08/27/12	P		S		08/27/12	100%
CUW36501	Cross Connection Controls <i>(Completed)</i>	11/26/08	P				11/26/08	100%
CUW36601	HTWTP Short-Term Improvements - Demo Filters <i>(Completed)</i>	01/11/06		P	S		01/11/06	100%
CUW36603	HTWTP Short-Term Improvements - Coagulation & Flocculation/Remaining Filters <i>(Completed)</i>	12/21/09		P	S		12/21/09	100%
CUW36701	HTWTP Long -Term Improvements <i>(Completed)</i>	09/08/15		P	S		09/08/15	100%
CUW36702	Peninsula Pipelines Seismic Upgrade <i>(Completed)</i>	10/30/15		P			10/30/15	100%
CUW36901	Capuchino Valve Lot Improvements <i>(Completed)</i>	02/14/08			P		02/14/08	100%
CUW37101	Crystal Springs/San Andreas Transmission Upgrade <i>(Completed)</i>	06/30/14		P	S		09/02/14	100%
CUW37801	Crystal Springs Pipeline No. 2 Replacement <i>(Completed)</i>	01/31/13		P	S		01/31/13	100%
CUW37901	San Andreas Pipeline No. 3 Installation <i>(Completed)</i>	03/29/11		P	S		03/29/11	100%
CUW39101	Baden & San Pedro Valve Lots Improvements <i>(Completed)</i>	03/31/11		P	S		03/31/11	100%

Project No.	Project Name / Construction Contract	Actual / Approved Substantial Completion Date	LOS Goals (P =Primary, S =Secondary)				Actual Operational Service Start	Construction Progress Toward LOS Goals
			Water Quality	Seismic Reliability	Delivery Reliability	Water Supply		
San Francisco Regional Projects								
CUW30103	Regional Groundwater Storage and Recovery (A) WD-2600 Test Well Drilling (B) WD-2668 Regional Groundwater Storage and Recovery (Phase 1) (C) Regional Groundwater Storage and Recovery (Phase 2)	(A) 07/23/12 (B) 12/31/17 (C) 02/28/21				P	(A) 07/23/12	(A) 100% (B) 97% (C) 0%
CUW35801	Sunset Reservoir - North Basin <i>(Completed)</i>	09/19/08		P	S		09/19/08	100%
CUW37201	University Mound Reservoir - North Basin <i>(Completed)</i>	05/25/11		P	S		05/25/11	100%

Notes:

- 1 Support projects and WSIP Closeout projects are not listed in the table above since these projects do not have specific Level of Service (LOS) goals.

3. PROGRAM COST SUMMARY

Table 3.1 provides an overall program-level cost summary of the WSIP Regional Program. It shows the Expenditures to Date; the 2005 Baseline, 2018 Approved, Current Approved and Q2/FY19-20 Forecasted Budgets; and the Cost Variance between the Current Approved and Forecasted Budgets.

The total Current Approved WSIP Budget (including Regional and Local Programs, Local

Water Supply Projects, and Financing Costs) and Current Forecasted Cost at completion are both \$4,787.8 million. The Current Approved WSIP Budget and Forecasted Cost at completion for the Regional Program (including construction contingency) are both \$3,803.1 million. The Current Approved WSIP Budget and Forecasted Cost at completion for the Local Improvement Projects are the same at \$331.4 million. Refer to Appendix B for a graphical representation of how the WSIP budget and actual expenditures have changed over time.

Table 3.1 Program Cost Summary

Cost Categories	Expenditures To Date (\$ Million) (A)	2005 Baseline Budget (\$ Million) (B)	2018 Approved Budget (\$ Million) (C)	Current Approved Budget ⁽⁷⁾ (\$ Million) (D)	Q2/FY19-20 Forecasted Costs (\$ Million) (E)	Cost Variance (\$ Million) (F = D - E)
Regional Improvement Projects	\$2,988	\$3,181	\$3,081.4	\$3,081.4	\$3,092.5	(\$11.1)
Construction Costs ⁽¹⁾	\$2,017	\$2,322	\$2,065.9	\$2,065.9	\$2,055.7	\$10.2
Program Delivery Costs ⁽²⁾	\$945	\$758	\$984.8	\$984.8	\$989.4	(\$4.6)
Other Costs ⁽³⁾	\$26	\$101	\$30.7	\$30.7	\$47.3	(\$16.6)
Support Projects ⁽⁴⁾	\$232	\$33	\$244.9	\$244.9	\$258.3	(\$13.4)
Construction Contingency for Regional & Support Projects ⁽⁵⁾	\$435	\$193	\$476.8	\$476.8	\$452.3	\$24.5
REGIONAL PROGRAM WITH CONTINGENCY	\$3,655	\$3,407	\$3,803.1	\$3,803.1	\$3,803.1	-
Local Improvement Projects	\$331	\$383	\$331.4	\$331.4	\$331.4	-
Local Water Supply Projects ⁽⁶⁾⁽⁸⁾	\$164	-	\$281.3	\$281.3	\$281.3	-
Finance	\$372⁽¹¹⁾	\$552⁽⁹⁾	\$372⁽¹⁰⁾	\$372.0	\$372.0	-
PROGRAM TOTAL	\$4,522	\$4,343	\$4,787.8	\$4,787.8	\$4,787.8	-

Notes:

- Construction Costs** include the Construction Base Bid and owner-provided equipment/material for all regional and support projects. Those costs do not include any construction contingency. That contingency is reflected as a separate cost category.
- Delivery Costs** include project management, planning, environmental (CEQA, permitting, construction compliance), design, construction management, and engineering support during construction.
- Other Costs** include environmental mitigation, art enrichment, security improvements, and real estate expenses.
- Support Projects** include (1) System Security Upgrades, (2) Programmatic EIR, (3) Bioregional Habitat Restoration, (4) Vegetation Restoration of WSIP Construction Sites, (5) Long Term Mitigation Endowment, (6) Program Management, and (7) Watershed and Environmental Improvement Program. Please note that the cost reflected above for support projects only includes "Delivery" and "Other" costs, and "Construction" cost for these projects is included in "Construction Costs" under the Regional Improvement Projects.
- Expenditures to Date for Construction Contingency for Regional and Support projects correspond to the Total Approved Change Orders on those projects. For projects with ongoing or completed construction, the 2018 Approved Budget for construction contingency includes all change orders and trends as identified at the time of the March 2018 Revised WSIP, as well as additional contingency funding allocated to cover the 80% confidence level risks identified at the time of the March 2018 Revised WSIP. For projects in pre-construction, the 2018 Approved Budget for construction contingency includes 10% of the estimated construction base bid.
- Local Water Supply Projects managed as part of the Water Enterprise Capital Improvement Program (CIP) are (1) Lake Merced Water Level Restoration, (2) San Francisco Groundwater Supply, (3) San Francisco Westside Recycled Water, (4)

- Harding Park Recycled Water, and (5) San Francisco Eastside Recycled Water.
7. The budget approved as part of the March 2018 Revised WSIP, plus any additional budget changes approved by the Commission as part of additional contingencies on construction contracts.
 8. The WSIP Local Water Supply projects underwent a September 2013 re-baseline. Only the original WSIP portion of the re-baselined costs is reported here. The remaining budget is funded under the Water Enterprise CIP and is managed outside the purview of the WSIP.
 9. The original \$522M estimate of financing cost was based on a memorandum to the Commission dated November 23, 2005.
 10. The financing cost budget of \$372M that was included in the March 2018 Revised WSIP includes all financing costs appropriated to date.
 11. The actual financing cost is assumed to match the budgeted financing cost. Final reconciliation of all associated financing costs will occur upon WSIP completion.

Table 3.2 provides the current remaining construction contingency. For each region, it shows the 2018 Approved Construction Contingency; the Total Approved Change Orders prior to the reporting quarter; Change Orders Approved during the reporting quarter; Total Approved Change Orders through the reporting quarter; Project Savings Moved to Contingency/ Funds Moved out of Contingency during the Reporting Quarter; the Q2/FY19-20 Forecasted Construction Contingency; and the Remaining

Contingency as of the end of the reporting quarter. As of December 31, 2019, the Forecasted Construction Contingency is \$452.4 million, and the Current Remaining Contingency is \$16.8 million.

The Change Orders Approved in Q2/FY19-20 are shown in Table 3.2. Table 3.3 provides further information at the construction contract level for all approved change orders during the reporting quarter.

Table 3.2 Current Remaining Construction Contingency

Region	Q1/FY19-20 Forecasted Construction Contingency ⁽¹⁾ (\$ Million) (A)	Total Approved Change Orders as of Q1/FY19-20 ^(2,3) (\$ Million) (B)	Change Orders Approved in Q2/FY19-20 ⁽²⁾ (\$ Million) (C)	Total Approved Change Orders as of Q2/FY19-20 (\$ Million) (D = B+C)	Project Savings or Director's Reserves (+) Moved to Contingency/ Funds (-) Moved out of Contingency during Q2/FY19-20 ⁽⁴⁾ (\$ Million) (E)	Q2/FY19-20 Forecasted Construction Contingency (\$ Million) (F = A + E)	Q2/FY19-20 Remaining Contingency (\$ Million) (G = F - D)
San Joaquin Region	\$0.22	-	-	-	-	\$0.22	\$0.22
Sunol Valley Region	\$370.45	\$358.13	(\$2.78)	\$355.36	(\$4.12)	\$366.33	\$10.97
Bay Division Region	\$8.25	\$8.06	-	\$8.06	(\$0.04)	\$8.21	\$0.15
Peninsula Region	\$57.38	\$56.79	-	\$56.79	-	\$57.38	\$0.59
San Francisco Regional Region	\$20.30	\$14.64	\$0.86	\$15.50	(\$0.22)	\$20.08	\$4.58
Support Projects	\$0.14	(\$0.12)	-	(\$0.12)	-	\$0.14	\$0.26
Regional Total	\$456.73	\$437.51	(\$1.91)	\$435.59	(\$4.38)	\$452.35	\$16.76

Notes:

1. Construction Contingency approved as part of the March 2018 Revised WSIP, plus any regional projects' savings moved to contingency.
2. Approved Change Orders are changes that have received all required approvals, including that of the City Controller.
3. This table only reports change orders for the active construction contracts as of this reporting cycle.
4. Values only reflect savings realized following the Commission's adoption of the March 2018 Revised WSIP.

Table 3.3. Details on Transactions Out of and Into Contingency

Project No. - Contract	Transactions Out of Contingency			Transactions Into Contingency		
	Approved Change Orders (\$ Million) (A)	Budget Underrun at Project Completion / Director's Reserve Moved Out of Project (\$ Million) (B)	Sub Total (\$ Million) (C = A + B)	Savings Due to Low Bid (\$ Million) (D)	Budget Overrun at Project Completion / Director's Reserve Moved to Project (\$ Million) (E)	Sub Total (\$ Million) (F = D + E)
Sunol Valley Region	(\$2.78)	\$4.34	\$1.56	-	\$0.21	\$0.21
CUW35201 Alameda Creek Recapture Project	-	-	-	-	\$0.21	\$0.21
CUW37401 Calaveras Dam Replacement WD-2551	(\$2.76)	\$3.79	\$1.04	-	-	-
CUW37401 Calaveras Dam Other Construction WD-2729	(\$0.02)	-	(\$0.02)	-	-	-
CUWSVI0101 WSIP Closeout - Sunol Valley	-	\$0.54	\$0.54	-	-	-
Bay Division Region	-	\$0.04	\$0.04	-	-	-
CUWBDF0101 - WSIP Closeout - Bay Division		\$0.04	\$0.04		-	-
San Francisco Regional	\$0.86	\$0.22	\$1.08	-	-	-
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	\$0.86	\$0.22	\$1.08	-	-	-
Regional Total	(\$1.91)	\$4.60	\$2.68	-	\$0.21	\$0.21

Table 3.4 Forecasted Remaining Construction Contingency

Region	Q2/FY19-20 Remaining Construction Contingency ⁽¹⁾ (\$ Million) (A)	Pending Change Orders as of Q2/FY19-20 ⁽²⁾ (\$ Million) (B)	Potential Change Orders as of Q2/FY19-20 ⁽³⁾ (\$ Million) (C)	Trends as of Q2/FY19-20 ⁽⁴⁾ (\$ Million) D	Q2/FY19-20 Forecasted Remaining Construction Contingency (\$ Million) (E = A-B-C-D)
San Joaquin Region	\$0.22	-	-	-	\$0.22
Sunol Valley Region	\$10.97	\$4.77	\$2.19	-	\$4.01
Bay Division Region	\$0.15	-	-	-	\$0.15
Peninsula Region	\$0.59	-	-	-	\$0.59
San Francisco Regional Region	\$4.58	\$0.74	\$0.66	\$2.13	\$1.05
Support Projects	\$0.26	-	-	-	\$0.26
Regional Total	\$16.76	\$5.51	\$2.84	\$2.13	\$6.28

Notes:

1. Same as Column G in Table 3.2.
2. Pending Change Orders are changes that have been negotiated and approved by the SFPUC but have to be approved by the City Controller.
3. Potential Change Orders are changes that have been requested and entered into CMIS but are still being negotiated.
4. Trends are any expected impact that the CM team believes has a high probability of becoming a change but are yet to be entered into CMIS as a Potential Change

Table 3.4 provides the forecasted remaining construction contingency. For each region as of Q2/FY19-20, it shows the Remaining Construction Contingency, Pending Change Orders, Potential Change Orders, Trends, and Forecasted Remaining Construction Contingency. As of December 31, 2019, the Total Forecasted Remaining Construction Contingency is \$6.3 million. This amount does not include funds that are currently held in Director's Reserve.

The Program Management project includes programmatic activities that span multiple regions and benefit several WSIP projects (Table 3.5). The project provides funding for the following functions and resources: SFPUC Staff assigned to the management of the overall program; consultants supporting SFPUC staff at the program level (program, project and pre-construction management consultant, program

construction management consultant, program control consultant); labor relations, including management of the project labor agreement; communication and public outreach; programmatic legal support; real estate acquisitions; program controls, including the tracking and reporting of all WSIP efforts; and program-level construction management activities associated with quality assurance, risk management, the Supplier Quality Surveillance (SQS) Program, operations assistance, safety, and training.

The activities under the Program Management project are organized into five categories that are tracked and monitored on a monthly basis. These categories are Management Support, Project Labor Agreement, Planning and Project Development, Program Control, and Program Construction Management.

Table 3.5 Status of Program Management Project Cost Breakdown

Category	Expenditures To Date (\$ Million) (A)	2018 Approved Budget (\$ Million) (B)	Current Approved Budget (\$ Million) (C)	Q2/FY19-20 Forecasted Cost* (\$ Million) (D)	Cost Variance (\$ Million) (E = C-D)
Management Support	\$37.4	\$42.8	\$42.8	\$42.8	-
Project Labor Agreement	\$3.7	\$3.8	\$3.8	\$3.8	-
Planning and Project Development	\$18.0	\$18.3	\$18.3	\$18.3	-
Program Controls	\$20.0	\$19.8	\$19.8	\$19.9	-
Program Construction Management	\$27.7	\$28.0	\$28.0	\$28.0	-
Program Management Total	\$106.8	\$112.7	\$112.7	\$112.7	-

The spending pattern for the project is very similar from month to month as the project primarily funds program-level positions occupied by both SFPUC staff and consultants. The Current Approved and the Forecasted Total Program Management Cost are \$112.7 million.

4. PROGRAM SCHEDULE SUMMARY

Figure 4.1 and Table 4.1 compare the 2005 Baseline, 2018 Approved, Current Approved, and Q2/FY19-20 Forecasted Schedules for the WSIP Regional Program. Refer to the “Cost and Schedule Status” notes in Section 5 for the criteria associated with the three color-coded Forecast Status levels in Figure 4.1 - Meet Requirements, Need Attention, and Exceed Limits. The Current Approved and Forecasted Schedule completion for the overall WSIP (including Regional and Local Programs) are in December 2021 and May 2023, respectively (16 months behind schedule). Refer to Appendix C for a graphical presentation of the WSIP Approved Project-Level Schedule.

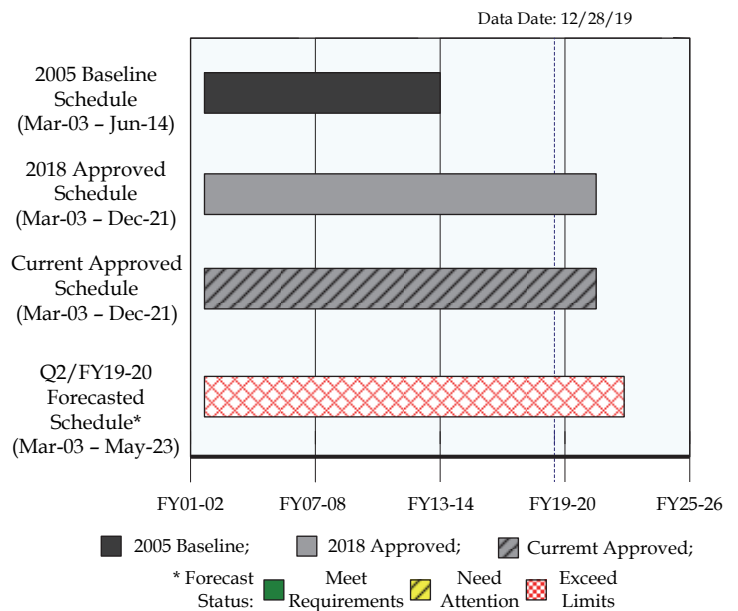


Figure 4.1 Program Schedule Summary

Table 4.1 2018 Approved vs. Q2/FY19-20 Forecasted Schedule Dates

Category	2005 Baseline Start	2018 Approved Start	Current* Approved Start	Actual Start	2005 Baseline Finish	2018 Approved Finish	Current* Approved Finish	Q2/FY19-20 Forecasted Finish	Schedule Variance (Months)
Regional Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/30/14	12/30/21	12/30/21	05/05/23	16.1 (Late)
Local** Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/28/13	7/31/18	7/31/18	01/31/20	18.0 (Late)
Overall WSIP	03/01/03	03/01/03	03/01/03	03/01/03✓	06/30/14	12/30/21	12/30/21	05/05/23	16.1 (Late)

* The budget and schedule approved as part of the March 2018 Revised WSIP, plus any additional budget and schedule changes approved by the Commission as part of additional contingencies on construction contracts.

** Excluding Local Water Supply Projects

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5. PROJECT PERFORMANCE SUMMARY*

All costs are shown in \$1,000s as of 12/28/19

Project Name	Active Phase (**)	2005 Baseline Budget (a)	2018 Approved Budget (b)	Current Approved Budget (c)	Q2/FY19-20 Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f= c - d)	Cost Status (+)	2005 Baseline Completion (g)	2018 Approved Completion (h)	Current Approved Completion (i)	Q2/FY19-20 Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
San Joaquin Region															
CUWSJI0101 - WSIP Closeout - San Joaquin	CN		\$ 4,376	\$ 4,376	\$ 3,876	\$ 666	\$ 500	★		12/20/19	12/20/19	12/18/20	12.0 mo. Late	●	See Section 6
Sunol Valley Region															
CUW35201 - Alameda Creek Recapture Project	DS	\$ 18,809	\$ 34,000	\$ 34,000	\$ 37,645	\$ 12,918	(\$3,645)	●	05/25/12	11/03/21	11/03/21	05/05/23	18.0 mo. Late	●	See Section 6
CUW37401 - Calaveras Dam Replacement	CN	\$ 256,511	\$ 823,092	\$ 823,092	\$ 812,265	\$ 774,739	\$ 10,827	★	05/25/12	12/20/19	12/20/19	12/31/20	12.4 mo. Late	●	See Section 6
CUWSVI0101 - WSIP Closeout - Sunol Valley	CN		\$ 5,990	\$ 5,990	\$ 5,990	\$ 2,845	-	★		06/30/21	06/30/21	06/30/21	-	★	See Appendix E
Bay Division Region															
CUWBDP0101 - WSIP Closeout - Bay Division	CN		\$ 4,399	\$ 4,399	\$ 3,801	\$ 2,249	\$ 598	★		06/30/20	06/30/20	06/30/20	-	★	See Appendix E
Peninsula Region															
CUWPW10101 - WSIP Closeout - Peninsula	CN		\$ 13,580	\$ 13,580	\$ 13,580	\$ 9,399	-	★		05/19/21	05/19/21	08/05/21	2.6 mo. Late	⚠	See Section 6
San Francisco Regional Region															
CUW30103 - Regional Groundwater Storage and Recovery	CN	\$ 39,233	\$ 138,793	\$ 138,793	\$ 149,151	\$ 106,746	(\$10,358)	⚠	02/27/14	12/30/21	12/30/21	10/21/22	9.7 mo. Late	●	See Section 6
Support Projects															
CUW38804 - Long Term Mitigation Endowment ++	NA		\$ 12,000	\$ 12,000	\$ 12,000	\$ 0	-	★		09/30/21	09/30/21	09/30/21	-	★	NA
CUW39401 - Watershed and Environmental Improvement Program	NA	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 16,506	-	★	06/28/13	01/08/21	01/08/21	01/08/21	-	★	See Appendix E

* Excludes projects with completed construction and projects that are no longer active (i.e., deleted projects, closed projects, and projects combined with other projects)

**** Phase Status Legend**

PL	Planning	DS	Design	BA	Bid & Award
CN	Construction	NA	Not Applicable		

For projects active in multiple phases, the table shows the phase in which a majority of the works is taking place.

+ Cost and Schedule Status

- ★ Meet Requirements: Forecasted Cost/Schedule is within Current Approved Budget/Schedule.
- ⚠ Need Attention: Forecasted Cost is over Current Approved Budget by greater than 1% and less than 10%. Or Forecasted Schedule is over Current Approved Schedule by greater than 2 months and less than 6 months and less than 10%.
- Exceed Limits: Forecasted Cost is over Current Approved Budget by 10% or more. Or Forecasted Schedule is over Current Approved Schedule by greater than 6 months or 10% or more.











++ The Long Term Mitigation Endowment (LTME) fund provides an initial deposit to secure a source of funds for perpetual monitoring and maintenance of the Bioregional Habitat Restoration sites constructed in the SFPUC watershed, as required by the United States Army Corps of Engineers and California Department of Fish and Wildlife permits. The LTME fund does not involve construction activities to secure land purchases.

6. PROJECTS NOT WITHIN BUDGET AND/OR SCHEDULE

CUWSJI0101 - WSIP Closeout - San Joaquin

Project Description: This project includes miscellaneous improvements to ensure the WSIP Level of Service (LOS) goals and objectives are fully achieved in the San Joaquin Region. The work will be completed by means of two sub-projects: (1) re-evaluation of existing photo-voltaic systems and potential addition of new solar panels to supplement existing solar panels for existing onsite equipment operations at San Joaquin No.4 Junction, at the Throttling Station at Knight’s Ferry, and at Oakdale Portal, eliminating the need for propane generators at these sites; and (2) the installation of an interior concrete slab and drainage improvements at Tesla Portal as the original slab was deleted during the portal construction to allow access for repairs of existing corroded pipelines beneath the slab.

Region: San Joaquin	Project Status: Construction	Environmental Status: Not Applicable
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Project Cost:		Project Schedule:	
Approved 	\$4.38 M	Approved Jun-16 	Dec-19
Forecast* 	\$3.88 M	Forecast* Jun-16 	Dec-20
Actual 	\$0.67 M	Project Percent Complete: 42.3%	
 Approved;  Actual Cost; * Forecast Status:  Meet Requirements  Need Attention  Exceed Limits			

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	N/A	N/A	Various	Various

Progress and Status:

During the reporting period, a total of three separate task orders were set up under two separate JOCs: JOC 71R-5 with Big Valley for the Oakdale Portal Valve House #4; JOC 65R-13 with Boyer Construction for SJPL#3 and #4 Throttling Station; and JOC 65R-14 for SJPL#4 Junction Valve. A meeting was conducted with the contractors to develop the scopes. Contractors are working with the Project team to provide cost proposals for the projects.

Issues and Challenges:

Due to the market condition for Solar Power, the type of battery needed requires at least 30 weeks of lead time to procure. The Project team is currently looking into options for a different type of battery.








Oakdale Valve House No. 4 Solar Facilities

CUW35201 - Alameda Creek Recapture Project

Project Description: The scope of this project includes conveyance of the water to various existing storage sites within the Sunol Valley to the Sunol Valley Water Treatment Plant by addition of the following:

- Four vertical turbine pumps mounted on floating barges located in existing Pond F2.
- Flexible discharge pipelines which are connected between the new pipe manifold and the existing Sunol Pipeline to discharge the recaptured water to the SFPUC system.
- Throttling valves, a flow meter, and other electrical and general site improvements.

Region: Sunol Valley	Project Status: Design	Environmental Status: Active (EIR)
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Project Cost:		Project Schedule:	
Approved	 \$34.00 M	Approved Sep-03	 Nov-21
Forecast*	 \$37.65 M	Forecast* Sep-03	 May-23
Actual	 \$12.92 M	Project Percent Complete: 40.6%	

 Approved;  Actual Cost; * Forecast Status:  Meet Requirements  Need Attention  Exceed Limits

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	07/02/20	07/15/20	01/15/21	11/07/22

Progress and Status:

The recirculated Administrative Draft EIR (ADEIR) was published on 12/4/19. Public comments on the document are due in the next reporting quarter. The redesign work includes updates to meet the latest design code revisions to the pumping and electrical systems to accommodate the revised pond operation procedure.

Issues and Challenges:

The project schedule was updated based on the ADEIR publication date. The budget was reevaluated based on scope revisions from the ADEIR. The forecast for final construction completion is November 2022, and project closeout is May 2023. The forecast project budget is \$37,645,000. The variance between the approved and forecast project budget and schedule is due to the extensive effort to recirculate the ADEIR including re-analyzing stream flow data, meeting with Regulatory Agencies and Fisheries Workgroup, revising and reviewing the document sections, and incorporating comments. The increases are also due to an increase in the construction duration, and increases in the construction estimate, contingency and escalation costs.









Current Condition of Pond F2 Access Road

CUW37401 - Calaveras Dam Replacement

Project Description: The main construction project at Calaveras Reservoir provides for construction of a new 210-foot-high earth and rock fill dam, spillway, stilling basin, and intake tower and shaft to replace the existing facilities. A fish ladder will be added on the right abutment (looking downstream) of the Alameda Creek Diversion Dam (ACDD), a dam which acts to divert water through the Alameda Creek Diversion Tunnel (ACDT) to Calaveras Reservoir.

Region: Sunol Valley	Project Status: Construction	Environmental Status: Completed (EIR)
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Project Cost:		Project Schedule:	
Approved	 \$823.09 M	Approved Sep-02	 Dec-19
Forecast*	 \$812.27 M	Forecast* Sep-02	 Dec-20
Actual	 \$774.74 M	Project Percent Complete: 99.5%	
			

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction+ NTP	Construction+ Final Completion
Current Forecast	01/27/11✓	(A) 01/31/11✓ (B) 01/04/16✓	(A) 08/15/11✓ (B) 04/19/16✓	(A) 07/12/19✓ (B) 09/30/20

+ Project includes multiple construction contracts.

(A) Calaveras Dam Replacement (WD-2551); (B) Alameda Creek Diversion Dam (WD-2729)

Progress and Status:

WD-2551 CDRP: The project team continued to complete a few outstanding deliverable items to close out this project. R&S contractor was brought on board (JOC 77-04) to address a few minor outstanding items that were delayed and could not be completed as part of WD-2551. NTP will be issued in the next quarter once the project team completes negotiations with R&S. The project team continues to perform dam monitoring inspections and will resume Initial Fill Plan inspections once the reservoir reaches EL 733.6 ft. The second hold point, which takes place once the reservoir reaches EL 745 ft to 750 ft, may occur in the next quarter depending on rainfall.

WD-2729 ACDD: The contractor completed almost all of the punch list items, continued to prepare and provide closeout documents, and negotiated with the City on two remaining change orders. The project team continued to plan for the remaining portion of the wet testing that did not occur in March 2019 but might happen in the next quarter depending on whether there is sufficient flow in the creek. R&S (JOC 77-02) started working on a few minor outstanding items that could not be completed as part of WD-2729.









CDRP Aerial View

Issues and Challenges:

As reported in the last quarter, the forecasted completion date for CUW37401 will need to be delayed to allow the contractor on WD-2729 to complete wet testing in the winter of 2020, and to adjust the debris rake and rack system in the summer of 2020 when there is no flow in the creek.

CUWPWI0101 - WSIP Closeout - Peninsula

Project Description: This project consists of miscellaneous improvements to ensure the WSIP Level of Service (LOS) goals and objectives are fully achieved in the Peninsula Region. The work will be completed by means of seven sub-projects: (1) the Lower Crystal Springs Dam (LCSD) stilling basin modifications and dissipation structure riprap; (2) valve modifications to accommodate stipulated releases of fresh water into San Mateo Creek for fish passage at the same site; (3) New Crystal Springs Bypass Tunnel electrical modifications due to groundwater intrusion into vaults housing it; (4) closeout of California Division of Safety of Dams permit applications; (5) coordination with San Mateo County for bridge construction over LCSD; (6) Harry Tracy Water Treatment Plant Improvements in automating operations to aid reliability in meeting LOS goals; and (7) Crystal Springs/San Andreas pipeline erosion repairs.

Region: Peninsula	Project Status: Construction	Environmental Status: Not Applicable
Project Cost:		Project Schedule:
Approved  \$13.58 M	Approved Jul-16  May-21	
Forecast*  \$13.58 M	Forecast* Jul-16  Aug-21	
Actual  \$9.40 M	Project Percent Complete: 86.2%	
		

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	N/A	Various	Various	Various

Progress and Status:

Lower Crystal Springs Dam: (1) WD-2822R2 - Lower Crystal Springs Dam (LCSD) Stilling Basin Connecting Channel - The Notice to Proceed for Anvil Builders was issued on 4/8/19, and Final Completion (FC) is 11/4/20. Subproject completion is 8/5/21. Construction is 75% complete. Completed installation of all electrical and mechanical equipment, piping, and wetland planting.

(2) LCSD Bridge Replacement - joint project with San Mateo County. A few warranty issues are being addressed. (2.1) JOC 76R-01 North Parapet Wall Extension will close a gap between the LCSD north parapet wall and the new bridge abutment, with a forecasted start date for gap repair construction in February 2020. Subproject Completion is 9/2/20. (2.2) To close out the Memorandum of Agreement (MOA) with San Mateo County, a draft LCSD Security Assessment report was completed, and is under review. Subproject completion is 6/30/20. (2.3) The SFPUC received a permit from San Mateo County for the use of the bridge during the repairs of the drainage channel atop the south side of LCSD. The project team is still waiting for an encroachment permit from CALTRANS for placement of traffic signs. Final completion is planned by 6/30/20. Subproject Completion is 12/31/20.











Harry Tracy Water Treatment Plant: [1] JOC 59-01 Electrical & Mechanical Piping Modifications - Scope of work for generator integration into SCADA and training is being finalized and has been determined to be not a part of WSIP. [2] JOC-59-17 Emergency Generators Filters Upgrades - In closeout. Subproject completion is 1/31/20. [3] Equalization Basin Mixers - Mixers were installed, tested and commissioned. Closeout is in progress with subproject completion planned by 1/31/20. [4] Erosion on CSSA Pipeline - completed 4/30/19.

Issues and Challenges:

Lower Crystal Springs Dam: (2.1) The delay for the start of construction for JOC 76R-01 North Parapet Wall Extension is due to the longer duration needed to acquire an approved site-specific health and safety plan from the contractor.

CUW30103 - Regional Groundwater Storage and Recovery

Project Description: The goal of the project is to provide up to 7.2 million gallons per day (mgd) of dry year water supply over 7.5 years. The original project design included the construction of up to 16 groundwater wells and well stations to be connected to three wholesale customers on the Upper Peninsula and the SFPUC transmission system to achieve the water supply goal. Phase 1 included the installation of 13 well stations to produce approximately 6.2 mgd, and the original scope of Phase 2 included construction of 2 to 3 additional well stations, based upon well yield. Due to difficulties with siting well stations in the central portion of the groundwater basin, Phase 2 has been modified to install up to 3 test wells (Ludeman North, Ludeman South and Centennial Trail), complete the South San Francisco Main well and pipeline, and complete other Phase 1 scope items, including chemical system monitoring, sampling and storage at various sites. The Phase 2 test wells will not be converted to production wells at this time, but will allow for determination as to whether the identified sites could be viable future production wells, and will provide valuable information related to water quality and potential pumping capacities that can be used for future planning and decision making.

Region: San Francisco Regional	Project Status: Construction	Environmental Status: Active (Various)
Project Cost:		Project Schedule:
Approved  \$138.79 M	Approved Jun-03  Dec-21	
Forecast*  \$149.15 M	Forecast* Jun-03  Oct-22	
Actual  \$106.75 M	Project Percent Complete: 77.8%	
 Approved;  Actual Cost; * Forecast Status:  Meet Requirements  Need Attention  Exceed Limits		

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction+ NTP	Construction+ Final Completion
Current Forecast	(A) 09/07/09✓ (B) 08/07/14✓ (C) 10/31/16✓	(A) 09/07/11✓ (B) 09/22/14✓ (C) 10/21/20	(A) 01/30/12✓ (B) 04/06/15✓ (C) 04/22/21	(A) 09/05/12✓ (B) 03/07/21 (C) 04/22/22

+ Project includes multiple construction contracts.

(A) Test well drilling; (B) Well station construction; (C) Well sites in Millbrae and South San Francisco

Progress and Status:

For Phase 1 (Contract B), functional testing at F Street Well & Treatment Facility (Colma BART) is in its final stage, and is prepared for the 7-day test in January 2020. Functional testing at Hickey Blvd and Serramonte Blvd Well and Treatment Facilities is proceeding.

For Phase 2 (associated with Contract C), the CER for the South San Francisco Main well station is being finalized. The initial follow-up work from Contract B is underway. Follow-up work is related to control panels, pressure sensing lines, sample taps, and discharge capacity evaluation.

Issues and Challenges:

The variance between the Approved and Forecasted schedule for Phase 1 (Contract B) is due to necessary modifications to the well pump system at several locations, to address problems from sand, decline of pump performance, electrical interference, and corrosion. The project team continues addressing other issues, including undersized carrier water pumps;

ammonia pump not meeting pump performance; other chemical system modifications for groundwater treatment; the retrofit of existing transmission line flowmeters; and other changes to programming, access, and treatment testing. Further monitoring and calibration are needed to acquire more accurate and consistent readings on the transmission line flowmeters. These changes have resulted in delays to the 7-day tests, resulting in the overall delay of construction completion. The project team is currently evaluating the potential cost impact for modification to Phase 1 work, and this evaluation will be included in the next future quarterly report. The variances between the Approved and Forecasted cost and schedule for Phase 2 (Contract C) are due to field findings during initial follow-up work from Contract B.

7. On-Going Construction

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion*	Q2/FY19-20 Forecasted Construction Final Completion**	Approved Contract Cost +	Q2/FY19-20 Forecasted Cost++	Schedule (Cal. Days)	Cost	
Sunol Valley Region								
CUW37401 - Alameda Creek Diversion Dam (Contract B)	04/19/16	12/16/18	09/30/20	\$ 36,464,126	\$ 43,422,940	(654)	(\$6,958,814)	99.0%
San Francisco Regional Region								
CUW30103 - Regional GW Storage and Recovery (Contract B)	04/06/15	03/28/19	03/07/21	\$ 58,483,289	\$ 59,881,726	(710)	(\$1,398,437)	97.0%

Program Total for On-Going Construction	Approved Contract Cost	Q2/FY19-20 Forecasted Cost*	Variance	
			Cost	Percent
	\$ 94,947,415	\$ 103,304,666	(\$8,357,251)	(8.8%)

Note:

* Approved Construction Final Completion Date includes approved change orders.
 ** The Forecasted Construction Final Completion Date includes all approved, pending, and potential change orders and trends.

+ Approved Contract Cost includes awarded contract amount and approved change orders.
 ++ The Forecasted Cost includes awarded contract amount and all approved, pending, and potential change orders.

8. PROJECTS IN CLOSE-OUT

Project Title	2005 Baseline Construction Phase Completion	2018 Approved Construction Phase Completion	Current Approved Construction Phase Completion	Actual Construction Phase Completion	2005 Approved Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Forecasted Project Completion	2005 Baseline Construction Phase Budget	2018 Approved Construction Phase Budget	Current Approved Construction Phase Budget	Construction Phase Expenditures To Date
Support Projects												
CUW38802 - Bioregional Habitat Restoration		05/31/18	05/31/18	05/31/18		09/30/21	09/30/21	09/30/21		\$ 52,299,498	\$ 51,636,156	\$ 50,646,914
TOTAL										\$ 52,299,498	\$ 51,636,156	\$ 50,646,914

9. COMPLETED PROJECTS

Project Title	2005 Baseline Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2018 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
San Joaquin Region								
CUW36401 - Lawrence Livermore Water Quality Improvement	11/07/11	07/31/13	07/31/13	07/31/13	\$ 4,235,258	\$ 4,198,247	\$ 4,198,247	\$ 4,198,247
CUW37301 - San Joaquin Pipeline System	03/25/14	03/31/16	03/31/16	03/31/16	\$ 352,732,000	\$ 203,178,014	\$ 203,178,015	\$ 203,178,015
CUW37302 - Rehabilitation of Existing San Joaquin Pipelines	06/30/14	10/31/14	10/31/14	10/31/14	\$ 80,000,000	\$ 21,153,622	\$ 21,153,622	\$ 21,153,622
CUW38401 - Tesla Treatment Facility	07/01/11	01/30/15	01/30/15	01/30/15	\$ 101,643,001	\$ 113,211,607	\$ 113,211,607	\$ 113,211,607
Sunol Valley Region								
CUW35501 - Standby Power Facilities - Various Locations	12/06/10	12/22/10	12/22/10	12/22/10	\$ 9,949,735	\$ 12,950,566	\$ 12,950,566	\$ 12,950,566
CUW35901 - New Irvington Tunnel	09/17/13	03/31/18	03/31/18	03/31/18	\$ 214,650,004	\$ 340,406,358	\$ 340,406,358	\$ 339,901,806
CUW35902 - Alameda Siphon #4	04/14/11	06/28/13	06/28/13	06/28/13	\$ 78,577,000	\$ 64,950,507	\$ 64,950,507	\$ 64,950,507
CUW37001 - Pipeline Repair & Readiness Improvements	03/30/07	04/16/09	04/16/09	04/16/09	\$ 5,591,770	\$ 5,195,381	\$ 5,195,381	\$ 5,195,381
CUW37402 - Calaveras Reservoir Upgrades	02/17/06	07/28/06	07/28/06	07/28/06	\$ 1,740,055	\$ 1,690,552	\$ 1,690,552	\$ 1,690,552
CUW37403 - San Antonio Backup Pipeline	06/29/12	06/30/16	06/30/16	06/30/16	\$ 7,677,000	\$ 53,594,683	\$ 53,594,683	\$ 53,594,683
CUW38101 - SVWIP Expansion & Treated Water Reservoir	07/09/13	10/31/14	10/31/14	10/31/14	\$ 133,108,002	\$ 129,593,674	\$ 129,593,674	\$ 129,593,674
CUW38601 - San Antonio Pump Station Upgrade	12/12/11	06/29/12	06/29/12	06/29/12	\$ 41,854,000	\$ 12,894,592	\$ 12,894,592	\$ 12,894,592
Bay Division Region								
CUW35301 - BDPL Nos. 3 & 4 Crossover/Isolation Valves	09/30/08	07/31/09	07/31/09	07/31/09	\$ 27,600,158	\$ 27,039,149	\$ 27,039,149	\$ 27,039,149
CUW35302 - Seismic Upgrade of BDPL Nos. 3 & 4	10/15/12	07/30/18	07/30/18	07/30/18	\$ 66,792,849	\$ 73,623,296	\$ 73,623,296	\$ 70,556,621
CUW36301 - SCADA System - Phase II	02/24/12	05/28/13	05/28/13	05/28/13	\$ 36,098,999	\$ 9,470,922	\$ 9,470,922	\$ 9,470,923
CUW36801 - BDPL Reliability Upgrade / Tunnel	01/31/14	08/30/16	08/30/16	08/30/16	\$ 572,022,634	\$ 272,364,089	\$ 272,364,089	\$ 271,823,525
CUW36802 - BDPL Reliability Upgrade - Pipeline	-	03/31/16	03/31/16	03/31/16	-	\$ 216,871,156	\$ 216,871,156	\$ 216,722,172
CUW36803 - BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2	-	05/28/10	05/28/10	05/28/10	-	\$ 3,046,981	\$ 3,046,981	\$ 3,046,981
CUW38001 - BDPL Nos. 3 & 4 Crossovers	04/24/13	06/30/14	06/30/14	06/30/14	\$ 36,616,911	\$ 29,910,449	\$ 29,910,449	\$ 29,910,449
CUW38901 - SFPUC/EBMUD Intertie	02/07/07	03/20/14	03/20/14	03/20/14	\$ 8,598,851	\$ 9,167,306	\$ 9,167,306	\$ 9,167,306
CUW39301 - BDPL No. 4 Condition Assessment PCCP Sections	05/01/08	02/06/09	02/06/09	02/06/09	\$ 2,000,000	\$ 1,937,599	\$ 1,937,599	\$ 1,937,599
Peninsula Region								
CUW35401 - Lower Crystal Springs Dam Improvements	08/16/11	12/28/12	12/28/12	12/28/12	\$ 27,752,222	\$ 34,859,040	\$ 34,859,040	\$ 34,859,040
CUW35601 - New Crystal Springs Bypass Tunnel	10/28/10	08/17/12	08/17/12	08/17/12	\$ 83,222,790	\$ 81,466,732	\$ 81,466,732	\$ 81,466,732
CUW35701 - Adit Leak Repair - Crystal Springs/Calaveras	07/03/08	07/31/08	07/31/08	07/31/08	\$ 3,748,452	\$ 2,787,322	\$ 2,787,322	\$ 2,787,322
CUW36101 - Pulgas Balancing - Inlet/Outlet Work	05/11/06	05/11/06	05/11/06	05/11/06	\$ 1,667,532	\$ 1,765,938	\$ 1,765,938	\$ 1,765,938

WSIP Quarterly Report

Project Title	2005 Baseline Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2018 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
Peninsula Region								
CUW36102 - Pulgas Balancing - Discharge Channel Modifications	08/05/13	07/30/10	07/30/10	07/30/10	\$ 8,111,422	\$ 2,910,007	\$ 2,910,007	\$ 2,910,007
CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement	01/29/13	12/28/12	12/28/12	12/28/12	\$ 36,712,846	\$ 20,238,716	\$ 20,238,716	\$ 20,238,716
CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility	-	03/20/13	03/20/13	03/20/13	-	\$ 5,390,031	\$ 5,390,031	\$ 5,390,031
CUW36501 - Cross Connection Controls	05/15/09	04/30/09	04/30/09	04/30/09	\$ 6,111,779	\$ 3,948,944	\$ 3,948,944	\$ 3,948,944
CUW36601 - HTWTP Short-Term Improvements (Demo Filters)	07/03/06	11/14/06	11/14/06	11/14/06	\$ 4,381,375	\$ 3,067,903	\$ 3,067,903	\$ 3,067,903
CUW36603 - HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters	09/08/10	07/28/10	07/28/10	07/28/10	\$ 9,741,617	\$ 18,604,937	\$ 18,604,937	\$ 18,604,937
CUW36701 - HTWTP Long-Term Improvements	04/08/14	12/30/16	12/30/16	12/30/16	\$ 167,570,000	\$ 274,081,969	\$ 274,081,969	\$ 273,833,162
CUW36702 - Peninsula Pipelines Seismic Upgrade	-	07/06/16	07/06/16	07/06/16	-	\$ 38,825,346	\$ 38,825,346	\$ 38,773,912
CUW36901 - Capuchino Valve Lot Improvements	07/24/09	08/19/08	08/19/08	08/19/08	\$ 3,573,782	\$ 2,803,153	\$ 2,803,153	\$ 2,803,153
CUW37101 - Crystal Springs/San Andreas Transmission Upgrade	04/01/14	06/30/15	06/30/15	06/30/15	\$ 148,582,655	\$ 190,309,453	\$ 190,309,453	\$ 189,816,066
CUW37801 - Crystal Springs Pipeline No. 2 Replacement	04/27/12	12/31/14	12/31/14	12/31/14	\$ 93,926,000	\$ 56,070,509	\$ 56,070,509	\$ 56,070,509
CUW37901 - San Andreas Pipeline No. 3 Installation	06/09/11	08/30/12	08/30/12	08/30/12	\$ 42,029,941	\$ 27,495,558	\$ 27,495,558	\$ 27,495,558
CUW39101 - Baden and San Pedro Valve Lots Improvements	10/12/11	03/29/13	03/29/13	03/29/13	\$ 47,319,999	\$ 24,990,803	\$ 24,990,803	\$ 24,990,803
San Francisco Regional Region								
CUW35801 - Sunset Reservoir - North Basin	05/06/09	09/10/10	09/10/10	09/10/10	\$ 61,975,999	\$ 64,270,725	\$ 64,270,725	\$ 64,270,725
CUW37201 - University Mound Reservoir - North Basin	03/10/11	03/29/13	03/29/13	03/29/13	\$ 102,882,610	\$ 43,266,552	\$ 43,266,552	\$ 43,266,552
Support Projects								
CUW36302 - System Security Upgrades	-	09/28/18	09/28/18	04/09/19	-	\$ 15,201,310	\$ 15,201,310	\$ 14,444,954
CUW38801 - Programmatic EIR	06/20/07	06/30/09	06/30/09	06/30/09	\$ 9,271,001	\$ 10,730,684	\$ 10,730,684	\$ 10,730,684
CUW38803 - Vegetation Restoration of WSIP Construction Sites	-	06/30/16	06/30/16	06/30/16	-	\$ 2,111,546	\$ 2,111,546	\$ 2,099,755
TOTAL					\$ 2,640,070,249	\$ 2,531,645,931	\$ 2,531,645,931	\$ 2,525,823,383

APPENDICES

- A PROJECT DESCRIPTIONS**
- B WSIP BUDGET AND EXPENDITURES HISTOGRAM**
- C WSIP REGIONAL PROGRAM STAFFING PLAN**
- D WSIP APPROVED PROJECT-LEVEL SCHEDULE**
- E PROJECTS WITHIN BUDGET AND SCHEDULE**
- F LIST OF ACRONYMS**

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APPENDIX A. PROJECT DESCRIPTIONS

SAN JOAQUIN REGION

CUW36401 - Lawrence Livermore Water Quality Improvement (Completed)

The project consists of:

- Ultraviolet (UV) disinfection, including two 150-gallon-per-minute, parallel UV units and ancillary facilities. The units will be installed in the existing Thomas Shaft building.
- Two pumps that will pump water from the Coastal Range Tunnel to the new disinfection system.

CUW37301 - San Joaquin Pipeline System (Completed)

The project consists of:

- Pipeline crossover facilities at Emery Road (including 10 valves) and Pelican Road (including 12 valves).
- Installation of a portion of new pipeline, the Western Segment, from the San Joaquin River to the Tesla Portal. The pipeline will be 78-inches in diameter, approximately 10.3 miles in length and will include tunneled crossings of several highways, a railroad, and an irrigation canal. The pipeline will cross over the top of the California Aqueduct.
- Installation of a portion of new pipeline, the Eastern Segment, from the Oakdale Portal to a new connection point approximately 6.7 miles downstream on SJPL No. 3. This segment will also be 78-inches in diameter.
- Installation of valve facilities on SJPL Nos. 3 and 4 along the Eastern Segment to provide for operational needs to divide and isolate segments of these lines for maintenance and to regulate flow and control pressure in the system.
- Security related site improvements at Oakdale Portal.

CUW37302 - Rehabilitation of Existing San Joaquin Pipelines (Completed)

The project scope is to assure that existing San Joaquin Pipelines will meet Delivery Reliability LOS goals by establishing a program of routine maintenance, repair, and replacement activities for long-term implementation and by addressing

the highest priority rehabilitation measures identified during the timeframe of the WSIP:

- Rehabilitation of and security-related site improvements at the existing Roselle Crossover.
- Establishment of a program of pipelines conditions assessment, including upgrading and renewal as required, of pipe coating and lining systems.
- Upgrade of the existing SJPL cathodic protection system.
- Upgrade of the existing SJPL Supervisory Control and Data Acquisition (SCADA) system.

CUW38401 - Tesla Treatment Facility (Completed)

The project consists of:

- Isolation valves and piping to divert SJPL flow to the new treatment facility, large-diameter piping and valves located within the treatment facilities, and a single discharge pipeline to tie back into the existing SJPLs.
- A disinfection building housing 12 UV reactors, cleaning equipment, and ancillary equipment.
- A chemical storage and feed facility for sodium hypochlorite, hydrofluorosilicic acid (i.e., fluoride), and carbon dioxide.
- Office, laboratory, and control facilities, emergency engine generators, and security related site and access road improvements.

CUW38701 - Tesla Portal Disinfection Station

The Tesla Portal Disinfection Facility is located where the San Joaquin Pipelines (SJPLs) converge into the Coast Range Tunnel and provides primary disinfection of the Hetch Hetchy water supply. The facility is one of the key water quality monitoring and compliance locations for the San Francisco Public Utilities Commission (SFPUC). The Tesla Portal Disinfection Station Project includes the planning of a new disinfection facility that will provide reliable disinfection to the Hetch Hetchy water supply.

This project has been combined with the "CUW38401 - Tesla Treatment Facility Project"; therefore, the respective budgets for the Environmental, Design, Bid & Award, Construction, Construction Management, and Close-out Phases have been transferred to the "CUW38401 - Tesla Treatment Facility Project".

Note that this project has been terminated and the remaining scope & budget has been combined with the "CUW38401 - Tesla Treatment Facility" project.

CUWSJI0101- WSIP Closeout - San Joaquin

• **Supplemental Solar Panel Installations** – The CUW37301 San Joaquin Pipeline System, including the western segment, eastern segment and facilities, and crossover pipeline projects, achieved final completion in 2013, 2014 and 2015, respectively. During the initial course of operations it was noted the solar panel arrays designed to provide power for the facility equipment were not sufficient to meet all modes of operational demands. This sub-project will re-evaluate the existing photo-voltaic systems and will provide additional solar panels, if needed, to cover power shortfalls and allow the facility to better meet its water delivery reliability LOS goal. This sub-project consists of three sites: Oakdale, Knight Ferry Throttling Station, and San Joaquin Junction No. 4. The scope of work includes:

- o Re-evaluation of the existing photo-voltaic systems at these three (3) locations before proceeding with modifications to the existing arrays,
- o If determined necessary to meet current power demands, furnish and install new supplemental solar arrays mounted on concrete pads within security fence enclosures,
- o Connection to and integration of the new solar panels into the existing power system and controls, and
- o Installation of batteries for solar power storage on-site.

• **Tesla Portal Facility Interior Floor Slab** – The Tesla Portal Facility, a sub-project of the CUW38401 Tesla Treatment Facility, was completed in January 2015. During construction, the concrete interior floor slab was deleted from the project construction documents to allow easier access to repair corrosion of the existing pipelines discovered during construction beneath the new Tesla Portal Facility. Due to drainage issues at the site, the Operations staff at the facility requested the interior slab be incorporated into the structure with a small access opening for future maintenance and corrosion repairs of the existing buried pipelines. This sub-project will be

constructed through use of a job order contract including:

- o A new interior concrete slab slope to drain to a new catch basin,
- o A new catch basin with grating and sump, and
- o A small sump pump and drain through the slab or existing concrete wall to a discharge point.

SUNOL VALLEY REGION

CUW35201 - Alameda Creek Recapture Project

The planned facilities for this project are based on Alternative 4-1 from the Updated Alternatives Analysis Report (AAR) dated January 30, 2009, with some refinements described below. The planned facilities include the following components: four identical vertical turbine pumps mounted on floating barges located in existing Pond F2 (including a mooring system); four flexible discharge pipelines extending from each pump to a new pipe manifold located on shore; approximately 100-feet of 36-inch pipeline connection between the new pipe manifold and the existing Sunol Pipeline to discharge the recaptured water to the SFPUC system; throttling valves and a flow meter; electrical control building; 1,600 feet of power lines from the existing Hetch Hetchy Water & Power Calaveras Electrical Substation installed on 10 new power poles; and general site improvements. In addition, the scope includes conveyance of the water to various existing storage sites within the Sunol Valley or the Sunol Valley Water Treatment Plant, as necessary. Some minor refinements were made in the March 2016 Notice of Changes to eliminate on-shore booster pumps in favor of a single set of pumps located on barges in Pond F2 and the elimination of the flexibility to allow multiple sources of water from Pond F2 and Calaveras Reservoir to be blended and sent to San Antonio Reservoir (SAR) in the future.

CUW35501 - Standby Power Facilities - Various Locations (Completed)

The project consists of installing standby electrical power facilities at six sites in the East Bay and on the Peninsula. Each site is either provided with an emergency generator or electrical receptacles to accommodate a portable emergency generator.

The five sites are: Alameda West Portal, and San Antonio Reservoir & Dam; Harry Tracy Water Treatment Plant; Millbrae Yard; San Pedro Valve Lot; and Capuchino Valve Lot.

CUW35901 - New Irvington Tunnel (Completed)

This project consists of an 18,660-foot long tunnel in a horseshoe shape with excavated dimensions of approximately 13 feet by 14 feet. The final tunnel lining will be mortar-lined, welded steel pipe, resulting in a finished diameter of 8.5 feet. Extra thick steel liner segments will also be used at low cover areas near the portals and beneath Interstate 680 where the tunnel intersects inactive fault zones, and where the tunnel passes through areas of poor ground conditions.

Major project elements include:

- Conventional mining methods are being used in a westward direction from the Alameda West Portal, in both an eastward and westward direction from an intermediate shaft located near Vargas Road just off Interstate 680, and in an eastward direction from Irvington Portal. Tunneling is being completed by multiple road header tunneling machines and limited, controlled detonation in areas of hard rock. Spoils disposal is being taken to fill sites just north of the San Antonio Pump Station (SAPS) near the intersection of Calaveras Road and Interstate 680. When completed the spoils fills will create a visual barrier to a new quarry operation located near Calaveras Road. Potentially contaminated spoils will be screened, separated, and, if found to contain contaminants, hauled to a permitted landfill.

- At the Irvington Portal, the tunnel connections to Bay Division Pipelines (BDPL) will include control valves directly buried with instrumentation and electrical gear in a small control building. At the Alameda West Portal, the tunnel will be connected to the discharge of the new mixing manifold to be constructed as part of the Alameda Siphons # 4 Project and to the existing overflow shaft. The project includes a new isolation valve between the mixing manifold and the portal.

- The NIT Project will include construction of a new access bridge across Alameda Creek to accommodate temporary construction traffic and

on-going SFPUC Alameda West Portal operations.

- A Groundwater Management Program has been developed that includes two years of pre-construction monitoring of wells, springs, creeks, ponds, and wetlands; environmental habitat construction mitigation measures; and two years of monitoring after construction to minimize the impact to the local groundwater.

- At both the existing Irvington and Alameda West Portal facilities, other security-related site improvements will be constructed, including undergrounding of portal structures and new card access controlled gates and security fences.

CUW35902 - Alameda Siphon #4 (Completed)

This project consists of a 66-inch diameter welded steel pipeline; a 96-inch diameter "blending structure" near the Alameda West Portal that will blend SVWTP and Hetch Hetchy water; new isolation/throttling valves on Alameda Siphons Nos. 3 and 4; new isolation valves on Alameda Siphons Nos. 1 and 2; ventilation improvements at Alameda East Portal; new chemical injection facilities on Siphon No. 4; relocation and extension of the overflow pipe; and road improvements at the intersection with Calaveras Road.

CUW37001 - Pipeline Repair & Readiness Improvements (Completed)

The project consists of three phases for implementation: Phase A (completed) involves the procurement of varied lengths and sizes of welded steel pipe and fitting for stockpiling at seven locations west of the Coast Range Tunnel; Phase B (completed) includes procurement and installation of a pipe rolling facility at the Sunol Yard; Phase C (completed) involves the development of a pipeline repair prioritization plan as well as on-call emergency repair procedures, contracts, and mutual assistance agreements.

CUW37401 - Calaveras Dam Replacement

Project elements primarily include:

- Constructing a new 210-foot high earth and rock fill dam designed to accommodate a maximum credible earthquake on the Calaveras

Fault. The dam will be constructed immediately downstream of the existing dam and will have a crest length of 1,210 feet, a base thickness of 1,180 feet, and a crest thickness of 80 feet. The total volume of the dam will be approximately 2.8 million cubic yards.

- The materials for construction will primarily originate from onsite sources, while surplus excavated material will be placed at disposal sites around the rim of the Calaveras Reservoir, including two in-water disposal sites and several upland disposal sites.

- The existing spillway will be removed, and a new spillway and stilling basin will be constructed. The overflow weir of the new spillway will be 307 feet long. The spillway will vary from 60 to 80 feet wide and will be 1,100 feet long. The stilling basin below the spillway will be 80 feet wide and 155 feet long.

- A new intake tower and shaft will be constructed. The drain line and three adits from the existing facility will be connected to the new shaft. The existing outlet conduit from the tower will be extended 1,250 feet downstream (beneath the replacement dam) and will be equipped with a high capacity fixed-cone discharge valve (relocated from the existing facility) to accommodate water releases from the reservoir. Fish screens will be added to the existing adits of the intake tower.

- The existing dam will largely remain in place. The downstream face will, however, be partially removed and re-graded, and a channel will be excavated through the dam to form the approach to the new spillway.

- A new 525-foot long fish ladder and flow bifurcation systems at Alameda Creek Diversion Dam (ACDD) will be used in conjunction with new low-flow capacity valves to be added at the base of the replacement Calaveras Dam to provide flows downstream of these facilities to support native aquatic resources and future populations of steelhead trout that are being restored to the Alameda Creek Watershed.

- The fish ladder and a total of four new fish protection screens will be added on the right abutment (looking downstream) of the ACDD. In addition, conveyance pipes will be installed to allow water from Alameda Creek to be delivered

to the Calaveras Reservoir via the Alameda Creek Diversion Tunnel (ACDT).

- Landslide A removal beneath the northern half of the left abutment slope located on the left side of the valley (when looking downstream) as well as other associated changes as previously noted in the March 2013 Notice of Change.

- Landslide B removal within the lower left abutment slope as well as other associated change.

- Additional slope reinforcement in Borrow Area B and import of offsite rockfill to supplement rockfill mined from Borrow Area B to mitigate schedule impacts.

- Repairs to a portion of Calaveras Road where a landslide occurred due to unusually wet weather in February 2017.

- Repairs to the West Haul Road which was inundated by the reservoir elevation rise due to unusually wet weather in February 2017.

- For the ACDD fish ladder, to address potential landslide hazard and further protect the fish passage structure, an extension to the contract landslide stabilization wall and an additional reinforced concrete panel wall with tie-backs to reinforce a section of the soil nail wall.

CUW37402 - Calaveras Reservoir Upgrades (Completed)

The project consists of a new hypolimnetic oxygenation system and cryogenic equipment installed near the dam to help maintain reservoir water quality.

CUW37403 - San Antonio Backup Pipeline (Completed)

The SABPL consists of 6,600 feet of 66-inch-diameter steel pipe and extends from the Alameda Siphons at the SAPS to Sunol quarry, SMP-24, near the intersection of Calaveras Road and San Antonio Creek. There are three tie-in facilities with air gap provisions from the SABPL: one connecting to Alameda Siphon No. 3, a second to the SAPL near SAPS, and a third to the SAPL on the west side of Calaveras Road before the SAPL alignment turns and heads west to quarry SMP-24. The alignment of the SABPL parallels that of the existing SAPL, terminating with a control valve and concrete energy

dissipation structure in quarry SMP-24. The project includes new chemical storage, feed, and water-quality-monitoring facilities for de-chlorination and pH adjustment of any discharges through the SABPL, the existing SAPL, and the Alameda East Portal overflow pipe. Water discharged into the SMP-24 quarry pond will be recovered with two submersible pumps and a short section of 24-inch diameter steel pipe which will connect to the existing SAPL to convey water to San Antonio Reservoir. Power to the water recovery pumps will be supplied from the nearby Calaveras Substation, which is owned and operated by Hetch Hetchy Water & Power. Construction of a slurry wall around the quarry pond to minimize groundwater intrusion and to ensure slope stability is also included.

CUW38101 - SVWTP Expansion & Treated Water Reservoir (Completed)

The project consists of a plant expansion which will increase the sustainable capacity to 160 mgd by adding a new flocculation/sedimentation basin, by retrofitting some of the existing filters, by adding a new 17.5-million gallon (MG) circular treated water reservoir (TWR) with a new 3.5-MG rectangular chlorine contact tank on the northern portion of the existing plant site, by adding new chemical storage and feed facilities for disinfection, and by construction of approximately 2,700 feet of 78-in pipe to connect the new TWR to the existing plant.

CUW38102 - SVWTP Calaveras Road

The project consists of safety related improvements to Calaveras Road near the SVWTP access road. The project was deleted because it does not contribute to the WSIP Level of Service goals. This project deletion was approved by the Commission in February of 2008.

CUW38201 - SVWTP Treated Water Reservoir

The project consists of providing improvements to the SVWTP disinfection facilities, including new chemical feed equipment and a 5 MG chlorine contact tank. Additionally, two 8.75 MG balancing reservoirs are planned. These improvements were determined in response to a DOHS requirement.

NOTE THAT THIS PROJECT WAS TERMINATED AND THE REMAINING SCOPE & BUDGET WAS COMBINED WITH PROJECT "CUW38101 - SVWTP EXPANSION & TREATED WATER RESERVOIR."

CUW38601 - San Antonio Pump Station Upgrade (Completed)

The project consisted of:

- Replacement of three 1,000-horsepower electrical pumps.
- Addition of two 1.5-megawatt emergency generators. The generators are sized to power the three electric pumps.
- Seismic retrofit of the pump station, including reinforcement of the walls, foundation improvements, and connection of the roof to the walls.

CUWSVI0101- WSIP Closeout - Sunol Valley

• **AS4 Carrier Water System Modifications** - The CUW35902 Alameda Siphon No. 4 Project was completed in 2013. Since that time, new facilities being brought on-line as well as other changes occurring in water operations have resulted in an apparent drop in water pressure and volume at the Sunol Valley Chloramination Facility. This has reduced the available water needed for the current system to pump the necessary water treatment chemicals into the system. This new sub-project is designed to resolve the deficiency and allow the facility to meet its water delivery reliability LOS goal. This sub-project will be constructed by a job order contract including:

- o Modifications of the current chemical injection system to overcome lack of water system pressure and volume,
- o New supplemental water facilities, including possible new storage tanks, and monitoring and regulating equipment as needed, and
- o Plumbing and control connections between the new facilities and the current system.

• **Erosion Repair at Pond F3 East** - The recently completed CUW37403 San Antonio Backup Pipeline Project included drainage improvements on the east side bank of Quarry Pond F3 East. After completion of construction, it was noted that the rock riprap below a 12-inch drainage pipe had eroded away and undermined the

downstream section of the pipe. This sub-project will repair the erosion with new rockfill and restore the drainage pipe including;

- o Grading to remove loose bank debris and prepare the subgrade slope to receive the riprap,
- o Extension of the existing drain pipe downslope to the water line of the pond,
- o Installation of new rockfill on the east bank of the quarry pond from the current drain pipe to the toe of the bank, and
- o Temporary access improvements at the side bank of the pond for a crane and other equipment to deliver and place rock riprap and other materials into the repair area.

• **Sunol Valley Water Treatment Plant Polymer Feed Facility.** The Sunol Valley Water Treatment Plant Expansion and Treated Water Reservoir Project was completed in 2014 and included addition of a new fifth flocculation sedimentation basin (Basin 5) to the existing four (4) basins at the plant. During operations after completion, it was noted that Basin 5 was not able to achieve the optimal water production goal of 40 million gallons per day consistently. This sub-project was originally scoped to change the flocculation aid composition for Basin 5. The March 2018 scope refinement is to build a polymer feed facility that will serve not only Basin 5, but also the four (4) older basins (Basins 1 to 4), to optimize plant water production, and allow this facility to better meet its water quality and delivery reliability LOS goals. The portion of the facility cost attributed to Basin 5 will be funded under the WSIP; the portion of the facility cost attributed to Basins 1 to 4 will be funded under the Water 10-Year Capital Improvement Program. This sub-project will be constructed by a bid contract including:

- o Addition of new flocculant aid polymer to optimize water production from the four older basins and the new Basin 5
- o Water testing to develop a range of polymer doses for the range of different water quality expected at the plant
- o Construction of new structures and facilities to store, monitor and control the application of the new polymer

• **Miscellaneous Work at AWP, IVP and SABPL.** The CUW35901 New Irvington Tunnel (NIT) was completed in 2017, and the CUW37403 San

Antonio Backup Pipeline (SABPL) was completed in 2016. This subproject will include the following work:

- o Installation of new security doors at Alameda West Portal (AWP) and Irvington Portal (IVP)
- o Installation of new couplings between the valve stem and actuator for the cathodic protection at AWP and IVP
- o Refurbishment of uninterruptible power supply (UPS) and installation of new enclosures for the UPS at AWP and IVP
- o Installation of discharge pipe lateral supports, safety railings, ladder stiffening supports, and sunshades for electrical equipment on SABPL

• **NIT Water Quality Equipment Relocation.** The CUW35901 New Irvington Tunnel (NIT) project installed new water quality monitoring equipment in an underground vault to monitor water quality on Irvington Portal 2 (IP2). After the equipment was installed, problems were noted that related to safe access and water drainage. This sub-project is to relocate the water quality monitoring equipment to Building B10 for Irvington Portal 1 (IP1), and install a new pump to pump water from Irvington Tunnel 2 (IT2) to Irvington Tunnel 1 (IT1) to provide IT2 water for the water quality monitoring.

• **San Antonio Backup Pipeline Carrier Water System Modifications.** The CUW37403 San Antonio Back Pipeline was completed in 2016. Since that time, changes in operations have resulted in an apparent drop in water pressure in the carrier water system for two (2) chemicals including Calcium Thiosulfate for dechlorination and Hydrofluorosilicic acid for pH adjustment. The purpose of this sub-project is to modify the carrier water and chemical injection system to ensure the chemicals will be injected properly.

BAY DIVISION REGION

CUW35301 - BDPL Nos. 3 & 4 Crossover/ Isolation Valves (Completed)

This project is 100 percent complete and has been closed out. The project consists of:

- Two large vaults that are primarily below-ground installations with only the top 30 inches of the structure exposed. Above-ground facilities include security fencing and satellite

communication dishes. The vaults are approximately 2,400 feet apart along the BDPL Nos. 3 and 4.

- Each vault includes four mainline isolation valves and a crossover valve. The isolation valves are hydraulically operated, while the crossover valves are electrically operated.
- The existing BDPL No. 3 is a 78-inch-diameter reinforced concrete pipe, and BDPL No. 4 is a 96-inch-diameter PCCP. At each vault, approximately 170 feet of each pipeline will be replaced with welded steel pipe.
- Each facility will be equipped with connections for portable electric generators, and a battery system will provide immediate emergency power to operate the hydraulic system.
- Valve actuators will have remote monitoring and operating capability through the SFPUC SCADA system.

CUW35302 - Seismic Upgrade of BDPL Nos. 3 & 4 (Completed)

The project primarily consists of:

BDPL No. 3:

- A new 300-foot-long concrete vault will be constructed under Mission Boulevard near the I-680 Interchange where Fault Trace B is located. A new 300-foot segment of 72-inch welded steel BDPL No. 3 will be installed inside the vault. Within the vault and on either end of the fault trace zone, 72-inch-diameter ball joints and slip joints will be installed that will accommodate pipeline displacement during a seismic event.
- For the crossing under I-680 at Trace A, about 400 feet of 78-inch-diameter welded steel pipe will be installed in an existing, unused corrugated metal pipe.
- About 1,450 feet of additional new 78-inch diameter welded steel pipe will connect the existing and new segments between the two vaults, and will be buried.

BDPL No. 4:

- About 400 feet of new 80-inch steel liner will be installed inside BDPL No. 4 at Hayward Fault Trace C.
- BDPL No. 4 will be encased with concrete outside the existing slip joint vault at Hayward Fault Trace B.
- Modifications to the existing slip joint vault will

be made including enlarging BDPL No. 4 pipe penetrations in the vault, new drainage systems, new roof panels, and adjustments to the existing slip joint.

- Modifications to the existing BDPL No. 3 (to be abandoned in place) to collect and divert water from the area and prevent the undermining of the new BDPL No. 3.
- About 400 feet of new 90-inch diameter welded steel pipe will be installed at Trace A of the Hayward Fault.
- Relocation of the following utilities: two Alameda County Water District water pipelines, one Union Sanitary District sewer pipeline, one conduit of AT&T phone lines, and one six-inch diameter PG&E gas pipeline.

CUW36301 - SCADA System - Phase II (Completed)

The project primarily consists of:

- Establish a common software platform and migrate all elements to this platform.
- Connect existing flow meters and new pressure transmitters, and provide communication to SCADA master station at five major Bay Area Water Supply and Conservation Agency (BAWSCA) customer sites.
- Install pressure transmitters, perform piping modifications, and provide communication to SCADA master station at seven existing regulating valves in the City of San Francisco distribution system.
- Install new flow and pressure monitoring devices at 23 key locations in the City distribution system.

CUW36801 - BDPL Reliability Upgrade - Tunnel (Completed)

- The tunnel extends 5 miles under San Francisco Bay and is adjacent to the marshlands between the vicinity of the Ravenswood Valve Lot and the Newark Valve Lot. The tunnel will be constructed with a Tunnel Boring Machine (TBM). The final tunnel lining will consist of a 9-foot diameter welded steel pipeline. The tunnel will terminate on each end with vertical shafts and a connection to the BDPL Nos. 1, 2, and 5 piping manifolds. The two piping manifolds are provided under the BDPL Reliability Upgrade - Pipeline Project. The

tunnel spoils are anticipated to be used as part of the conversion of adjacent salt ponds to marshland. The portion of the existing BDPL Nos. 1 and 2 that are replaced by the tunnel will be capped on each end and will be abandoned in place.

- Two facilities are proposed to be added to the original scope of work and are necessary to ensure the project will meet LOS goals:

1) SCADA Communications system at Newark Valve Lot

This added scope provides for the installation of a SCADA communications system and integrating such system into the existing water quality monitoring equipment located in the Newark Valve Lot Control Building. The work consists of installing communications equipment, telephone line, wires, conduits, and electrical cabinets.

2) 42-inch diameter Bay Division Pipeline No. 2 (BDPL2) Bypass

The supply from the Newark Valve Lot to the City of Hayward is currently being fed from both Bay Division Pipelines (BDPL) No. 1 and No. 2. Upon the completion of the Bay Tunnel Project, Hayward supply will be fed only by BDPL2. BDPL2, built in the mid-1930s, is a mixture of reinforced concrete cylinder pipe and wrought steel pipe. Thus, with the current scope of the Bay Tunnel project, the reliability of the Hayward service line could be reduced when the project is completed.

The scope of work for this change will provide for the installation of 640 linear feet of new 42-inch diameter welded steel pipe, replacing a portion of BDPL2, thereby increasing the reliability of the Hayward service.

CUW36802 - BDPL Reliability Upgrade - Pipeline (Completed)

The project primarily consists of:

- In the East Bay, 7 miles of 72-inch-diameter pipe will be constructed between the Irvington Portal and the Newark Portal of the new Bay Tunnel. On the Peninsula, 9 miles of 60-inch diameter pipe will be constructed between the Ravenswood Portal of the new Bay Tunnel and the portal of the Pulgas Tunnel.

- A seismically resistant crossing of the Hayward Fault will be constructed. The crossing will

include a new crossover valve vault on each side of the fault. The valves will be hydraulically actuated and will include emergency batteries. The pipe between the vaults will be higher strength and will be installed on a special foundation or trench section.

- Isolation valves and an interconnecting pipe manifold will be constructed at each portal of the new Bay Tunnel. The facilities will include new or rehabilitated control buildings with new emergency generators.

- New crossover valves between BDPL Nos. 2 and 5 will be installed at a location in Redwood City. The crossover facility will include a new or rehabilitated control building and connections for a portable emergency generator.

- A new throttling valve will also be added on BDPL No. 5 at the Pulgas Valve Lot. The throttling valve will include a new or rehabilitated control building.

- The project originally included underground concrete vaults for crossover facilities at Newark, Ravenswood, and Redwood City Valve Lots. The current project eliminates the concrete vaults and directly buries the valves with full access to valve actuators at these facilities.

CUW36803 - BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2 (Completed)

This project is 100 percent complete and has been closed out. The project includes relocation of approximately 600 feet of each pipeline (BDPL Nos. 1 and 2) at the BART/railroad crossings. The pipe segments to be relocated will be installed inside new casings that will be placed by the construction contractor doing the other development work in the area. The encased pipes are being installed in accordance with a utility agreement between the City of Fremont and the SFPUC.

CUW38001 - BDPL Nos. 3 & 4 Crossovers (Completed)

The three proposed crossover facilities are located near the Guadalupe River in Santa Clara, near Barron Creek in Palo Alto, and near Bear Gulch in Atherton. The facilities include vaults that are largely below-ground, with only the top 30 inches exposed. They are very similar to one another,

consisting of four mainline valves and a crossover valve. Emergency engine generators will be included as an optional bid item.

CUW38901 - SFPUC/EBMUD Intertie (Completed)

The project primarily consists of:

- Providing new 36-inch-diameter piping and valving at the Newark Turnout to provide an additional connection between BDPL Nos. 1 and 2 to the existing City of Hayward system.
- Using the existing City of Hayward system for conveyance and providing six new valves for isolation.
- Providing 1.3 miles of new 36-inch-diameter pipe to connect the City of Hayward system to the EBMUD system and providing a new pump station along this alignment.

CUW39301 - BDPL No. 4 Condition Assessment PCCP Sections (Completed)

- This project is 100 percent complete and has been closed out. This project includes a detailed condition assessment of the two PCCP segments along BDPL No. 4. The first reach of concern (Reach 1) is 8.6 miles long and 96-inches in diameter. The second reach of concern (Reach 4) is 8.0 miles long and 84-inches in diameter. The condition assessment consists of an electromagnetic survey, seismic risk analysis, corrosion survey, visual inspection, and field investigations.
- The assessment identified six reaches of pipe (144 feet total out of 16 miles) that are potentially distressed. During initial investigations, the condition of one distressed pipe segment (Pipe 1558) was determined visually to be particularly deteriorated, and immediate emergency repair was recommended. The project funded and completed emergency repair using post-tension exterior tendon repair for this segment. For the other five potentially distressed pipe segments that were identified using electromagnetic survey, and determined to be of lower priority, recommendations were made for future excavation to confirm pipe condition in these areas, and repair if needed. A number of future follow-up investigations were recommended, including monitoring of groundwater acidity for a

period of one year in the area of Edgewood Road and additional excavations of lower priority pipe pieces. Any additional required repairs will be scheduled based on urgency and funded through the Water Enterprise's Repair and Replacement (R&R) Program.

CUWBDP0101- WSIP Closeout - Bay Division

- **Site Drainage and Pipe Coating Repairs** - This sub-project will focus on providing a drainage system solely within SFPUC's Right-of-Way to address an erosion issue that developed after the construction of the CUW35302 Seismic Upgrades of BDPL Nos. 3 & 4. In addition, this sub-project will include repairs to coatings on the pipe and pipe supports of the Bay Division Pipeline (BDPL) No. 3 to address issues that developed inside the articulated vault after construction was completed. The sub-project includes design, construction, and management of the drainage system work.

- **Bay Tunnel Warranty Inspection and BDPL 1 & 2 EIR Mitigation** - This sub-project advances the planning for a decommissioning study of the existing BDPL Nos. 1 and 2 until such time that the funding for a new Water 10-Year Capital Improvement Project (CIP) to further study mitigation alternatives and pursue removal of the BDPL Nos. 1 and 2 within the Don Edwards San Francisco Bay National Wildlife Refuge becomes available in FY2020-21.

- **Hydro-seeding at Bay Tunnel Project** - The scope of this sub-project provides for monitoring of hydro-seeded areas, removal of noxious weeds, and potentially re-seeding some of the areas at the tunnel portals in Menlo Park and Newark if the storm water performance objectives are not met.

- **Newark Valve Lot Additional Gravel Placement** - The Bay Tunnel Project design plans call for a portion of the Newark Valve Lot to be landscaped and hydro-seeded. However, Operations staff requested that gravel be placed in this area since it will be a high traffic area during shutdowns and other maintenance work. Accordingly, this sub-project provides for the purchase and placement of the gravel.

- **Corrosion Protection for Valve E50U** - The E50U Valve was installed in 2011 as part of the CUW36802 BDPL Reliability Upgrade - Pipeline

Project. Immediately prior to the Bay Tunnel Project in-service/commissioning date in early Fall 2015, the Bay Tunnel Contractor completed the flanged connection of the manifold to the existing E50U Valve. However, during the installation and testing of the new flanged connection, the Bay Tunnel Contractor discovered an inconsistency in the corrosion protection isolation system of the existing valve E50U (high corrosion potential). It was decided to not authorize a Change Order to fix the corrosion problem of the E50U Valve at that time due to the risk of high cost delays to the Bay Tunnel Project, if leaks were to occur after the solution was implemented. Accordingly, this sub-project includes excavating and shoring the area around the valve, and removal of one bolt at a time for testing, and replacement if necessary. A gasket will be purchased and may be installed if there are leaks that develop after the bolts are removed, cleaned, and replaced.

• **Ventilation and Sump Pump Systems Installation.** This sub-project provides improvements for inspection, monitoring and maintenance associated with the construction of the CUW35302 Seismic Upgrades of BDPL Nos. 3 and 4. The BDPL No. 3 pipe, slip joint, ball joints and pipe supports and seismic monitoring equipment inside the articulated vault require on-going inspection, monitoring and maintenance. The type and frequency of inspection and maintenance were not well defined during the design phase; it is now clear that a fixed ventilation system is required for the BDPL No. 3 vault. Furthermore, the BDPL No. 4 expansion joint vault also requires access for inspection and monitoring; installation of a sump pump is required to remove water from the vault prior to inspections. Accordingly, the scope of this sub-project is to install a fixed ventilation system and a sump pump system to eliminate the need for removing access hatches and installing temporary fans and sump pump prior to accessing the vaults for frequent inspection and maintenance needs.

PENINSULA REGION

CUW35401 - Lower Crystal Springs Dam

Improvements (Completed)

The project consists of:

- Spillway modifications that include widening the spillway, constructing two bridge piers within the spillway to accommodate rebuilding of a San Mateo County Bridge, removing the existing timber stop-log system, constructing a new weir system within the spillway, installing access cat-walks for operation and maintenance, and eliminating water ponding on top of the dam.
- Parapet wall modifications that include increasing the height of the wall that is located on top of the upstream face of the dam and increasing the height of the approach walls to the spillway.
- Stilling basin modifications at the base of the spillway that include removing the existing basin, constructing a new larger basin, and adding downstream riprap protection at the toe of the basin.

CUW35601 - New Crystal Springs Bypass Tunnel (Completed)

The project consists of:

- A 4,200-foot long tunnel with 8-foot diameter welded steel liner.
- Vertical shafts on each end of the tunnel to accommodate a tunnel boring machine and future maintenance. The southern shaft will include a connection to the existing Crystal Springs Bypass Pipeline; the northern shaft will tie into the southern ends of both Crystal Springs Pipeline No. 2 and Sunset Supply Line.
- New isolation valves and valve vaults.
- Standby power near valve vault G40.

CUW35701 - Adit Leak Repair - Crystal Springs/Calaveras (Completed)

The project consists of :

- Crystal Springs Outlet Tower No. 1: repairing leaks inside the tower, blasting and recoating piping and valves, replacing roof, structurally retrofitting the access footbridge, and installing a marine hatch at the tower drain.
- Crystal Springs Outlet Tower No. 2: installing a marine hatch at the tower drain.
- Calaveras Outlet Tower: installing a dewatering pump, replacing a deteriorated valve actuator, and providing ladder fall protection.

- San Antonio Outlet Tower: installing a dewatering pump and repairing leaks inside the tower.

CUW36101 - Pulgas Balancing - Inlet/Outlet Work (Completed)

The project consists of new inlet and outlet piping designed to direct the path of the water in such a manner as to promote better mixing. The shutdowns associated with construction of these improvements provided an opportunity to perform a condition assessment of the reservoir interior that has been used to help identify work associated with CUW36103 - Pulgas Balancing Reservoir - Structural Rehabilitation and Roof Replacement project. This project was successfully completed in May 2006.

CUW36102 - Pulgas Balancing - Discharge Channel Modifications (Completed)

The project consists of raising the channel walls, repairing concrete cracks and exposed reinforcing steel, strengthening and interconnecting the channel floor sections, and strengthening the wall near the Pulgas Tunnel as needed. The project will restore the Discharge Channel capacity for accommodating flow up to 250 mgd.

CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement (Completed)

The project consists of the seismic retrofit of the walls, installation of a new steel frame roof, and repair of concrete cracks and exposed reinforcing steel. The project scope also includes installing a new ventilation system and sampling ports, replacing utility piping, and upgrading the electrical system.

CUW36104 - Pulgas Balancing - Laguna Creek Sedimentation (Completed)

This project consists of the execution of the Laguna Creek Habitat Management and Revegetation Plan. This is a mitigation measure for the Non-WSIP Pulgas Dechlorination Facility Project, which involves the restoration of the Laguna Creek Sedimentation Basin, a 6-8 acre catchment basin that provides habitat for the San Francisco Garter Snake and the California Red Legged Frog. In coordination with regulatory

agencies, a strategy was developed to accomplish this habitat restoration, and to have it measured under the Habitat Reserve Program (HRP). This project was closed in December 2007 and combined with Project CUW38802-Habitat Reserve Program (HRP).

CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility (Completed)

The project consists of various improvements to the dechloramination and pH control facilities that are necessary to address immediate compliance issues. Anticipated improvements include modifications to the flow measurement and control systems, and to the various process control and chemical feed systems.

CUW36501 - Cross Connection Controls (Completed)

The project consists of providing improvements at 304 different sites to address potential cross connections. The work varies from site to site due to specific site conditions. The major work elements typically include: Install air gaps at blow-off locations and at air valves; install backflow prevention devices; reconstruct or raise existing vaults; install new vault covers; replace existing air valves; and/or modify, relocate, or remove existing blow-off facilities.

CUW36601 - HTWTP Short-Term Improvements (Demo Filters) (Completed)

The project consists of retrofitting two filters and performing full-scale performance demonstration testing of the retrofitted filters. The project was successfully completed in November 2006.

CUW36602 - HTWTP Short-Term Improvements - Remaining Filters (Completed)

This project consists of filtration modification to eight of the ten existing filters, replacement of effluent control valves and backwash supply valves, provision for a filter to waste system, installation of new underdrains and media, and seismic retrofit of basin walls. Combined with CUW36603 - HTWTP Short-term Improvements - Coagulation & Flocculation project.

CUW36603 - HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters (Completed)

The project consists of improvements to both the coagulation and flocculation systems. The coagulation improvements include restoring and improving operation of the pumped-jet flash-mix system, increasing capacity of the flash-mix pumps, providing the pumps with variable speed controls to improve efficiency, providing an automated dilution water system, and reconfiguring the chemical injectors to improve performance. Flocculation improvements include reconfiguring the baffling system, adding new mechanical mixers with variable speed controls, and seismically retrofitting the walkways and basin walls.

CUW36701 - HTWTP Long-Term Improvements (Completed)

The project consists of seismic and hydraulic improvements in various treatment units and expansion of the filtration process capacity by the addition of five new filters. In addition, a new 11 million gallon Treated Water Reservoir will be built to replace the two existing treated water reservoirs. The project also includes improvements to the sludge handling and washwater systems and provides a new additional washwater tank to enhance the plant's performance. Additional improvements are also planned for the electrical system, including a new substation, switchgear, and motor control center. The project also includes improvement to key valves and pipelines conveying the raw water supply to the Plant and treated water to the distribution system.

CUW36702 - Peninsula Pipelines Seismic Upgrade (Completed)

The scope of this project includes geotechnical investigations to characterize the Serra Fault in the vicinity of the pipelines and to confirm assumptions about sub-surface conditions along the length of the pipelines (SAPL2 and SAPL3 from HTWTP to San Pedro Valve Lot, SSBPL from HTWTP to Capuchino Valve Lot, and Sunset Supply Pipeline (SSPL) from Capuchino Valve Lot to San Pedro Valve Lot). In addition,

hydraulic modeling has been performed to review system/facility requirements to meet system goals. The objectives of the investigations were: 1) to determine the potential fault offset at the Serra Fault crossings and the potential response from the three pipelines to these offsets, and 2) to determine potential for pipeline rupture due to displacement from liquefaction, landslides, and other seismically-triggered hazards along the pipeline alignments. The extensive geotechnical and modeling analyses performed to date have been carefully reviewed to identify specific project recommendations.

The refined project scope (Phase 1) currently includes the following components at five locations on the San Francisco Peninsula:

- Colma Site - Replacement of an approximately 700-ft segment of SAPL2
- South San Francisco Site - Replacement of an approximately 720-ft segment of SAPL2
- San Bruno North Site - Stabilization of SAPL2 where it extends through a tunnel
- San Bruno South Site - Replacement of an approximately 1,170-ft segment of SAPL2 and an approximately 1,050-ft segment of SAPL3; and
- Millbrae Site - Replacement of an approximately 900-ft segment of SSBPL

A common staging area is planned to be located at SFPUC Baden Valve Lot in South San Francisco on El Camino Real.

Phase 2 of the project will include installation of two new isolation valves near the Baden Valve Lot on SAPL No. 2 and No. 3 in the City of South San Francisco. The WSIP construction contract will include both Phases 1 and 2.

Phase 3 has been identified as a non-WSIP project, and includes condition assessment and improvements to SAPL2, installation of new isolation valves, and the potential addition of flexible connections along the alignment within the City of San Francisco.

CUW36901 - Capuchino Valve Lot Improvements (Completed)

The project consists of replacing two existing isolation valves, providing new electric actuators for valve operation, performing concrete crack repair to prevent water leakage into the vault, providing new instrumentation and control

systems for valve operation and pressure monitoring, and relocating the existing electrical and instrumentation systems outside the vault.

CUW37101 - Crystal Springs/San Andreas Transmission Upgrade (Completed)

The project consists of improvements to facilities necessary to transport water from Upper Crystal Springs Reservoir, through the lower Crystal Springs Reservoir to San Andreas Reservoir, and ultimately, to the Harry Tracy Water Treatment Plant (HTWTP) Raw Water Pump Station. Specifically, improvements will be made to the Upper Crystal Springs Dam discharge culverts, the Lower Crystal Springs outlet structures, the Crystal Springs Pump Station (CSPS), the Crystal Springs/San Andreas Pipeline, and the San Andreas outlet structures.

CUW37801 - Crystal Springs Pipeline No. 2 Replacement (Completed)

The project consists of:

- Seismic reliability improvements, which include replacing or relocating a total of 1.7 miles of pipe at 12 locations, sliplining 3.5 miles of pipe, retrofitting pipe bridge pier supports at two creek crossings, providing a new connection at the Crystal Springs Pump Station, and providing a connecting segment with a blind flange for later connection to the New Crystal Springs Bypass Tunnel.
- Facility improvements, which include installing fences and enclosures for exposed facilities, and concealing exposed portions of pipe.
- Upgrading the cathodic protection system along the length of the pipeline.

CUW37901 - San Andreas Pipeline No. 3 Installation (Completed)

The project consists of installation of 4.4 miles of 36-inch-diameter pipe from San Pedro Valve Lot in Daly City to Merced Manor Reservoir in San Francisco. There will be three jack and bore crossings along 19th Avenue and John Daly Boulevard. Work will also include installation of five customer service connections, a new cathodic protection system along the length of the new pipeline, three interconnections to the San Andreas Pipeline No.2, various valves, and a flow

meter.

CUW39101 - Baden and San Pedro Valve Lots Improvements (Completed)

This project consists of upgrades to valve vaults, valves, and piping in the Baden Valve Lot and the San Pedro Valve Lot. It also includes the installation of a pressure reducing valve and associated system valving to allow transfer of a portion of the flow from the HTWTP high-pressure zone to the low-pressure zone during emergencies.

CUWPWI0101- WSIP Closeout - Peninsula

• LCSD Stilling Basin Modifications & Dissipation Structure Riprap

- This sub-project is provided in response to concerns that fish may be "trapped" in the Lower Crystal Springs Dam (LCSD) stilling basin during low flow summer periods, and that high flow discharges from the new LCSD dissipation structure and potential high water levels in Pool 2 may cause erosion of the bank adjacent to the dissipation structure. The dissipation structure includes 60-inch diameter pipes with a maximum flow of 600 cubic feet per second (cfs) each and two 8-inch diameter pipes with maximum flow of 7 cfs each. During flow testing of the dissipation structure, released water could be observed flowing over the dissipation structure, potentially eroding the bank adjacent to the structure. It was also observed that during summer periods, of low flow in the channel downstream of the stilling basin, fish trapped in the basin were dying due to warm water temperatures. The purposes of this sub-project are to hydraulically connect the stilling basin with Pool 2 in order to allow fish to escape the basin in summer, and to add rip-rap behind the dissipation structure to prevent erosion. Specifically, this sub-project consists of:

- o A new deeper channel between the dissipation structure and the Pool 2, which would prevent fish from being trapped in the stilling basin,
- o Installation of a new SCADA controls to the existing 8-in discharge pipeline and re-routing one line to the stilling basin,
- o Installation of additional rip-rap around the dissipation structure,
- o Installation of a new 24-inch HDPE pipeline

through an existing abandoned 60-inch pipe directed to the stilling basin

- o Coordination and facilitation of access for a piezometer drilling contractor during periods of concurrent work in the stilling basin

- o Deletion of landscaping around the new Crystal Springs Pump Station

- o Addition of tree, shrub and grass plantings along the creek bank in accordance with the approved re-vegetation plan

- **LCSD Valve H53/ Pipeline Investigation & Fisheries Release Valve** - As stipulated by the US Army Corps of Engineers 404 permit and the associated biological opinion by NOAA's National Marine Fisheries Service (NMFS) covering the SFPUC activities at the Crystal Springs Pump Station (CSPS), the SFPUC is to take measures to protect the threatened Central California Coast (CCC) steelhead present in San Mateo Creek at CSPS site. One measure requires the release of fresh water at a rate of 3 to 17 cubic feet per second (cfs) depending on the season in recorded dry and wet years. This sub-project will utilize modification of an existing pipeline to release the required flows to the LCSD stilling basin feeding San Mateo Creek. Specifically, this sub-project consists of:

- o Condition assessment of the existing 60-in diameter pipeline from Valve H-53 to the stilling basin. In addition, valve H-53 will be exposed and visually inspected to determine its condition, requiring excavation and shoring of a pit approximately 20 feet long by 20 feet wide by 20 feet deep.

- o Depending on the verified condition, viable alternatives, including abandonment of the option to use H-53 pipeline, will be evaluated.

- o The approved option will include a SCADA controlled 12-inch valve installed at the discharge end of the pipeline. Depending on the condition of the pipeline, the approved option may also include repairs to the pipeline lining. Options may also include slip-lining the existing line with a smaller diameter pipeline such as 12 to 24-in diameter flexible polypropylene pipe.

- o Use of a temporary pipeline "line stop" and associated shoring upstream of Valve H-53 to allow for potential installation of a permanent blind flange.

- o Replacement of leaking plug valves that discharge from an existing concrete vault to the stilling basin with new knife gate valves.

- o Installation of new flow control valves, isolation valves and appurtenances for Pool 2.

- o Connections to the existing 72-inch pipeline using hot taps.

- o Construction of a new concrete walkway from the access road to the existing stairs at the flow dissipation structure adjacent to the stilling basin.

- **New Crystal Springs Bypass Tunnel Electrical Modifications** - The New Crystal Springs Bypass Tunnel (CUW35601) was commissioned in July 2011, and the project administratively closed in August 2012. Various inspections of the above ground facilities discovered excessive groundwater intrusion and resultant corrosion of equipment and electrical components. This sub-project will develop a thorough documentation of the above ground facilities at the north and south shafts, and design and implement repairs as warranted. Possible repairs may include replacement of damaged equipment and electrical components, water proofing of the affected vaults, and rechanneling of surface runoff as necessary. Preliminary inspections identified the following in the South Shaft: groundwater seepage into the venturi meter and valve G32 vaults through pipe/conduit wall penetrations, resulting in coating failure and localized corrosion. In the North Shaft, preliminary investigations identified surface runoff is entering electrical boxes. In addition, groundwater is seeping through wall penetrations into G36 and G38 vaults. Due to the high moisture, some electrical switches and two actuators failed and required replacement. This sub-project developed a thorough documentation of the above ground facilities at the north and south shafts and designed and implemented repairs as warranted. Repairs included replacement of damaged equipment and electrical components, water proofing of the affected vaults, and rechanneling of surface runoff as necessary. This subproject is 100% complete and has been closed out.

- **Closeout of DSOD Permit Applications for LCSDI and CSSA Projects** - California Department of Water Resources, Division of

Safety of Dams (DSOD) issued Alteration Permits allowing the start of construction of CUW35401, Lower Crystal Springs Dam Improvements (LCSDI) Project (Application No. 10-6) and the construction of CUW37101, Crystal Springs / San Andreas Transmission Upgrade (CSSA) Project (Application No.10-10). In June 2015, DSOD issued an approval of the completed work and requested the SFPUC to submit the final documentation of each project. Under this sub-project, the following information and documents will be extracted from the project files and submitted in a format acceptable to DSOD: affidavit of actual costs of construction and design; full size as-built drawings stamped and signed by a California registered Civil Engineer; and final concrete testing summary reports.

- **Coordination with San Mateo County Bridge Construction over LCSI** - The implementation of the CUW35401 Lower Crystal Springs Dam Improvement (LCSDI) Project required the demolition of an existing San Mateo County (SMC) Bridge that spanned over the LCSD crest. With the completion of the LCSDI Project, SMC awarded the construction contract for the new bridge and gave notice-to-proceed to the construction contractor in January 2016. To support this, SMC and the SFPUC executed a Memorandum of Understanding outlining the roles and responsibilities and expectations of both organizations. Accordingly, this sub-project will support the coordination between the SFPUC and SMC Bridge Project team. Typical activities may include response to relevant Requests for Information (RFI) such as existing site conditions, existing dam design, coordination with SFPUC Operations and Watershed groups; field inspection of placement of the bridge piers over the dam and the construction of the SFPUC funded catwalk; attendance at construction meetings; and activities concerning the water quality in Lower Crystal Springs Reservoir, security measures, and other aspects of SFPUC assets.

- **Harry Tracy Water Treatment Plant (HTWTP) Improvements.** The Harry Tracy Long-Term Improvements Project (CUW36701) was completed in 2014. Since 2014, the following needs were identified to address construction

issues and improve operations at the plant to fully meet the LOS goals and objectives:

- o Automate the 12-inch gate valve at the High Rate Clarifiers' filter to waste manhole to eliminate the need for Operations to manually operate the valve on a frequent basis
- o Modify Sludge Tank No. 1 piping to eliminate cavitation in the washwater pumps
- o Upgrade the filters of three (3) emergency generators from passive filters to active filters to increase the effectiveness of the exhaust filtration and to reduce the need for Operations to constantly clean the filters
- o Repair leaks in the filter gallery channels where stainless steel angle plates were added to support several concrete walls
- o Automate flushing of the sludge transfer pumps and piping to eliminate the need for Operations to manually flush on a frequent basis
- o Replace and relocate failed variable frequency drives (VFDs) for the wash water and sludge transfer pumps to address an over-heating issue
- o Install double containment for the diesel fuel supply lines for the exterior generator to protect against leaks into the environment
- o Provide training and programming modifications to the Raw Water Pump Station switchgear equipment to enable remote SCADA control
- o Install vibration control monitoring system on the electrical panels at the Raw Water Pump Station to replace the existing obsolete system
- o Evaluate/Assess condition of failed mixers in the equalization basin

- **Crystal Springs/San Andreas Pipeline (CSSA) Erosion Repairs.** The heavy winter storms of 2017 exacerbated erosion at two (2) watershed culvert locations, OW-13 and OW-18, along the CSSA Pipeline. Erosion has caused the CSSA Pipeline to be exposed and potentially undermined. The scope of this sub-project is to repair the erosion with systems consistent with the requirements of permitting agencies such as the State Water Resources Control Board.

SAN FRANCISCO REGIONAL REGION

CUW30103 - Regional Groundwater Storage and Recovery

The goal of the project is to provide up to 7.2 million gallons per day (mgd) of dry year water supply over 7.5 years. The original project design included the construction of up to 16 groundwater wells and well stations in the South Westside Basin to be connected to three wholesale customers on the Upper Peninsula and the SFPUC transmission system to achieve the water supply goal. Phase 1 included the installation of 13 well stations to produce approximately 6.2 mgd, and the original scope of Phase 2 included construction of 2 to 3 additional well stations, based upon well yield. Due to difficulties with siting well stations in the central portion of the groundwater basin, Phase 2 has been modified to install up to 3 test wells (Ludeman North, Ludeman South and Centennial Trail), complete the South San Francisco Main well and pipeline, and complete other Phase 1 scope items, including chemical system monitoring, sampling and storage at various sites. The Phase 2 test wells will not be converted to production wells at this time, but will allow for determination as to whether the identified sites could be viable future production wells, and will provide valuable information related to water quality and potential pumping capacities that can be used for future planning and decision making.

CUW35801 - Sunset Reservoir - North Basin (Completed)

This project consists of:

- Seismic rehabilitation, which includes stabilization of the soil dam embankment; a retrofit of the walls and roof using seismic joints, shear walls, diagonal bracing, and struts; and foundation improvements.
- General rehabilitation, which includes repairing deteriorated concrete, replacing part of the reservoir lining material, replacing inlet piping, installing security fencing, upgrading the landscaping, and other miscellaneous site improvements.

CUW37201 - University Mound Reservoir - North Basin (Completed)

This project consists of:

- Seismic rehabilitation of the reservoir walls and roof using seismic joints, shear walls, diagonal

bracing, and struts and foundation improvements. A geotechnical investigation was conducted that verified that the reservoir embankments are not subject to seismically induced failure.

- General rehabilitation, which includes repairing deteriorated concrete; replacing the reservoir lining material; replacing inlet/outlet, drain, and overflow piping; replacing outlet and drain valves; and performing landscaping and other miscellaneous site improvements.

SUPPORT PROJECTS

CUW36302 - System Security Upgrades

The purpose of this project is to develop and integrate security components at critical water system facilities including those identified in previous vulnerability assessments and to ensure that security functions such as deterrence, detection, assessment, delay, and response will be effective. As part of this project, SFPUC Security has evaluated all WSIP projects. The project includes the identification of all necessary security components including security fencing, intrusion detection, and vehicle barriers for applicable WSIP projects. The project provides for the necessary planning and design of these facilities, while the individual WSIP projects will fund the installation and construction of civil security work such as conduit lay out, fencing, and gate installation. This project will fund the furnishing and installation of Access Control and Alarm Monitoring System (ACAMS) and Digital Video Surveillance System (DVSS) equipment, and necessary security systems.

CUW38801 - Programmatic EIR (Completed)

A Program Environmental Impact Report (PEIR) has been prepared for the WSIP under the California Environmental Quality Act (CEQA). The WSIP includes a number of projects that will improve the Regional Water System with respect to water quality, seismic reliability, delivery reliability, and water supply. The PEIR will (1) identify and analyze, at a programmatic level, the potential environmental impacts of proposed system improvements, (2) describe and evaluate feasible alternatives to the proposed program,

and (3) propose mitigation measures.

CUW38802 - Bioregional Habitat Restoration

The Bioregional Habitat Restoration project was created to provide a coordinated and consolidated approach to compensate for habitat impacts that may result from implementation of the WSIP projects in the San Joaquin, Sunol Valley, Bay Division, and Peninsula Regions of the SFPUC Regional Water System. The previously approved scope of the Bioregional Habitat Restoration project included projects to preserve, enhance, restore, or create approximately 2,350 acres of tidal marsh, vernal pools, white alder riparian forest, sycamore alluvial woodland, arroyo willow riparian habitat, oak woodland and savannah, sage scrub habitat, serpentine grasslands, coastal live oak woodland, annual grasslands, and oak riparian forest.

The project includes design, environmental permitting, construction, construction management, maintenance and performance monitoring during a 3-year plant establishment period.

The wide variety of the types of impacts from WSIP projects resulted in the need for development of 18 compensation sites on SFPUC property and for contracting with 7 property owners to secure compensation on property outside the Alameda and Peninsula watersheds. There are 7 compensation sites on SFPUC property in the Alameda watershed with an average size of 250 acres, demonstrating a significant commitment to the continued protection of species habitat. Although the average size of the 11 Peninsula compensation sites is 15 acres, the projects have been strategically placed to best benefit the San Francisco garter snake and the fountain thistle. The increase in habitat compensation addresses mitigation for the fountain thistle and for changes in the Calaveras Dam Replacement Project.

Under the March 2014 Revised WSIP, some scope for the Bioregional Habitat Restoration project associated with Lower Crystal Springs Dam and long term monitoring and maintenance of the compensation sites was reduced. The remaining wetland development at Upper San Mateo Creek and Boat Ramp and most of the oak woodland

compensation for the Lower Crystal Springs Dam Improvement Project has been deferred until the operating elevation of the reservoir has increased, estimated to be around 2020. This work will be completed in the future by SFPUC Water Enterprise.

CUW38803 - Vegetation Restoration of WSIP Construction Sites (Completed)

The Vegetation Restoration of WSIP Construction Sites is a WSIP project that received Commission approval on October 9, 2012. This project is required to comply with the CEQA and resource agency permit requirements to restore and re-vegetate habitat areas temporarily impacted by construction at the various WSIP sites to preconstruction condition.

CUW38804 - Long Term Mitigation Endowment

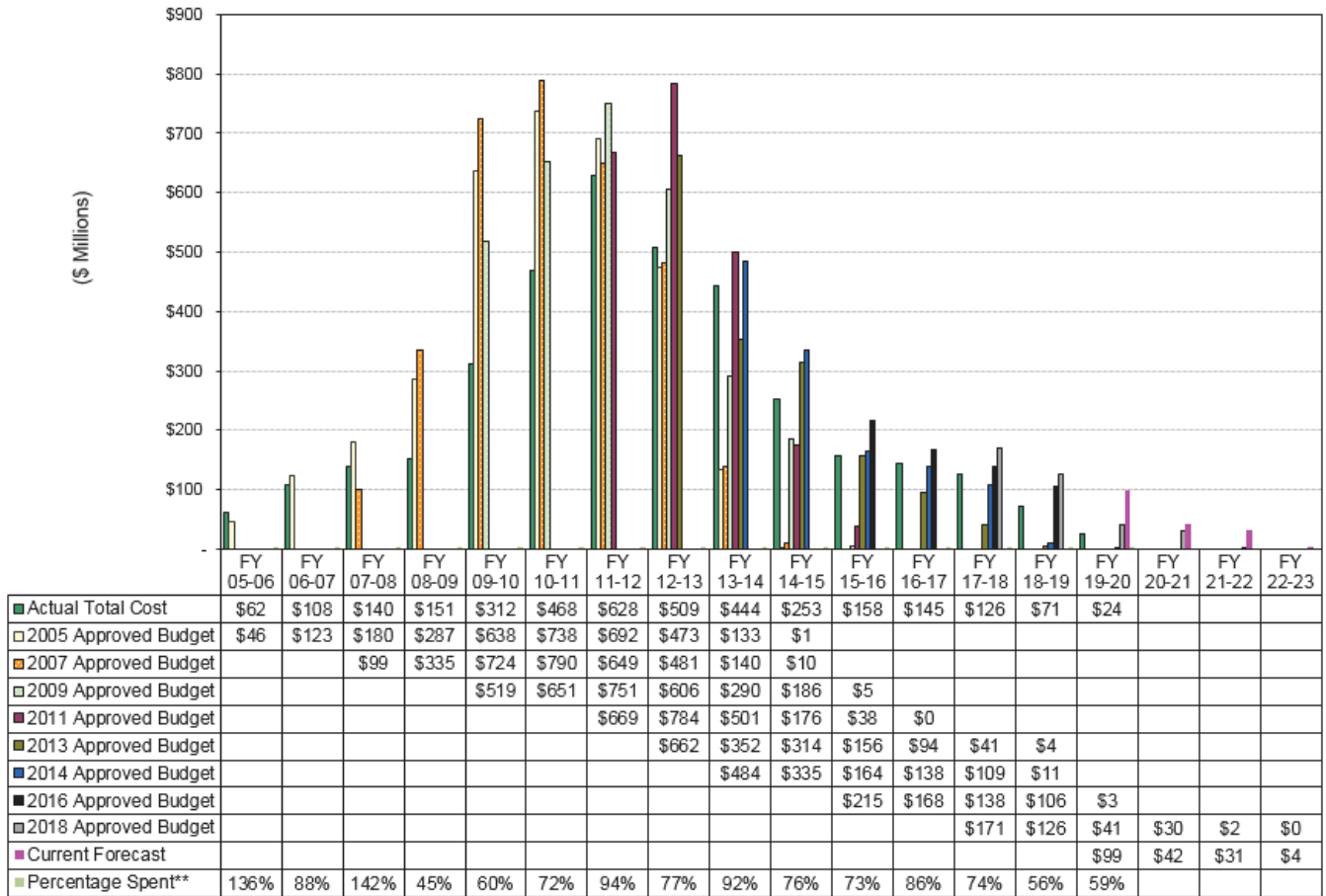
The scope of work and budget for this Long Term Mitigation Endowment was previously included and reported within the WSIP Regional project CUW38802 Bioregional Habitat Restoration; however, the office of the City Controller has established a separate project, specific for this endowment fund, in project CUW38804 Long Term Mitigation Endowment. This perpetual endowment fund, was required by the United States Army Corps of Engineers and California Department of Fish and Wildlife permits issued for WSIP projects. It provides a secure source of funds for the perpetual monitoring and maintenance of the Bioregional Habitat Restoration sites constructed in the SFPUC watershed.

CUW39401 - Watershed and Environmental Improvement Program

The Watershed and Environmental Improvement Program (WEIP) includes the comprehensive identification and protection of critical watershed lands and ecosystem restoration needs within the hydrologic boundaries of the Alameda Creek, Peninsula (San Mateo and Pilarcitos Creeks) and Tuolumne River watersheds, and prioritizes the protection and/or restoration of these lands. Projects under this program will protect source water quality, native species, and their habitat as well as identifying critical watershed lands for

protection through purchase of fee title or perpetual conservation easement. The program also supports projects that enhance public awareness and provide education opportunities related to water quality, water supply, conservation, and environmental stewardship. Consistent with the SFPUC Water Enterprise Environmental Stewardship Policy, a portion of the funding under the WEIP will be allocated to support projects that enhance public awareness and provide education opportunities related to water quality, water supply, conservation, and environmental stewardship issues. Accordingly, construction of the Southern Skyline Boulevard Ridge Trail Extension will be funded using a portion of the WEIP funds.

APPENDIX B. BUDGET AND EXPENDITURE HISTOGRAM*



All costs are shown in \$ Millions.

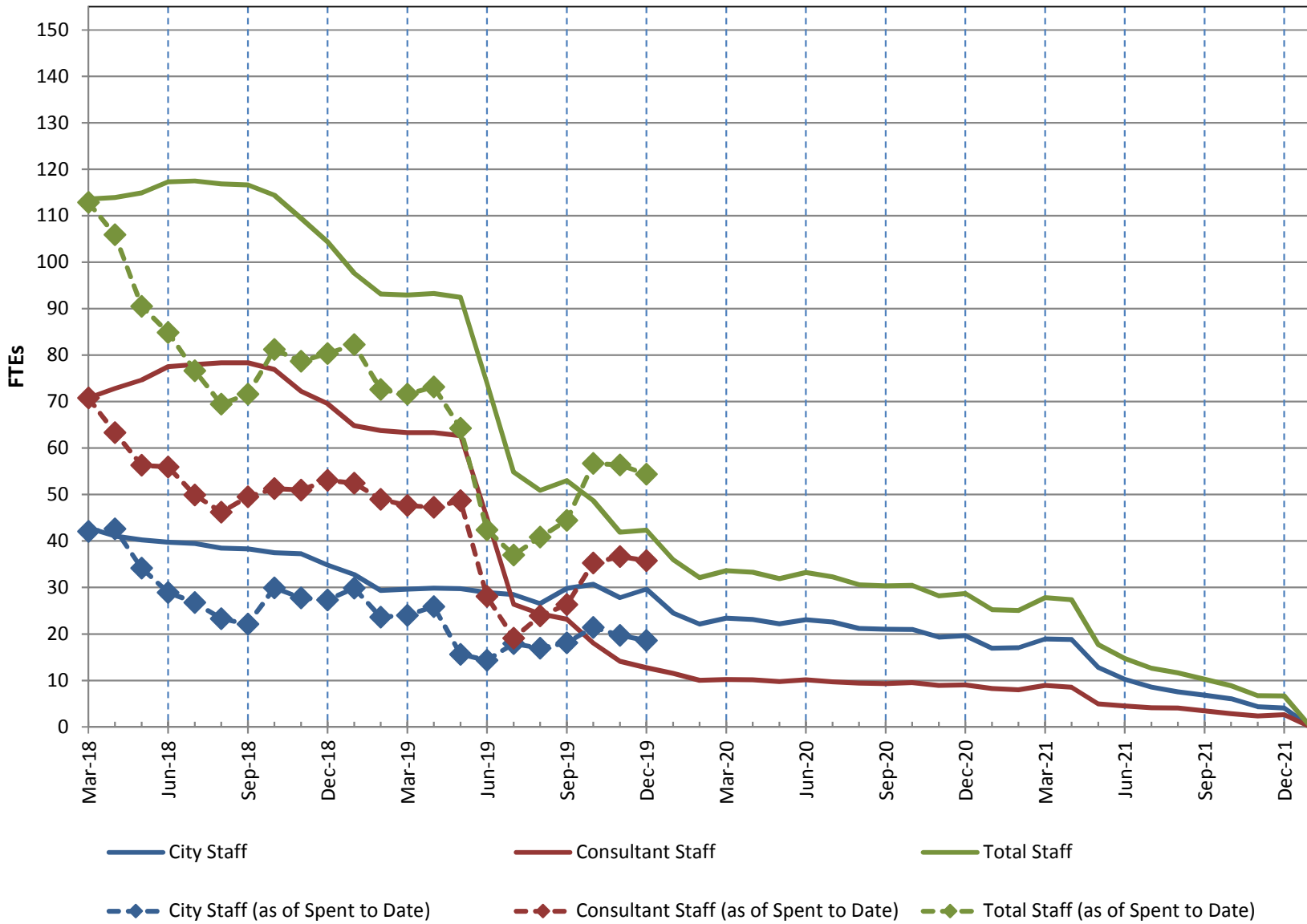
* The histogram does not reflect budget and expenditures prior to FY 2005-2006.

** Percentage Spent calculated as Actual Expenditures over the most current Approved Budget for each individual Fiscal Year.

Figure B: Annual Budgeted Spending Plans vs. Actual Expenditures

Figure B compares the spending plans associated with the various WSIP Approved Budgets to Actual Expenditures. It shows total annual expenditures from FY05-06 through Q2/FY19-20 and cost projections (Current Forecast) from FY19-20 through program completion currently forecast for June 2022. Actual annual expenditures have ranged from 45% to 142% of planned expenditures







Appendix C. WSIP Regional Program Staffing Plan



APPENDIX E. PROJECTS WITHIN BUDGET AND SCHEDULE

CUWSVI0101 - WSIP Closeout - Sunol Valley

Project Description: The project includes miscellaneous improvements to ensure WSIP Level of Service (LOS) goals and objectives are fully achieved in the Sunol Valley Region. The work will be completed by means of six sub-projects: (1) JOC-60-14 - AS4 Carrier Water System Modifications will modify the chemical injection system of the Alameda Siphons No.4 Pipeline to overcome lack of water system volume and pressure needed to inject water treatment chemicals; (2) JOC-59-20 - Erosion Repairs at Pond F3 East will repair the existing outfall pipe erosion at Quarry Pond F3 East with new rockfill and restore the drain pipe. The outfall drainage system was originally installed as part of the San Antonio Backup Pipeline; (3) Sunol Valley Water Treatment Plant (SVWTP) Polymer Feed Facility will build a polymer feed facility that will serve all five sedimentation basins to optimize plant water production (only the portion of the facility cost attributable to basin No. 5 will be funded under the WSIP); (4) JOC-54-02 - Miscellaneous Work at Alameda West Portal (AWP), Irvington Portal (IVP), and San Antonio Backup Pipeline (SABPL) will install security doors at AWP, provide cathodic protection at IVP, refurbish uninterruptable power supply (UPS) at AWP and IVP, and install discharge pipe lateral supports, safety railings, ladder stiffening supports, and sunshades for electrical equipment at SABPL; (5) JOC-60-20 - NIT Water Quality Equipment Relocation will relocate water quality monitoring equipment from an underground vault to a dedicated building together with a pump to the building to provide the water for water quality monitoring; (6) JOC-60-23 - San Antonio Backup Pipeline Carrier Water System Modifications will modify the carrier water and chemical injection systems to ensure proper chemical injection.

Region: Sunol Valley	Project Status: Construction	Environmental Status: Completed (Various)
Project Cost:		Project Schedule:
Approved  \$5.99 M	Approved Jul-16  Jun-21	
Forecast*  \$5.99 M	Forecast* Jul-16  Jun-21	
Actual  \$2.85 M	Project Percent Complete: 67.7%	
		

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	Various	Various	Various	Various

Progress and Status:

Subprojects (1) JOC-60-14 and (4) JOC-54-02 were completed.

(2) JOC-59-20 Pond F3 East Erosion Repair - This subproject is part of WD-2855, Turner Dam Spillway Erosion Repair project (a non-WSIP project). Sukut Construction has been experiencing some problems with the project sub-contractor, which delayed the final completion. Substantial Completion (SC) of Pond F3E Erosion Repair was 9/25/19. Final Completion (FC) is forecast to be 3/31/20. Subproject Completion on 6/30/2020.

(3) SVWTP Polymer Feed Facility - The JOC 60-27 Mobile Pilot Plant (MPP) construction work was substantially completed on 12/20/19. Closeout documents and some additional improvement work requested by Water Quality Bureau (WQB) is on-going. The WQB performed an assessment of the pilot test equipment. Repair work will start in January

2020. The design for the Polymer Feed Facility has started. Subproject Completion 6/30/21.

(5) JOC-60-20 - CalState, the JOC Contractor, completed the construction work for the relocation of all the water quality instrumentation and for the valve cathodic protection work. Red-line drawings have been completed. As-built drawings will be continued in the next quarter. FC was 7/31/19. Subproject Completion 3/31/20.

(6) JOC-60-23 - NTP for Phase 2 has been issued. Awaiting CalState to begin work. FC is 12/31/20. Subproject Completion on 6/30/21.







Issues and Challenges:

None at this time.

CUWBDP0101 - WSIP Closeout - Bay Division

Project Description: This project includes miscellaneous improvements to ensure the WSIP Level of Service (LOS) goals and objectives are fully achieved in the Bay Division Region. The work will be completed by means of six sub-projects, including: (1) providing a drainage system to address erosion issues that developed after Seismic Upgrades to Bay Division Pipeline Nos. 1 and 2 was constructed; (2) planning for a decommissioning study of the existing BDPL Nos. 1 and 2 pending funding for removal of the portion within the Don Edwards San Francisco Bay Wildlife Refuge and other mitigation measures; (3) monitoring of hydro-seeded areas at the Bay Tunnel Project; (4) placement of gravel at the Newark Valve Lot; (5) uncovering of previously installed valve E50U to provide for removal, cleaning, and re-installation of bolts for corrosion protection purposes; and (6) installation of a ventilation and sump pump system to improve conditions for inspection and monitoring of the pipe, slip, ball joints, and pipe supports inside the articulated vaults of Bay Division Pipeline Nos. 3 and 4.

Region: Bay Division	Project Status: Construction	Environmental Status: Not Applicable
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Project Cost:		Project Schedule:	
Approved	 \$4.40 M	Approved Jul-16	 Jun-20
Forecast*	 \$3.80 M	Forecast* Jul-16	 Jun-20
Actual	 \$2.25 M	Project Percent Complete: 87.6%	
			

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	N/A	N/A	Various	Various

Progress and Status:

- Subprojects (3) completed on 4/24/17, (4) completed on 7/29/16, (5) completed on 10/20/2017 and (6) completed on 9/30/2019

(1) BDPL 3&4 Site Drainage and Pipe Coating Repairs - Due to some changes in the scope of work, the project team renegotiated with Power Engineering (JOC Contractor) on the cost proposal. The team is waiting for the contractor's update of the cost proposal, and anticipating issuance of NTP in the next reporting period.

(2) BDPL 1&2 EIR Mitigation - The Project team continued to prepare the CER. After CER, remaining work is being performed under the 10-year Water Enterprise Capital Improvement Program (WECIP). Progress and status for the project will thereafter be reported under the WECIP. Subproject Completion is on 6/30/2020.

Issues and Challenges:

None at this time.









Ventilation and Sump Pump Project

CUW39401 - Watershed and Environmental Improvement Program

Project Description: The Watershed and Environmental Improvement Program (WEIP) includes the comprehensive identification of critical watershed lands and ecosystem restoration needs within the hydrologic boundaries of the Alameda Creek, Peninsula (San Mateo and Pilarcitos Creeks), and Tuolumne River watersheds, and prioritizes the protection and/or restoration of these lands. This program will manage watershed activities and resources to protect source water quality, native species, and their habitat and to identify critical watershed lands, key ecosystem restoration needs, and restoration priorities. The program also supports projects that enhance public awareness and provide educational opportunities related to water quality, water supply, conservation, and environmental stewardship issues. Consistent with the SFPUC Water Enterprise Stewardship Policy, a portion of the WEIP funding will be used to fund construction of the Southern Skyline Boulevard Ridge Trail Extension.

Region: Support Projects	Project Status: Not Applicable	Environmental Status: Active (CatEx)
---------------------------------	---------------------------------------	---

Project Cost:		Project Schedule:	
Approved	 \$20.00 M	Approved Jan-07	 Jan-21
Forecast*	 \$20.00 M	Forecast* Jan-07	 Jan-21
Actual	 \$16.51 M	Project Percent Complete: 25.9%	
			

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	03/31/20	N/A	N/A	N/A

Progress and Status:

The Phase 1 environmental assessment for the 164.5 acre parcel the SFPUC is considering purchasing has been completed. A boundary survey of the property is currently being conducted. It is anticipated that the sales agreement will go to the Commission for approval by April 2020.

SFPUC staff is also working with several partners (local governmental agencies and non-profit organizations) on the purchase of a 50,000+ acre property located in Alameda, Santa Clara, San Joaquin and Stanislaus counties. Approximately 9,800 acres of the property are within the Alameda Creek watershed and drain into Calaveras and San Antonio reservoirs. The appraisal of the property has been completed.

Issues and Challenges:

None at this time.



Upper Alameda Creek Watershed

APPENDIX F. LIST OF ACRONYMS

AAR	Alternative Analysis Report	JOC	Job Order Contract
AC	Asphalt Concrete	LCSD	Lower Crystal Springs Dam
ACAMS	Access Control and Alarm Monitoring System	LCSDI	Lower Crystal Springs Dam Improvements
ACDD	Alameda Creek Diversion Dam	LOS	Levels of Service
ACDT	Alameda Creek Diversion Tunnel	MG	Million Gallons
AGM	Assistant General Manager	MGD	Million Gallons per Day
ARM	Active Risk Manager	MND	Mitigated Negative Declaration
AWP	Alameda West Portal	MOA	Memorandum of Agreement
BART	Bay Area Rapid Transit	MOU	Memorandum of Understanding
BAWSCA	Bay Area Water Supply and Conservation Agency	MPP	Mobile Pilot Plant
BDPL	Bay Division Pipeline	N/A	Not Applicable
BHR	Bioregional Habitat Restoration	NEG DEC	Negative Declaration (also shown as ND)
CATEX	Categorical Exemption	NEPA	National Environmental Policy Act
CCSF	City and County of San Francisco	NIT	New Irvington Tunnel
CDD	City Distribution Division	NMFS	National Marine Fisheries Service (under NOAA)
CDRP	Calaveras Dam Replacement Project	NOAA	National Oceanic and Atmospheric Agency
CEQA	California Environmental Quality Act	NTP	Notice to Proceed
CER	Conceptual Engineering Report	O&M	Operation and Maintenance
CIP	Capital Improvement Program	PCCP	Pre-stressed Concrete Cylinder Pipe
CM	Construction Management	PEIR	Program Environmental Impact Report
CMB	Construction Management Bureau	PG&E	Pacific Gas and Electric Company
CMIS	Construction Management Information System	PLC	Programmable Logic Control
CO	Change Order	PV	Photovoltaic
CPI	Cost Performance Index	RFI	Request For Information
CSPS	Crystal Springs Pump Station	ROW	Right-of-Way
CSSA	Crystal Springs/San Andreas	SABPL	San Antonio Backup Pipeline
DB	Design, Build	SAPL	San Antonio Pipeline
DSOD	Division of Safety of Dams (State of California)	SAPS	San Antonio Pump Station
DVSS	Digital Video Surveillance System	SCADA	Supervisory Control and Data Acquisition
EBMUD	East Bay Municipal Utility District	SFPUC	San Francisco Public Utilities Commission
EIR	Environmental Impact Report	SJPL	San Joaquin Pipeline
EIS	Environmental Impact Statement	SMC	San Mateo County
EV	Earned Value	SMP	Surface Mining Permit
EVM	Earned Value Management	SPI	Schedule Performance Index
FC	Final Completion	SQS	Supplier Quality Surveillance
FTE	Full-Time Equivalent	SSBPL	Sunset Supply Branch Pipeline
FY	Fiscal Year	SSPL	Sunset Supply Pipeline
HH	Hetch Hetchy	SVWTP	Sunol Valley Water Treatment Plant
HHWP	Hetch Hetchy Water and Power		
HTWTP	Harry Tracy Water Treatment Plant		
IVP	Irvington Portal		


TBD	To be determined
TBM	Tunnel Boring Machine
TM	Technical Memorandum
TWR	Treated Water Reservoir
UM	University Mound
UPS	Uninterruptable Power Supply
UV	Ultra Violet
VFD	Variable Frequency Drive
WECIP	Watershed Environmental Improvement Program
WEIP	Water Enterprise Capital Improvement Program
WSIP	Water System Improvement Program
WSTD	Water Supply and Treatment Division

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DATE: May 19, 2020

TO: Commissioner, Ann Moller Caen, President
 Commissioner, Francesca Vietor, Vice President
 Commissioner, Anson Moran
 Commissioner, Sophie Maxwell
 Commissioner, Tim Paulson

FROM: Harlan L. Kelly, Jr., General Manager 

RE: WSIP Regional Projects Quarterly Report
 3rd Quarter / Fiscal Year 2019-2020

Enclosed please find the Water System Improvement Program (WSIP) Regional Projects Quarterly Report for the 3rd Quarter (Q3) of Fiscal Year (FY) 2019-2020. The primary intent of the report is to provide the San Francisco Public Utilities Commission (“Commission”), stakeholders, and the public with a status summary of the program’s regional projects for the period of January 1, 2020 through March 31, 2020.

In their April 3, 2018 letter, the Bay Area Water Supply and Conservation Agency (BAWSCA) requested additional information be included in the WSIP Quarterly reports. On June 5, 2018 SFPUC representatives met with BAWSCA and agreed that beginning with the Q1FY2018-2019 report, the SFPUC will (1) add a section to the cover letter for the WSIP Quarterly Report to highlight the use of contingency, (2) provide documentation on the sufficiency of the contingency to deliver WSIP within budget, and (3) highlight, and provide in the cover letter documentation regarding, work force reduction and other efficient practices and procedures to control soft costs as the program is completed. This information can be found in the sections below entitled “Status on Use of Construction Contingency” and “Status on Workforce Reduction and Other Efficient Practices to Control Soft Costs”.

On March 16, 2020, the Department of Public Health issued a shelter-in-place order, Order No. C19-07, effective March 17, 2020. In compliance with this order, nearly 1,200 SFPUC employees have been working remotely. Employees who have been deemed essential to continue operations by reporting to SFPUC facilities are doing so to deliver water, power and sewer services to the communities we serve.

Following the shelter-in-place order, on March 18, 2020, SFPUC issued a memo to the construction contractors stating that public works construction projects are considered an “essential activity” and work is expected to continue, but

- London N. Breed**
Mayor
- Ann Moller Caen**
President
- Francesca Vietor**
Vice President
- Anson Moran**
Commissioner
- Sophie Maxwell**
Commissioner
- Tim Paulson**
Commissioner
- Harlan L. Kelly, Jr.**
General Manager



contractors are required to stop work temporarily and submit a revised Site-Specific Health and Safety Plan to address COVID-19 safety and protective work practices for SFPUC review by close of business on March 20, 2020.

On March 20, 2020, a letter was issued to contractors from the City Administrator. The letter noted that The City was prepared to partner with contractors to take steps to make projects as safe as possible for employees to help keep projects moving forward and determine if Social Distancing Requirements can be met.

On March 31, 2020, the Health Officer issued Health Order No. C19-07b, replacing the earlier March 17, 2020 order. The order requires the City Administrator, in consultation with the Health Officer, to specifically designate certain public works projects as an Essential Government Function if they are to continue during this shelter-in-place order.

Additionally, contractors were provided with the Construction Safety Guidelines, dated April 1, 2020, developed by City representatives, working with San Francisco Building and Construction Trades Council, and construction industry contractors' associations. This document provides industry guidelines for safe practices at construction work sites. Accordingly, Contractors were required to prepare and submit updated Site-Specific Health and Safety Plan to address COVID-19 issues at each site.

Furthermore, on April 15, 2020, the City Administrator's Office issued the Procedures for Implementation and Enforcement of COVID-19 Field Safety Guidelines for Public Works Projects.

On April 29, 2020, the Health Officer issued Health Order No. C19-07c, extending the shelter-in-place through the end of May. This new order went into effect as of midnight May 3, 2020 and all construction was allowed to resume as long as specific safety measures are in place. The Health Order C19-07c also provides safety protocols for both small and large construction projects; however, City representatives developed "Public Works Project Safety Protocol for COVID-19" as an alternative to Appendices B-1 and B-2 in the Health Order, for all Public Works Projects. On May 5, 2020, the Health Officer issued a directive requiring that each contractor for a City public works project to comply with all aspects of the Public Works Project Safety Protocol for COVID-19 safety protocol.

Due to anticipated financial impacts from the pandemic, staff are also re-evaluating the 10-year Capital Improvement Program (CIP) for potential cost reductions based on best projections on impacts to future revenues. As a result of this effort, a Revised CIP plan is anticipated to be submitted to the Commission by first quarter of FY20-21.

STATUS AND PERFORMANCE SUMMARY

Overall, WSIP regional projects are 98.6% complete as of March 31, 2020.

As of the end of the reporting period, planning, environmental, design, and construction activities are 100%, 99.9%, 98.9%, and 98.9% complete, respectively. The following table shows the number of WSIP Regional projects and the total approved value of these projects that are active in various project phases.

Status of WSIP Regional Projects (as of March 31, 2020)

Project Phase	No. of Projects	Percent by No. of Projects	Total Project Value (\$M) ¹	Percent by Project Value
Planning	0	0%	\$0	0%
Design	1	2%	\$35	1%
Bid & Award	0	0%	\$0	0%
Construction	6	12%	\$1,021	27%
Close-Out	1	2%	\$96	3%
Completed	42	81%	\$2,619	69%
Not Applicable ²	2	4%	\$32	1%
Total	52	100%	\$3,803	100%

Notes: (1) "Total Project Value" for various phases includes proportional allocation of approved program management budget. Projects active in multiple phases are counted as being in the phase with the greatest amount of project activities.

(2) "Not Applicable" category is for the two projects that do not include construction: Long-Term Mitigation Endowment and Watershed and Environmental Improvement Program.

PROGRAM UPDATE

As of the end of the reporting period, six (6) regional projects with a total value of \$1,021M are in construction and forty-three (43) projects with a total value of \$2,715M are in close-out or have been completed. Forty-one (41) out of forty-three (43) Regional WSIP projects with specific Level of Service (LOS) goals have achieved their LOS goals to date. Besides the WSIP Closeout Projects, the one Regional project remaining in pre-construction is the Alameda Creek Recapture Project.

As of the end of the reporting period, the forecasted total program cost (regional and local projects) is \$4,787.8M, which is the same as the current Commission Approved Budget. As of the end of the reporting period, all approved change orders (COs) on active construction contracts total \$436.35M, and the current remaining construction contingency is \$17.15M. Also, as of the end of the reporting period, all pending and potential COs, and trends total \$10.7M. Therefore, if

all pending and proposed COs and trends become approved COs, the current forecasted remaining construction contingency is \$6.45M.

The current forecasted date to complete the overall WSIP is May 2023, which is the same as the current approved completion date.

UPDATE ON PROJECTS IN PRE-CONSTRUCTION

Alameda Creek Recapture

During this quarter, comments on the recirculated Administrative Draft EIR (ADEIR) were received and reviewed. Response to comments was prepared and reviewed for posting. The recirculated ADEIR certification and project approval are expected in the next reporting quarter. The redesign work continued during the reporting quarter. Hanson submitted a geotechnical engineering report on the erosion around Pond F2 for review.

WSIP Closeout Projects

Steady progress was made on WSIP Closeout Projects for each of the San Joaquin, Sunol Valley, Bay Division, and Peninsula Regions in the reporting quarter.

In the San Joaquin Region, Notice to Proceed (NTP) was issued to the two Job Order Contract (JOC) contractors, Big Valley and Boyer Construction, and work was initiated to install solar panels that eliminate the need for propane generators at San Joaquin Pipeline No.4 Junction, the Throttling Station at Knight's Ferry, and Oakdale Portal.

In the Sunol Valley Region, the JOC contractor, CalState, continued to modify and upgrade the Mobile Pilot Plant (MPP) for the Sunol Valley Water Treatment Plant (SVWTP) Polymer Feed Facility (aka Basin 5) project. SFPUC Water Quality Division initiated use of the MPP during the reporting period and will officially start pilot testing in the next quarter. For the SABPL Water Carrier System Modification Phase 2, CalState completed installation of the HVAC and chemical analyzers, and construction work will continue in the next quarter.

In the Bay Division Region, NTP has been issued to the JOC contractor, Power Engineering. Construction work will begin in the next quarter for the V-ditch and BDPL 3 pipe coating.

In the Peninsula Region, (1) Lower Crystal Springs Dam (LCSD) Stilling Basin Connecting Channel construction is 90% complete. (2) LCSD Bridge Replacement (joint project with San Mateo County) is mostly complete with a few remaining warranty issues that are being addressed. (2.1) JOC 76R-01 North Parapet Wall Extension closes a gap between the LCSD north parapet wall and the new bridge abutment. The gap repair construction was completed in March 2020. (2.2) To close out the Memorandum of Agreement with San Mateo County, a draft LCSD Security Assessment report was completed, and is under review. (2.3) The repairs of the drainage channel atop the south side of LCSD were completed.

Several JOC task orders have been initiated for the Harry Tracy Water Treatment Plant (HTWTP) facility, with the status as follows: 1) JOC 59-01 Electrical & Mechanical Piping Modifications project is in closeout; this will be the last time this project is reported on. 2) Equalization Basin Mixers project is in closeout; this will be the last time this project is reported on.

UPDATE ON PROJECTS IN CONSTRUCTION

Steady progress was reported on the remaining ongoing WSIP construction activities. As of the end of March 2020, WSIP regional construction contracts (including active, completed, and future contracts) are 99.9% complete overall, a continuation of the same percentage as last quarter.

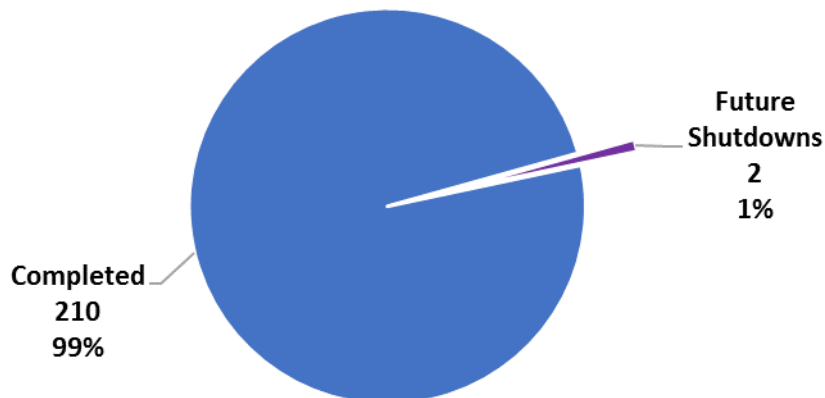
A review of the construction work hours recorded over the last five (5) years shows continued ramping down of construction activities, with monthly workhours peaking at 206,400 in August 2012, compared to a total of 896 work hours recorded in March 2020. The monthly average workhours in the reporting quarter was 830, a significant decrease compared to the 16,808 monthly average workhours for the same period in 2019.

As of the end of March 2020, monitored exposure hours on WSIP regional projects totaled 9.8 million construction person-hours. Since the implementation of the WSIP Safety Approach in April 2009, the total lost time incidence rate is at 0.51, compared to the U.S. Bureau of Labor Statistics (BLS) industry average rate (2016) of 1.7.

To date, 210 out of 212 (99%) of the planned shutdowns and hot taps have been completed. Currently, there are no active shutdowns/hot taps and two (2) future planned shutdowns.

The following is a summary of the progress made, issues encountered, and/or milestones achieved on the key WSIP regional projects currently active in construction.

WSIP Shutdowns & Hot Taps



Regional Groundwater Storage and Recovery

Overall progress on the Regional Groundwater Storage and Recovery Phase 1 construction contract (Contract B) is reported at 97% as of the end of the quarter. This value is the same as the value reported during the previous quarter. Although work continued actively during the

quarter, additional approved change orders increased the size of the contract during the quarter sufficiently that additional expenditures on the contract did not reflect an increase in contract percentage completed. Although Substantial Completion was achieved on December 31, 2017, key additional construction work is still being implemented through change orders, including modifications to multiple pump systems at several locations due to sand, decline of pump performance, electrical interference, and corrosion; chemical system modifications for groundwater treatment; retrofit of transmission line flowmeters; and other changes to programming, access, and testing. The Regional Groundwater Storage and Recovery Phase 2 subproject is in the Planning phase and is 20% complete. The Conceptual Engineering Report for the Antoinette Lane Well (South San Francisco Main Area Well Station) and the initial follow up work from Contract B are being finalized.

Fish Passage Facilities within the Alameda Creek Watershed (Sub-project to Calaveras Dam Replacement)

Construction of the Fish Passage Facilities within the Alameda Creek Watershed remains at 99% complete as of the end of this quarter. The contractor is submitting closeout documentation. The two items remaining on the punch list include repairs to the debris rake/rack system, which is expected to take place in Summer 2020, and additional wet testing. Wet testing was not able to take place this quarter because there was insufficient flow in the creek, and will be rescheduled for Winter 2020/2021. As a result of these two remaining, weather-dependent issues, final construction completion remains forecast for December 2020, and final administrative project closeout is forecast for March 2021.

MAJOR PROGRAM TRENDS AND RISKS

Actual and potential impacts to the cost and schedule of WSIP projects are identified and tracked using change orders (COs), trends, and risks. COs and trends are managed using the Construction Management Information System (CMIS), while risks are managed using Active Risk Manager (ARM). Active COs on the WSIP are categorized based on their status as follows: Approved COs are changes that have been negotiated, have been certified by the City Controller, and are now part of the contract (exact magnitude of change is known); Pending COs are changes that have been negotiated but have yet to be certified by the City Controller (exact magnitude of change is known); and Potential COs are changes that have been proposed by either the SFPUC or the contractor but are still being negotiated (magnitude of change is unknown). Any known issue with a probable impact to the approved schedule and/or contract amount that has yet to be proposed as a Potential CO is captured as a trend. In addition, project teams assess and quantify conceivable risks to their projects with the goal to mitigate the conditions which might cause them to materialize.

WSIP Management submits to the Commission on a quarterly basis a separate report on the status of Change Orders. This section summarizes the major program trends and risks being tracked as of March 31, 2020.

The trends for the WSIP Active Regional construction contracts totaled \$3.2M as of the end of the reporting period, an increase of \$1.1M during the period. This is due to new trends for Regional Groundwater Storage and Recovery (RGSR). All the remaining trends belong to RGSR. The following table lists the trend totals for active projects:

WSIP Active Regional Projects Trend Totals (as of March 31, 2020)

Project	Trends (\$ Million)	Percent Completion ¹
Regional Groundwater Storage & Recovery (Contract B)	\$3.2	98%

1. Refers to percent completion of the current construction contract (including all Approved COs).

The WSIP Risk Management System ranks risks based on a combination of likelihood of occurrence and potential cost impact to the SFPUC. As of March 31, 2020, the Regional Groundwater Storage and Recovery project is the only active construction project with remaining risk, and this contract, with a total of nine (9) remaining risks, is now 98% complete.

Regional Groundwater Storage and Recovery

This project is currently reporting on eighteen (18) active trends that total \$3.2M, an increase of \$1.1M during the quarter. This increase is mainly due to three new trends for RGSR.

The largest trend addresses the decline in Serra Bowl Pump performance. The second largest trend relates to Well Pump maintenance and warranty. The third highest trend addresses the time extension and associated costs. Other high value trends include costs for: startup testing; miscellaneous plumbing and chemical changes; repairs and/or replacement of flowmeters; change from use of aqueous ammonia to use of liquid ammonium sulfate; rental of generators to provide temporary power; installation of PG&E power for the Lake Merced Golf Club, Treasure Island, and Funeral Home sampling stations; new injection quill, water quality supplies, and equipment; and commissioning.

Other relevant trends include the potential for revisions to the Programmable Logic Control (PLC) programming and for resetting of the security system.

The 80% risk confidence level as of the end of the reporting period is estimated at \$2.2M, an increase of \$0.2 since last quarter. Since this is the only WSIP contract in construction, all the WSIP risks are now from this project. The risks are ranked based on likelihood of occurrence and potential cost impact. This contract has a total of nine (9) risks. The current largest risk is due to the change of chemical to be used for water treatment during operation from aqueous ammonia to ammonium sulfate. The second highest risk is associated with multiple water quality challenges. Additional risks include design errors and omissions, unexpected challenges that may arise during testing, challenges in meeting regulatory and operational requirements during testing, and delays in finalizing permanent easements (including with utilities).

STATUS ON USE OF CONSTRUCTION CONTINGENCY

The following table shows the status of approved construction contingency for projects that are in active construction as of the end of the reporting period. The forecast remaining contingency shown in the table for each project is after accounting for all approved, pending, and potential change orders as well as all current trends.

Contract	Final Construction Completion	Current Approved Contingency	Current Approved, Pending, and Potential Change Orders Plus Trends	Remaining Contingency	% Completion
CUW37401 Alameda Creek Diversion Dam Fish Passage Facility (WD-2729)	12/31//20	\$15.8M	\$14.5M	\$1.3M	98%
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	4/22/22	\$21.6M	\$20.0M	\$1.6M	98%

The Fish Passage Facilities at Alameda Creek Diversion Dam is currently estimated to have remaining construction contingency of \$1.3 million as of the end of the reporting period.

The Regional Groundwater Storage and Recovery (Contract B) is currently estimated to have remaining construction contingency of \$1.6M as of the end of the reporting period. The remaining risk, estimated at \$2.2 million (at the 80% risk confidence level) means that it is likely some additional contingency may be needed for this construction contract. Funding is available from the remaining Director’s Reserve, currently at \$19 million for the entire WSIP, to satisfy such additional contingency needs for this project.

STATUS ON WORKFORCE REDUCTION AND OTHER EFFICIENT PRACTICES TO CONTROL SOFT COSTS

As has been the practice since the program was established, the WSIP Director will continue to meet with project teams in order to review status of every budget line item at least twice quarterly. As a result of these meetings, staffing adjustments are made in real time to ensure project teams work within the existing budgets, and budget forecasts and resources are adjusted as necessary to help ensure successful completion of every project.

The current staff transition plan for the remainder of WSIP is included on page 42 of the attached WSIP Quarterly Report. As can be seen in the chart on that page, the overall staffing levels in

June 2018 were approximately 85 full-time equivalents (FTEs), which has decreased to approximately 54 FTEs in March 2020. The decrease is attributable to both City and consultant staff ramping down activities as projects complete construction and close out. Actual staffing levels will continue to be tracked monthly against this plan, and appropriate staff adjustments made accordingly, to ensure staffing levels stay within the remaining available budget.

In addition, we are continuing to implement our industry best practice Construction Management (CM) Business Processes and Procedures to ensure available funds are used efficiently and effectively, with emphasis on identification of cost savings wherever possible. The primary features of the best practice processes and procedures that facilitate monitoring and control of WSIP construction include: change management, trends management, risk management, claims avoidance, schedule management, program CM project audits, monthly and quarterly project review meetings, and lessons learned reports.

CLOSING

Despite the challenges described above, the WSIP team continues to make steady progress in the delivery of the program as described in the attached WSIP Quarterly Report. It should be noted that the challenges encountered in the field and reported herein are not unusual for infrastructure programs of the size and complexity of the WSIP.

The SFPUC continues to be committed to working collaboratively with other City departments, its Regional Wholesale customers, and all program stakeholders and partners to ensure the successful delivery of the WSIP.

Enclosure



HETCH HETCHY
WATER SYSTEM IMPROVEMENT PROGRAM



QUARTERLY REPORT

Regional Projects
Q3 FY 2019 | 2020
January 2020 — March 2020

Rebuilding Today for a Better Tomorrow

Published: 05/19/2020

Quarterly Report - Q3 FY2019/2020

Water System Improvement Program - Regional Projects

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- B. WSIP Budget and Expenditures Histogram
- C. WSIP Regional Program Staffing Plan
- D. WSIP Approved Project-Level Schedule
- E. Projects Within Budget and Schedule
- F. List of Acronyms



1. PROGRAM DESCRIPTION

The Water System Improvement Program (WSIP) is a \$4.8 billion, multi-year capital program to upgrade the City of San Francisco's regional and local drinking water systems. The program will deliver improvements that enhance the City's ability to provide reliable, affordable, high quality drinking water to its 26 wholesale customers and regional retail customers in Alameda, Santa Clara, and San Mateo Counties, and to 800,000 retail customers in San Francisco, in an environmentally sustainable manner. The WSIP is structured to cost-effectively meet water quality requirements, improve seismic and delivery reliability, and achieve water supply goals.

Built in the early to mid-1900s, the water system has many components nearing the end of their working life, with crucial facilities crossing or in close proximity to, three major earthquake faults. The San Francisco Public Utilities Commission (SFPUC) initiated the WSIP to repair, replace, and seismically upgrade the system's deteriorating pipelines, tunnels, dams, reservoirs, pump stations, storage tanks, and treatment facilities.

The program consists of 35 local projects located within San Francisco and 52 regional projects spread over seven different counties from the Sierra foothills to San Francisco. Local projects only benefit San Francisco residents whereas regional projects benefit both City residents and the 26 wholesale agencies that receive water from the SFPUC. The management of regional projects is divided into 6 regions - San Joaquin, Sunol Valley, Bay Division, Peninsula, San Francisco Regional, and Support Projects.

The WSIP is funded through the issuance of revenue bonds. Local Measures A and E, which were approved by San Francisco voters in November 2002, allowed for the financing of improvements to the City's water system using revenue bonds and/or other forms of revenue financing. Increases in the water rates of retail and wholesale customers are used to pay back the debt service on the bonds.

The program budget and schedule were originally adopted by the San Francisco Public Utilities Commission on March 1, 2003. The program at the time was referred to as the Capital Improvement Program (CIP). The scope of the CIP was changed significantly following the adoption of Level of Service (LOS) goals in early 2005. The program changes were so substantial that the program was renamed the WSIP and a new program budget and schedule were adopted on November 29, 2005. Since the scope of the 2005 Revised WSIP is in general representative of the program that is in the end stage of being implemented today, the 2005 budget and schedule are considered the "Baseline Budget and Schedule."

Subsequently, the WSIP Baseline Budget and Schedule were revised in 2007, 2009, 2011, 2013, 2014, 2015, 2016, 2017, 2018 and 2020, and these revisions were approved by the San Francisco Public Utilities Commission on February 26, 2008, July 28, 2009, July 12, 2011, April 23, 2013, April 22, 2014, December 8, 2015, April 26, 2016, February 14, 2017, April 10, 2018, and April 14, 2020, respectively. Refer to Appendix A for a scope description of all the regional projects included in the WSIP.

Program Revision	Commission Approval	Budget (\$Million)	Schedule(*)
2003 (Original)	March 1, 2003	\$3,628	03/15/16
2005 (Baseline)	November 29, 2005	\$4,343	06/30/14
2007 (Revised)	February 26, 2008	\$4,392	12/18/14
2009 (Revised)	July 28, 2009	\$4,586	12/04/15
2011 (Revised)	July 12, 2011	\$4,586	07/29/16
2013 (Revised)	April 23, 2013	\$4,640	04/11/19
2014 (Revised)	April 22, 2014	\$4,765	05/24/19
2015 (Revised)	December 8, 2015	\$4,765	05/24/19
2016 (Revised)	April 26, 2016	\$4,845	12/20/19
2017 (Revised)	February 14, 2017	\$4,845	12/20/19
2018 (Revised)	April 10, 2018	\$4,788	12/30/21
2020 (Revised)	April 14, 2020	\$4,788	05/05/23

* Final Program Completion Date

2. PROGRAM STATUS

This third (3rd) Quarterly Report for Fiscal Year (FY) 2019-2020 presents the progress made on the WSIP regional projects between January 1, 2020 and March 31, 2020. The program’s schedule and budget were last approved by the San Francisco Public Utilities Commission (SFPUC or Commission) on April 14, 2020. The progress made on the local projects of the WSIP is presented in a separate quarterly report.

Figure 2.1 shows the total Current Approved Budget for the regional projects remaining in each phase of the program as of March 31, 2020. The number of projects currently active in each phase is shown in parentheses.

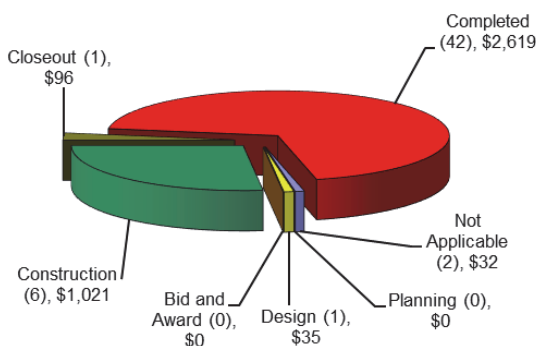


Figure 2.1 Total Current Approved Budget for Projects Active in Each Phase (\$Million)

Figure 2.2 shows the number of regional projects in the following stages of the program as of

March 31, 2020: Pre-construction, Construction, and Post-construction.

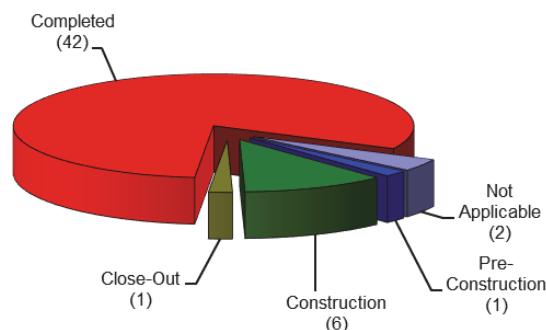


Figure 2.2 Number of Projects in Pre-construction, Construction, and Post-construction

Figure 2.3 summarizes the environmental review and permitting status of the WSIP’s 52 regional projects as of March 31, 2020.

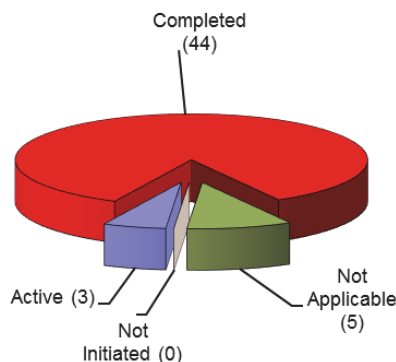


Figure 2.3 Program Environmental and Permitting Status

2.1 Progress Towards Meeting Level of Service (LOS) Goals

The scope of the WSIP is based on the following Level of Service (LOS) goals for the Regional Water System: Seismic Reliability, Delivery Reliability, Water Quality Reliability, and Water Supply Reliability. Each project that reaches construction substantial completion contributes to increasing the overall reliability of the system and achieving progress towards meeting the overall LOS goals for the system.

Table 2.1 lists the projects with their individual Primary (P) and Secondary (S) contributions towards LOS goals, and indicates which projects have met their respective LOS goals. As can be seen in Table 2.1, the actual operational service start dates indicate that 41 of the 43 Regional WSIP projects with specific LOS goals have achieved their LOS goals to date. The other 9 Regional WSIP projects do not have specific LOS goals. The WSIP team remains committed to achieving the overall LOS goals established for the system.

Table 2.1 Progress Towards Meeting LOS Goals ⁽¹⁾

Project No.	Project Name / Construction Contract	Actual / Approved Substantial Completion Date	LOS Goals (P =Primary, S =Secondary)				Actual Operational Service Start	Construction Progress Toward LOS Goals
			Water Quality	Seismic Reliability	Delivery Reliability	Water Supply		
San Joaquin Projects								
CUW36401	Lawrence Livermore Water Quality Improvement <i>(Completed)</i>	08/31/10	P				08/31/10	100%
CUW37301	San Joaquin Pipeline System <i>(Completed)</i> (A) HH935A Crossovers (B) HH935B Western Segment (C) HH935C Eastern Segment	(A) 01/06/12 (B) 05/27/13 (C) 06/21/13			P		(A) 01/06/12 (B) 05/27/13 (C) 06/21/13	100%
CUW37302	Rehabilitation of Existing San Joaquin Pipelines (Roselle Crossover; <i>Completed</i>)	05/13/11			P		05/13/11	100%
CUW38401	Tesla Treatment Facility <i>(Completed)</i> (A) DB116 Tesla Treatment Facility Design-Build Contract (B) HH953 Tesla Portal Protection	(A) 06/24/11 (B) 08/05/13	P	S	S		(A) 06/24/11 (B) 08/05/13	100%
Sunol Valley Projects								
CUW35201	Alameda Creek Recapture	11/30/20				P		0%
CUW35501	Standby Power Facilities - Various Locations <i>(Completed)</i> (A) WD-2553 East Bay - Standby Power Facilities (B) WD-2511 Peninsula - Standby Power Facilities	(A) 09/11/08 (B) 04/15/10		P	S		(A) 09/11/08 (B) 04/15/10	100%
CUW35901	New Irvington Tunnel <i>(Completed)</i>	09/19/15		S	P		02/27/15	100%
CUW35902	Alameda Siphon #4 <i>(Completed)</i>	12/16/11		P	S		12/16/11	100%
CUW37001	Pipeline Repair & Readiness Improvements <i>(Completed)</i> (A) WD-2530 Phase A 8 Pipe Storage Sites (B) WD-2530 Phase B Pipe Rolling Machine Facility @ Sunol Yard	(A) 02/09/07 (B) 07/14/08		P	S		(A) 02/09/07 (B) 07/14/08	100%
CUW37401	Calaveras Dam Replacement (A) WD-2551 Calaveras Dam Replacement (B) WD-2729 Alameda Creek Diversion Dam	(A) 04/12/19 (B) 02/15/19		S	P	S	(A) 04/12/19 (B) 02/15/19	(A) 100% (B) 98%
CUW37402	Calaveras Reservoir Upgrades <i>(Completed)</i>	10/06/05	P				10/06/05	100%
CUW37403	San Antonio Backup Pipeline <i>(Completed)</i>	12/31/14			P		12/31/14	100%
CUW38101	SVWTP Expansion & Treated Water Reservoir <i>(Completed)</i>	05/17/13	P		P		05/17/13	100%
CUW38601	San Antonio Pump Station Upgrade <i>(Completed)</i>	06/30/11			P		06/30/11	100%

WSIP Quarterly Report

Project No.	Project Name / Construction Contract	Actual / Approved Substantial Completion Date	LOS Goals (P =Primary, S =Secondary)				Actual Operational Service Start	Construction Progress Toward LOS Goals
			Water Quality	Seismic Reliability	Delivery Reliability	Water Supply		
Bay Division Projects								
CUW35301	BDPL Nos. 3 & 4 Crossover/Isolation Valves <i>(Completed)</i>	11/15/07		P			11/15/07	100%
CUW35302	Seismic Upgrade of BDPL Nos. 3 & 4 <i>(Completed)</i>	10/26/15		P			06/20/14	100%
CUW36301	SCADA System - Phase II <i>(Completed)</i>	11/29/10			P		11/29/10	100%
CUW36801	BDPL Reliability Upgrade – Tunnel <i>(Completed)</i>	05/20/15		P	S		10/15/14	100%
CUW36802	BDPL Reliability Upgrade – Pipeline <i>(Completed)</i> (A) WD-2541 East Bay (B) WD-2542 Peninsula (C) WD-2665 Cordilleras	(A) 12/09/11 (B) 06/13/12 (C) 03/05/13		P	S		(A) 12/09/11 (B) 06/13/12 (C) 03/05/13	100%
CUW36803	BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2 <i>(Completed)</i>	05/28/10			P		05/28/10	100%
CUW38001	BDPL Nos. 3 & 4 - Crossovers <i>(Completed)</i>	08/15/12		P	S		08/15/12	100%
CUW38901	SFPUC/EBMUD Intertie <i>(Completed)</i>	09/07/07			P		09/07/07	100%
CUW39301	BDPL No. 4 Condition Assessment PCCP Sections <i>(Completed)</i>	02/06/09		P	S		02/06/09	100%
Peninsula Projects								
CUW35401	Lower Crystal Springs Dam Improvements <i>(Completed)</i>	11/20/11			P	S	11/20/11	100%
CUW35601	New Crystal Springs Bypass Tunnel <i>(Completed)</i>	07/14/11		P	S		07/14/11	100%
CUW35701	Adit Leak Repair - Crystal Springs/Calaveras <i>(Completed)</i>	11/30/07			P		11/30/07	100%
CUW36101	Pulgas Balancing - Inlet/Outlet Work <i>(Completed)</i>	02/02/06	P		S		02/02/06	100%
CUW36102	Pulgas Balancing - Discharge Channel Modifications <i>(Completed)</i>	10/23/09			P		10/23/09	100%
CUW36103	Pulgas Balancing - Structural Rehabilitation & Roof Replacement <i>(Completed)</i>	07/26/11	P		S		07/26/11	100%
CUW36105	Pulgas Balancing - Modifications of the Existing Dechloramination Facility <i>(Completed)</i>	08/27/12	P		S		08/27/12	100%
CUW36501	Cross Connection Controls <i>(Completed)</i>	11/26/08	P				11/26/08	100%
CUW36601	HTWTP Short-Term Improvements - Demo Filters <i>(Completed)</i>	01/11/06		P	S		01/11/06	100%
CUW36603	HTWTP Short-Term Improvements - Coagulation & Flocculation/Remaining Filters <i>(Completed)</i>	12/21/09		P	S		12/21/09	100%
CUW36701	HTWTP Long -Term Improvements <i>(Completed)</i>	09/08/15		P	S		09/08/15	100%
CUW36702	Peninsula Pipelines Seismic Upgrade <i>(Completed)</i>	10/30/15		P			10/30/15	100%
CUW36901	Capuchino Valve Lot Improvements <i>(Completed)</i>	02/14/08			P		02/14/08	100%
CUW37101	Crystal Springs/San Andreas Transmission Upgrade <i>(Completed)</i>	06/30/14		P	S		09/02/14	100%
CUW37801	Crystal Springs Pipeline No. 2 Replacement <i>(Completed)</i>	01/31/13		P	S		01/31/13	100%
CUW37901	San Andreas Pipeline No. 3 Installation <i>(Completed)</i>	03/29/11		P	S		03/29/11	100%
CUW39101	Baden & San Pedro Valve Lots Improvements <i>(Completed)</i>	03/31/11		P	S		03/31/11	100%

Project No.	Project Name / Construction Contract	Actual / Approved Substantial Completion Date	LOS Goals (P =Primary, S =Secondary)				Actual Operational Service Start	Construction Progress Toward LOS Goals
			Water Quality	Seismic Reliability	Delivery Reliability	Water Supply		
San Francisco Regional Projects								
CUW30103	Regional Groundwater Storage and Recovery (A) WD-2600 Test Well Drilling (B) WD-2668 Regional Groundwater Storage and Recovery (Phase 1) (C) Regional Groundwater Storage and Recovery (Phase 2)	(A) 07/23/12 (B) 12/31/17 (C) 02/28/21				P	(A) 07/23/12	(A) 100% (B) 98% (C) 0%
CUW35801	Sunset Reservoir - North Basin <i>(Completed)</i>	09/19/08		P	S		09/19/08	100%
CUW37201	University Mound Reservoir - North Basin <i>(Completed)</i>	05/25/11		P	S		05/25/11	100%

Notes:

- 1 Support projects and WSIP Closeout projects are not listed in the table above since these projects do not have specific Level of Service (LOS) goals.

3. PROGRAM COST SUMMARY

Table 3.1 provides an overall program-level cost summary of the WSIP Regional Program. It shows the Expenditures to Date; the 2005 Baseline, 2020 Approved, Current Approved and Q3/FY19-20 Forecasted Budgets; and the Cost Variance between the Current Approved and Forecasted Budgets.

The total Current Approved WSIP Budget (including Regional and Local Programs, Local

Water Supply Projects, and Financing Costs) and Current Forecasted Cost at completion are both \$4,787.8 million. The Current Approved WSIP Budget and Forecasted Cost at completion for the Regional Program (including construction contingency) are both \$3,803.1 million. The Current Approved WSIP Budget and Forecasted Cost at completion for the Local Improvement Projects are the same at \$331.4 million. Refer to Appendix B for a graphical representation of how the WSIP budget and actual expenditures have changed over time.

Table 3.1 Program Cost Summary

Cost Categories	Expenditures To Date (\$ Million) (A)	2005 Baseline Budget (\$ Million) (B)	2020 Approved Budget (\$ Million) (C)	Current Approved Budget ⁽⁷⁾ (\$ Million) (D)	Q3/FY19-20 Forecasted Costs (\$ Million) (E)	Cost Variance (\$ Million) (F = D - E)
Regional Improvement Projects	\$2,995	\$3,181	\$3,081.4	\$3,076.4	\$3,091.3	(\$14.9)
Construction Costs ⁽¹⁾	\$2,018	\$2,322	\$2,065.9	\$2,063.9	\$2,053.0	\$10.9
Program Delivery Costs ⁽²⁾	\$951	\$758	\$984.8	\$982.8	\$990.9	(\$8.1)
Other Costs ⁽³⁾	\$26	\$101	\$30.7	\$29.7	\$47.4	(\$17.7)
Support Projects ⁽⁴⁾	\$232	\$33	\$244.9	\$244.9	\$258.3	(\$13.4)
Construction Contingency for Regional & Support Projects ⁽⁵⁾	\$435	\$193	\$476.8	\$481.8	\$453.5	\$28.3
REGIONAL PROGRAM WITH CONTINGENCY	\$3,662	\$3,407	\$3,803.1	\$3,803.1	\$3,803.1	-
Local Improvement Projects	\$331	\$383	\$331.4	\$331.4	\$331.4	-
Local Water Supply Projects ⁽⁶⁾⁽⁸⁾	\$169	-	\$281.3	\$281.3	\$281.3	-
Finance	\$372⁽¹¹⁾	\$552⁽⁹⁾	\$372⁽¹⁰⁾	\$372.0	\$372.0	-
PROGRAM TOTAL	\$4,535	\$4,343	\$4,787.8	\$4,787.8	\$4,787.8	-

Notes:

- Construction Costs** include the Construction Base Bid and owner-provided equipment/material for all regional and support projects. Those costs do not include any construction contingency. That contingency is reflected as a separate cost category.
- Delivery Costs** include project management, planning, environmental (CEQA, permitting, construction compliance), design, construction management, and engineering support during construction.
- Other Costs** include environmental mitigation, art enrichment, security improvements, and real estate expenses.
- Support Projects** include (1) System Security Upgrades, (2) Programmatic EIR, (3) Bioregional Habitat Restoration, (4) Vegetation Restoration of WSIP Construction Sites, (5) Long Term Mitigation Endowment, (6) Program Management, and (7) Watershed and Environmental Improvement Program. Please note that the cost reflected above for support projects only includes "Delivery" and "Other" costs, and "Construction" cost for these projects is included in "Construction Costs" under the Regional Improvement Projects.
- Expenditures to Date for Construction Contingency for Regional and Support projects correspond to the Total Approved Change Orders on those projects. For projects with ongoing or completed construction, the 2020 Approved Budget for construction contingency includes all change orders and trends as identified at the time of the March 2020 Revised WSIP, as well as additional contingency funding allocated to cover the 80% confidence level risks identified at the time of the March 2020 Revised WSIP. For projects in pre-construction, the 2020 Approved Budget for construction contingency includes 10% of the estimated construction base bid
- Local Water Supply Projects managed as part of the Water Enterprise Capital Improvement Program (CIP) are (1) Lake Merced Water Level Restoration, (2) San Francisco Groundwater Supply, (3) San Francisco Westside Recycled Water, (4)

7. The budget approved as part of the March 2020 Revised WSIP, plus any additional budget changes approved by the Commission as part of additional contingencies on construction contracts.
8. The WSIP Local Water Supply projects underwent a September 2013 re-baseline. Only the original WSIP portion of the re-baselined costs is reported here. The remaining budget is funded under the Water Enterprise CIP and is managed outside the purview of the WSIP.
9. The original \$522M estimate of financing cost was based on a memorandum to the Commission dated November 23, 2005.
10. The financing cost budget of \$372M that was included in the March 2020 Revised WSIP includes all financing costs appropriated to date.
11. The actual financing cost is assumed to match the budgeted financing cost. Final reconciliation of all associated financing costs will occur upon WSIP completion.

Table 3.2 provides the current remaining construction contingency. For each region, it shows the 2020 Approved Construction Contingency; the Total Approved Change Orders prior to the reporting quarter; Change Orders Approved during the reporting quarter; Total Approved Change Orders through the reporting quarter; Project Savings Moved to Contingency/ Funds Moved out of Contingency during the Reporting Quarter; the Q3/FY19-20 Forecasted Construction Contingency; and the Remaining

Contingency as of the end of the reporting quarter. As of March 31, 2020, the Forecasted Construction Contingency is \$453.5 million, and the Current Remaining Contingency is \$17.2 million.

The total costs of Change Orders approved in Q3/FY19-20 are shown in Table 3.2. Table 3.3 provides further information at the construction contract level for all approved change orders during the reporting quarter.

Table 3.2 Current Remaining Construction Contingency

Region	Q2/FY19-20 Forecasted Construction Contingency ⁽¹⁾ (\$ Million) (A)	Total Approved Change Orders as of Q2/FY19-20 ^(2,3) (\$ Million) (B)	Change Orders Approved in Q3/FY19-20 ⁽²⁾ (\$ Million) (C)	Total Approved Change Orders as of Q3/FY19-20 (\$ Million) (D = B+C)	Project Savings or Director's Reserves (+) Moved to Contingency/ Funds (-) Moved out of Contingency during Q3/FY19-20 ⁽⁴⁾ (\$ Million) (E)	Q3/FY19-20 Forecasted Construction Contingency (\$ Million) (F = A + E)	Q3/FY19-20 Remaining Contingency (\$ Million) (G = F - D)
San Joaquin Region	\$0.22	-	-	-	-	\$0.21	\$0.21
Sunol Valley Region	\$366.33	\$355.36	\$0.14	\$355.50	(\$1.07)	\$365.26	\$9.76
Bay Division Region	\$8.21	\$8.06	-	\$8.06	-	\$8.21	\$0.15
Peninsula Region	\$57.38	\$56.79	-	\$56.79	-	\$57.38	\$0.59
San Francisco Regional Region	\$20.08	\$15.50	\$0.62	\$16.12	\$2.23	\$22.31	\$6.18
Support Projects	\$0.14	(\$0.12)	-	(\$0.12)	-	\$0.14	\$0.26
Regional Total	\$452.35	\$435.59	\$0.76	\$436.35	\$1.16	\$453.51	\$17.15

Notes:

1. Construction Contingency approved as part of the March 2020 Revised WSIP, plus any regional projects' savings moved to contingency.
2. Approved Change Orders are changes that have received all required approvals, including that of the City Controller.
3. This table only reports change orders for the active construction contracts as of this reporting cycle.
4. Values only reflect savings realized following the Commission's adoption of the March 2020 Revised WSIP.

Table 3.3. Details on Transactions Out of and Into Contingency

Project No. - Contract	Transactions Out of Contingency			Transactions Into Contingency		
	Approved Change Orders (\$ Million) (A)	Budget Underrun at Project Completion / Director's Reserve Moved Out of Project (\$ Million) (B)	Sub Total (\$ Million) (C = A + B)	Savings Due to Low Bid (\$ Million) (D)	Budget Overrun at Project Completion / Director's Reserve Moved to Project (\$ Million) (E)	Sub Total (\$ Million) (F = D + E)
Sunol Valley Region	\$0.14	\$1.07	\$1.21	-	-	-
CUW37401 Calaveras Dam Replacement WD-2551	-	\$1.07	\$1.07	-	-	-
CUW37401 Calaveras Dam Other Construction WD-2729	\$0.14	-	\$0.14	-	-	-
San Francisco Regional	\$0.62	-	\$0.62	-	\$2.23	\$2.23
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	\$0.62	-	\$0.62	-	\$2.23	\$2.23
Regional Total	\$0.76	\$1.07	\$1.83	-	\$2.23	\$2.23

Table 3.4 Forecasted Remaining Construction Contingency

Region	Q3/FY19-20 Remaining Construction Contingency ⁽¹⁾ (\$ Million) (A)	Pending Change Orders as of Q3/FY19-20 ⁽²⁾ (\$ Million) (B)	Potential Change Orders as of Q3/FY19-20 ⁽³⁾ (\$ Million) (C)	Trends as of Q3/FY19-20 ⁽⁴⁾ (\$ Million) D	Q3/FY19-20 Forecasted Remaining Construction Contingency (\$ Million) (E = A-B-C-D)
San Joaquin Region	\$0.21	-	-	-	\$0.21
Sunol Valley Region	\$9.76	\$6.82	-	-	\$2.94
Bay Division Region	\$0.15	-	-	-	\$0.15
Peninsula Region	\$0.59	-	-	-	\$0.59
San Francisco Regional Region	\$6.18	\$0.43	\$0.30	\$3.16	\$2.30
Support Projects	\$0.26	-	-	-	\$0.26
Regional Total	\$17.15	\$7.24	\$0.30	\$3.16	\$6.45

Notes:

1. Same as Column G in Table 3.2.
2. Pending Change Orders are changes that have been negotiated and approved by the SFPUC but have to be approved by the City Controller.
3. Potential Change Orders are changes that have been requested and entered into CMIS but are still being negotiated.
4. Trends are any expected impact that the CM team believes has a high probability of becoming a change but are yet to be entered into CMIS as a Potential Change

Table 3.4 provides the forecasted remaining construction contingency. For each region as of Q3/FY19-20, it shows the Remaining Construction Contingency, Pending Change Orders, Potential Change Orders, Trends, and Forecasted Remaining Construction Contingency. As of March 31, 2020, the Total Forecasted Remaining Construction Contingency is \$6.5 million. This amount does not include funds that are currently held in Director's Reserve.

The Program Management project includes programmatic activities that span multiple regions and benefit several WSIP projects (Table 3.5). The project provides funding for the following functions and resources: SFPUC Staff assigned to the management of the overall program; consultants supporting SFPUC staff at the program level (program, project and pre-construction management consultant, program

construction management consultant, program control consultant); labor relations, including management of the project labor agreement; communication and public outreach; programmatic legal support; real estate acquisitions; program controls, including the tracking and reporting of all WSIP efforts; and program-level construction management activities associated with quality assurance, risk management, the Supplier Quality Surveillance (SQS) Program, operations assistance, safety, and training.

The activities under the Program Management project are organized into five categories that are tracked and monitored on a monthly basis. These categories are Management Support, Project Labor Agreement, Planning and Project Development, Program Control, and Program Construction Management.

Table 3.5 Status of Program Management Project Cost Breakdown

Category	Expenditures To Date (\$ Million) (A)	2020 Approved Budget (\$ Million) (B)	Current Approved Budget (\$ Million) (C)	Q3/FY19-20 Forecasted Cost* (\$ Million) (D)	Cost Variance (\$ Million) (E = C-D)
Management Support	\$37.5	\$42.8	\$42.8	\$42.8	-
Project Labor Agreement	\$3.7	\$3.8	\$3.8	\$3.8	-
Planning and Project Development	\$18.0	\$18.3	\$18.3	\$18.3	-
Program Controls	\$20.1	\$19.8	\$19.8	\$19.9	-
Program Construction Management	\$27.7	\$28.0	\$28.0	\$28.0	-
Program Management Total	\$107.0	\$112.7	\$112.7	\$112.7	-

The spending pattern for the project is very similar from month to month as the project primarily funds program-level positions occupied by both SFPUC staff and consultants. The Current Approved and the Forecasted Total Program Management Cost are \$112.7 million.

4. PROGRAM SCHEDULE SUMMARY

Figure 4.1 and Table 4.1 compare the 2005 Baseline, 2020 Approved, Current Approved, and Q3/FY19-20 Forecasted Schedules for the WSIP Regional Program. Refer to the “Cost and Schedule Status” notes in Section 5 for the criteria associated with the three color-coded Forecast Status levels in Figure 4.1 - Meet Requirements, Need Attention, and Exceed Limits. The Current Approved and Forecasted Schedule completion for the overall WSIP (including Regional and Local Programs) are both May 2023. Refer to Appendix C for a graphical presentation of the WSIP Approved Project-Level Schedule.

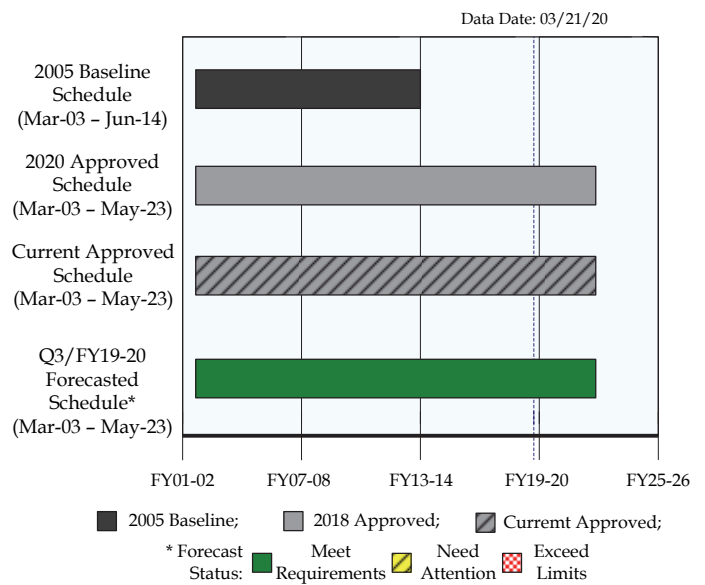


Figure 4.1 Program Schedule Summary

Table 4.1 2020 Approved vs. Q3/FY19-20 Forecasted Schedule Dates

Category	2005 Baseline Start	2020 Approved Start	Current* Approved Start	Actual Start	2005 Baseline Finish	2020 Approved Finish	Current* Approved Finish	Q3/FY19-20 Forecasted Finish	Schedule Variance (Months)
Regional Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/30/14	05/05/23	05/05/23	05/05/23	-
Local** Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/28/13	7/31/18	7/31/18	06/30/20	23.0 (Late)
Overall WSIP	03/01/03	03/01/03	03/01/03	03/01/03✓	06/30/14	05/05/23	05/05/23	05/05/23	-

* The budget and schedule approved as part of the March 2020 WSIP, plus any additional budget and schedule changes approved by the Commission as part of additional contingencies on construction contracts.

** Excluding Local Water Supply Projects

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5. PROJECT PERFORMANCE SUMMARY*

All costs are shown in \$1,000s as of 03/21/20

Project Name	Active Phase (**)	2005 Baseline Budget (a)	2020 Approved Budget (b)	Current Approved Budget (c)	Q3/FY19-20 Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f= c - d)	Cost Status (+)	2005 Baseline Completion (g)	2020 Approved Completion (h)	Current Approved Completion (i)	Q3/FY19-20 Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
San Joaquin Region															
CUWSJI0101 - WSIP Closeout - San Joaquin	CN		\$ 4,376	\$ 4,376	\$ 3,876	\$ 705	\$ 500	★			03/31/21	03/31/21	-	★	See Appendix E
Sunol Valley Region															
CUW35201 - Alameda Creek Recapture Project	DS	\$ 18,809	\$ 34,000	\$ 34,000	\$ 37,645	\$ 13,194	(\$3,645)	●	05/25/12		05/05/23	05/05/23	-	★	See Section 6
CUW37401 - Calaveras Dam Replacement	CN	\$ 256,511	\$ 823,092	\$ 823,092	\$ 813,066	\$ 779,073	\$ 10,026	★	05/25/12		03/31/21	03/31/21	-	★	See Appendix E
CUWSVI0101 - WSIP Closeout - Sunol Valley	CN		\$ 5,990	\$ 5,990	\$ 5,990	\$ 3,173	-	★			06/30/21	06/30/21	-	★	See Appendix E
Bay Division Region															
CUWBDP0101 - WSIP Closeout - Bay Division	CN		\$ 4,399	\$ 4,399	\$ 3,801	\$ 2,324	\$ 598	★			12/31/20	12/31/20	-	★	See Appendix E
Peninsula Region															
CUWPW10101 - WSIP Closeout - Peninsula	CN		\$ 13,580	\$ 13,580	\$ 13,580	\$ 10,601	-	★			08/05/21	08/05/21	-	★	See Appendix E
San Francisco Regional Region															
CUW30103 - Regional Groundwater Storage and Recovery	CN	\$ 39,233	\$ 138,793	\$ 138,793	\$ 148,350	\$ 107,524	(\$9,557)	⚠	02/27/14		12/30/21	10/21/22	9.7 mo. Late	●	See Section 6
Support Projects															
CUW38804 - Long Term Mitigation Endowment ++	NA		\$ 12,000	\$ 12,000	\$ 12,000	\$ 0	-	★			09/30/21	09/30/21	-	★	NA
CUW39401 - Watershed and Environmental Improvement Program	NA	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 16,642	-	★	06/28/13		01/08/21	01/08/21	-	★	See Appendix E

* Excludes projects with completed construction and projects that are no longer active (i.e., deleted projects, closed projects, and projects combined with other projects)

**** Phase Status Legend**

PL	Planning	DS	Design	BA	Bid & Award
CN	Construction	NA	Not Applicable		

For projects active in multiple phases, the table shows the phase in which a majority of the works is taking place.

+ Cost and Schedule Status

- ★ Meet Requirements: Forecasted Cost/Schedule is within Current Approved Budget/Schedule.
- ⚠ Need Attention: Forecasted Cost is over Current Approved Budget by greater than 1% and less than 10%. Or Forecasted Schedule is over Current Approved Schedule by greater than 2 months and less than 6 months and less than 10%.
- Exceed Limits: Forecasted Cost is over Current Approved Budget by 10% or more. Or Forecasted Schedule is over Current Approved Schedule by greater than 6 months or 10% or more.

++ The Long Term Mitigation Endowment (LTME) fund provides an initial deposit to secure a source of funds for perpetual monitoring and maintenance of the Bioregional Habitat Restoration sites constructed in the SFPUC watershed, as required by the United States Army Corps of Engineers and California Department of Fish and Wildlife permits. The LTME fund does not involve construction activities to secure land purchases.






6. PROJECTS NOT WITHIN BUDGET AND/OR SCHEDULE

CUW35201 - Alameda Creek Recapture Project

Project Description: The scope of this project includes conveyance of the water to various existing storage sites within the Sunol Valley to the Sunol Valley Water Treatment Plant by addition of the following:

- Four vertical turbine pumps mounted on floating barges located in existing Pond F2.
- Flexible discharge pipelines which are connected between the new pipe manifold and the existing Sunol Pipeline to discharge the recaptured water to the SFPUC system.
- Throttling valves, a flow meter, and other electrical and general site improvements.

Region: Sunol Valley	Project Status: Design	Environmental Status: Active (EIR)
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Project Cost:		Project Schedule:	
Approved 	\$34.00 M	Approved Sep-03 	May-23
Forecast* 	\$37.65 M	Forecast* Sep-03 	May-23
Actual 	\$13.19 M	Project Percent Complete: 41.0%	

 Approved;  Actual Cost; * Forecast Status:  Meet Requirements  Need Attention  Exceed Limits

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	04/23/20	08/15/20	01/15/21	11/07/22

Progress and Status:

Comments on the recirculated Administrative Draft EIR (ADEIR) were received and reviewed. Response to comments were prepared and reviewed for posting. The recirculated ADEIR certification and project approval are expected in the next reporting quarter. The redesign work continued during the reporting quarter. The project team continued to coordinate with Hanson Quarry on the erosion occurring around Pond F2. Hanson prepared and submitted a Geotech engineering report for SFPUC review on the erosion and recommended repairs.

Issues and Challenges:











The project schedule was updated based on the ADEIR publication date. The budget was reevaluated based on scope revisions from the ADEIR. The forecast for final construction completion is November 2022, and project closeout is May 2023. The forecast project budget is \$37,645,000. The variance between the approved and forecast project budget and schedule is due to the extensive effort to recirculate the ADEIR including re-analyzing stream flow data, meeting with Regulatory Agencies and Fisheries Workgroup, revising and reviewing the document sections, and incorporating comments. The increases are also due to an increase in the construction duration, and increases in the construction estimate, contingency and escalation costs.



Current Condition of Pond F2 Access Road

CUW30103 - Regional Groundwater Storage and Recovery

Project Description: The goal of the project is to provide up to 7.2 million gallons per day (mgd) of dry year water supply over 7.5 years. The original project design included the construction of up to 16 groundwater wells and well stations to be connected to three wholesale customers on the Upper Peninsula and the SFPUC transmission system to achieve the water supply goal. Phase 1 included the installation of 13 well stations to produce approximately 6.2 mgd, and the original scope of Phase 2 included construction of 2 to 3 additional well stations, based upon well yield. Due to difficulties with siting well stations in the central portion of the groundwater basin, Phase 2 has been modified to install up to 3 test wells (Ludeman North, Ludeman South and Centennial Trail), complete the South San Francisco Main well and pipeline, and complete other Phase 1 scope items, including chemical system monitoring, sampling and storage at various sites. The Phase 2 test wells will not be converted to production wells at this time, but will allow for determination as to whether the identified sites could be viable future production wells, and will provide valuable information related to water quality and potential pumping capacities that can be used for future planning and decision making.

Region: San Francisco Regional	Project Status: Construction	Environmental Status: Active (Various)
Project Cost:		Project Schedule:
Approved  \$138.79 M	Approved Jun-03  Dec-21	
Forecast*  \$148.35 M	Forecast* Jun-03  Oct-22	
Actual  \$107.52 M	Project Percent Complete: 81.3%	
 Approved;  Actual Cost; * Forecast Status:  Meet Requirements  Need Attention  Exceed Limits		

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction+ NTP	Construction+ Final Completion
Current Forecast	(A) 09/07/09✓ (B) 08/07/14✓ (C) 11/10/20	(A) 09/07/11✓ (B) 09/22/14✓ (C) 11/18/20	(A) 01/30/12✓ (B) 04/06/15✓ (C) 04/22/21	(A) 09/05/12✓ (B) 03/06/21 (C) 04/22/22

+ Project includes multiple construction contracts.

(A) Test well drilling; (B) Well station construction; (C) Well sites in Millbrae and South San Francisco

Progress and Status:

For Phase 1 (Contract B), 4-day testing at F Street Well & Treatment Facility (Colma BART) and at Colma Boulevard Well have been completed. Testing at Hickey Boulevard and Millbrae Yard Well and Treatment Facilities are planned to begin after the suspension due to COVID-19 has been lifted. The Commission approved increases to the construction cost and duration contingencies on 2/25/20, extending the construction to 3/6/21.

For Phase 2 (associated with Contract C), the CER for the South San Francisco Main well station is in the final approval process. The 35% design has started. The draft 35% package is expected to be issued in April 2020.

Issues and Challenges:

The variance between the Approved and Forecasted cost for Phase 1 (Contract B) is due to necessary modifications to the well pump system at several locations, to address problems from sand, decline of pump performance, electrical interference, corrosion,

and higher than expected transmission line pressures. The project team continues addressing other issues, including undersized carrier water pumps; ammonia pump not meeting pump performance; other chemical system modifications for groundwater treatment; the retrofit of existing transmission line flowmeters; and other changes to programming, access, and treatment testing. Further monitoring and calibration are needed to acquire more accurate and consistent readings on the transmission line flowmeters. These changes have resulted in delays to the 4-day tests, resulting in the overall delay of construction completion. Furthermore, construction work was suspended for the last two weeks of the quarter due to the Shelter-in-Place order in response to COVID-19.

The variances between the Approved and Forecasted cost and schedule for Phase 2 (Contract C) are due to the addition of remaining work from Contract B to Contract C.

7. On-Going Construction

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion*	Q3/FY19-20 Forecasted Construction Final Completion**	Approved Contract Cost +	Q3/FY19-20 Forecasted Cost++	Schedule (Cal. Days)	Cost	
Sunol Valley Region								
CUW37401 - Alameda Creek Diversion Dam (Contract B)	04/19/16	12/16/18	12/31/20	\$ 36,604,893	\$ 43,422,940	(746)	(\$6,818,047)	98.0%
San Francisco Regional Region								
CUW30103 - Regional GW Storage and Recovery (Contract B)	04/06/15	03/06/20	03/06/21	\$ 59,103,489	\$ 59,830,333	(365)	(\$726,844)	98.0%

Program Total for On-Going Construction	Approved Contract Cost	Q3/FY19-20 Forecasted Cost*	Variance	
			Cost	Percent
	\$ 95,708,382	\$ 103,253,273	(\$7,544,891)	(7.9%)

Note:

* Approved Construction Final Completion Date includes approved change orders.
 ** The Forecasted Construction Final Completion Date includes all approved, pending, and potential change orders and trends.

+ Approved Contract Cost includes awarded contract amount and approved change orders.
 ++ The Forecasted Cost includes awarded contract amount and all approved, pending, and potential change orders.

8. PROJECTS IN CLOSE-OUT

Project Title	2005 Baseline Construction Phase Completion	2020 Approved Construction Phase Completion	Current Approved Construction Phase Completion	Actual Construction Phase Completion	2005 Approved Project Completion	2020 Approved Project Completion	Current Approved Project Completion	Forecasted Project Completion	2005 Baseline Construction Phase Budget	2020 Approved Construction Phase Budget	Current Approved Construction Phase Budget	Construction Phase Expenditures To Date
Support Projects												
CUW38802 - Bioregional Habitat Restoration		05/31/18	05/31/18	05/31/18		09/30/21	09/30/21	09/30/21		\$ 52,299,498	\$ 51,636,156	\$ 50,647,197
TOTAL										\$ 52,299,498	\$ 51,636,156	\$ 50,647,197

9. COMPLETED PROJECTS

Project Title	2005 Baseline Project Completion	2020 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2020 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
San Joaquin Region								
CUW36401 - Lawrence Livermore Water Quality Improvement	11/07/11	07/31/13	07/31/13	07/31/13	\$ 4,235,258	\$ 4,198,247	\$ 4,198,247	\$ 4,198,247
CUW37301 - San Joaquin Pipeline System	03/25/14	03/31/16	03/31/16	03/31/16	\$ 352,732,000	\$ 203,178,014	\$ 203,178,015	\$ 203,178,015
CUW37302 - Rehabilitation of Existing San Joaquin Pipelines	06/30/14	10/31/14	10/31/14	10/31/14	\$ 80,000,000	\$ 21,153,622	\$ 21,153,622	\$ 21,153,622
CUW38401 - Tesla Treatment Facility	07/01/11	01/30/15	01/30/15	01/30/15	\$ 101,643,001	\$ 113,211,607	\$ 113,211,607	\$ 113,211,607
Sunol Valley Region								
CUW35501 - Standby Power Facilities - Various Locations	12/06/10	12/22/10	12/22/10	12/22/10	\$ 9,949,735	\$ 12,950,566	\$ 12,950,566	\$ 12,950,566
CUW35901 - New Irvington Tunnel	09/17/13	03/31/18	03/31/18	03/31/18	\$ 214,650,004	\$ 340,406,358	\$ 340,406,358	\$ 339,901,806
CUW35902 - Alameda Siphon #4	04/14/11	06/28/13	06/28/13	06/28/13	\$ 78,577,000	\$ 64,950,507	\$ 64,950,507	\$ 64,950,507
CUW37001 - Pipeline Repair & Readiness Improvements	03/30/07	04/16/09	04/16/09	04/16/09	\$ 5,591,770	\$ 5,195,381	\$ 5,195,381	\$ 5,195,381
CUW37402 - Calaveras Reservoir Upgrades	02/17/06	07/28/06	07/28/06	07/28/06	\$ 1,740,055	\$ 1,690,552	\$ 1,690,552	\$ 1,690,552
CUW37403 - San Antonio Backup Pipeline	06/29/12	06/30/16	06/30/16	06/30/16	\$ 7,677,000	\$ 53,594,683	\$ 53,594,683	\$ 53,594,683
CUW38101 - SVWIP Expansion & Treated Water Reservoir	07/09/13	10/31/14	10/31/14	10/31/14	\$ 133,108,002	\$ 129,593,674	\$ 129,593,674	\$ 129,593,674
CUW38601 - San Antonio Pump Station Upgrade	12/12/11	06/29/12	06/29/12	06/29/12	\$ 41,854,000	\$ 12,894,592	\$ 12,894,592	\$ 12,894,592
Bay Division Region								
CUW35301 - BDPL Nos. 3 & 4 Crossover/Isolation Valves	09/30/08	07/31/09	07/31/09	07/31/09	\$ 27,600,158	\$ 27,039,149	\$ 27,039,149	\$ 27,039,149
CUW35302 - Seismic Upgrade of BDPL Nos. 3 & 4	10/15/12	07/30/18	07/30/18	07/30/18	\$ 66,792,849	\$ 73,623,296	\$ 73,623,296	\$ 70,556,621
CUW36301 - SCADA System - Phase II	02/24/12	05/28/13	05/28/13	05/28/13	\$ 36,098,999	\$ 9,470,922	\$ 9,470,922	\$ 9,470,923
CUW36801 - BDPL Reliability Upgrade / Tunnel	01/31/14	08/30/16	08/30/16	08/30/16	\$ 572,022,634	\$ 272,364,089	\$ 272,364,089	\$ 271,823,525
CUW36802 - BDPL Reliability Upgrade - Pipeline	-	03/31/16	03/31/16	03/31/16	-	\$ 216,871,156	\$ 216,871,156	\$ 216,722,172
CUW36803 - BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2	-	05/28/10	05/28/10	05/28/10	-	\$ 3,046,981	\$ 3,046,981	\$ 3,046,981
CUW38001 - BDPL Nos. 3 & 4 Crossovers	04/24/13	06/30/14	06/30/14	06/30/14	\$ 36,616,911	\$ 29,910,449	\$ 29,910,449	\$ 29,910,449
CUW38901 - SFPUC/EBMUD Intertie	02/07/07	03/20/14	03/20/14	03/20/14	\$ 8,598,851	\$ 9,167,306	\$ 9,167,306	\$ 9,167,306
CUW39301 - BDPL No. 4 Condition Assessment PCCP Sections	05/01/08	02/06/09	02/06/09	02/06/09	\$ 2,000,000	\$ 1,937,599	\$ 1,937,599	\$ 1,937,599
Peninsula Region								
CUW35401 - Lower Crystal Springs Dam Improvements	08/16/11	12/28/12	12/28/12	12/28/12	\$ 27,752,222	\$ 34,859,040	\$ 34,859,040	\$ 34,859,040
CUW35601 - New Crystal Springs Bypass Tunnel	10/28/10	08/17/12	08/17/12	08/17/12	\$ 83,222,790	\$ 81,466,732	\$ 81,466,732	\$ 81,466,732
CUW35701 - Adit Leak Repair - Crystal Springs/Calaveras	07/03/08	07/31/08	07/31/08	07/31/08	\$ 3,748,452	\$ 2,787,322	\$ 2,787,322	\$ 2,787,322
CUW36101 - Pulgas Balancing - Inlet/Outlet Work	05/11/06	05/11/06	05/11/06	05/11/06	\$ 1,667,532	\$ 1,765,938	\$ 1,765,938	\$ 1,765,938

Project Title	2005 Baseline Project Completion	2020 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2020 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
Peninsula Region								
CUW36102 - Pulgas Balancing - Discharge Channel Modifications	08/05/13	07/30/10	07/30/10	07/30/10	\$ 8,111,422	\$ 2,910,007	\$ 2,910,007	\$ 2,910,007
CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement	01/29/13	12/28/12	12/28/12	12/28/12	\$ 36,712,846	\$ 20,238,716	\$ 20,238,716	\$ 20,238,716
CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility	-	03/20/13	03/20/13	03/20/13	-	\$ 5,390,031	\$ 5,390,031	\$ 5,390,031
CUW36501 - Cross Connection Controls	05/15/09	04/30/09	04/30/09	04/30/09	\$ 6,111,779	\$ 3,948,944	\$ 3,948,944	\$ 3,948,944
CUW36601 - HTWTP Short-Term Improvements (Demo Filters)	07/03/06	11/14/06	11/14/06	11/14/06	\$ 4,381,375	\$ 3,067,903	\$ 3,067,903	\$ 3,067,903
CUW36603 - HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters	09/08/10	07/28/10	07/28/10	07/28/10	\$ 9,741,617	\$ 18,604,937	\$ 18,604,937	\$ 18,604,937
CUW36701 - HTWTP Long-Term Improvements	04/08/14	12/30/16	12/30/16	12/30/16	\$ 167,570,000	\$ 274,081,969	\$ 274,081,969	\$ 273,833,162
CUW36702 - Peninsula Pipelines Seismic Upgrade	-	07/06/16	07/06/16	07/06/16	-	\$ 38,825,346	\$ 38,825,346	\$ 38,773,912
CUW36901 - Capuchino Valve Lot Improvements	07/24/09	08/19/08	08/19/08	08/19/08	\$ 3,573,782	\$ 2,803,153	\$ 2,803,153	\$ 2,803,153
CUW37101 - Crystal Springs/San Andreas Transmission Upgrade	04/01/14	06/30/15	06/30/15	06/30/15	\$ 148,582,655	\$ 190,309,453	\$ 190,309,453	\$ 189,816,066
CUW37801 - Crystal Springs Pipeline No. 2 Replacement	04/27/12	12/31/14	12/31/14	12/31/14	\$ 93,926,000	\$ 56,070,509	\$ 56,070,509	\$ 56,070,509
CUW37901 - San Andreas Pipeline No. 3 Installation	06/09/11	08/30/12	08/30/12	08/30/12	\$ 42,029,941	\$ 27,495,558	\$ 27,495,558	\$ 27,495,558
CUW39101 - Baden and San Pedro Valve Lots Improvements	10/12/11	03/29/13	03/29/13	03/29/13	\$ 47,319,999	\$ 24,990,803	\$ 24,990,803	\$ 24,990,803
San Francisco Regional Region								
CUW35801 - Sunset Reservoir - North Basin	05/06/09	09/10/10	09/10/10	09/10/10	\$ 61,975,999	\$ 64,270,725	\$ 64,270,725	\$ 64,270,725
CUW37201 - University Mound Reservoir - North Basin	03/10/11	03/29/13	03/29/13	03/29/13	\$ 102,882,610	\$ 43,266,552	\$ 43,266,552	\$ 43,266,552
Support Projects								
CUW36302 - System Security Upgrades	-	09/28/18	09/28/18	04/09/19	-	\$ 15,201,310	\$ 15,201,310	\$ 14,444,954
CUW38801 - Programmatic EIR	06/20/07	06/30/09	06/30/09	06/30/09	\$ 9,271,001	\$ 10,730,684	\$ 10,730,684	\$ 10,730,684
CUW38803 - Vegetation Restoration of WSIP Construction Sites	-	06/30/16	06/30/16	06/30/16	-	\$ 2,111,546	\$ 2,111,546	\$ 2,099,755
TOTAL					\$ 2,640,070,249	\$ 2,531,645,931	\$ 2,531,645,931	\$ 2,525,823,383

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APPENDICES

- A PROJECT DESCRIPTIONS**
- B WSIP BUDGET AND EXPENDITURES HISTOGRAM**
- C WSIP REGIONAL PROGRAM STAFFING PLAN**
- D WSIP APPROVED PROJECT-LEVEL SCHEDULE**
- E PROJECTS WITHIN BUDGET AND SCHEDULE**
- F LIST OF ACRONYMS**

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APPENDIX A. PROJECT DESCRIPTIONS

SAN JOAQUIN REGION

CUW36401 - Lawrence Livermore Water Quality Improvement (Completed)

The project consists of:

- Ultraviolet (UV) disinfection, including two 150-gallon-per-minute, parallel UV units and ancillary facilities. The units will be installed in the existing Thomas Shaft building.
- Two pumps that will pump water from the Coastal Range Tunnel to the new disinfection system.

CUW37301 - San Joaquin Pipeline System (Completed)

The project consists of:

- Pipeline crossover facilities at Emery Road (including 10 valves) and Pelican Road (including 12 valves).
- Installation of a portion of new pipeline, the Western Segment, from the San Joaquin River to the Tesla Portal. The pipeline will be 78-inches in diameter, approximately 10.3 miles in length and will include tunneled crossings of several highways, a railroad, and an irrigation canal. The pipeline will cross over the top of the California Aqueduct.
- Installation of a portion of new pipeline, the Eastern Segment, from the Oakdale Portal to a new connection point approximately 6.7 miles downstream on SJPL No. 3. This segment will also be 78-inches in diameter.
- Installation of valve facilities on SJPL Nos. 3 and 4 along the Eastern Segment to provide for operational needs to divide and isolate segments of these lines for maintenance and to regulate flow and control pressure in the system.
- Security related site improvements at Oakdale Portal.

CUW37302 - Rehabilitation of Existing San Joaquin Pipelines (Completed)

The project scope is to assure that existing San Joaquin Pipelines will meet Delivery Reliability LOS goals by establishing a program of routine maintenance, repair, and replacement activities for long-term implementation and by addressing

the highest priority rehabilitation measures identified during the timeframe of the WSIP:

- Rehabilitation of and security-related site improvements at the existing Roselle Crossover.
- Establishment of a program of pipelines conditions assessment, including upgrading and renewal as required, of pipe coating and lining systems.
- Upgrade of the existing SJPL cathodic protection system.
- Upgrade of the existing SJPL Supervisory Control and Data Acquisition (SCADA) system.

CUW38401 - Tesla Treatment Facility (Completed)

The project consists of:

- Isolation valves and piping to divert SJPL flow to the new treatment facility, large-diameter piping and valves located within the treatment facilities, and a single discharge pipeline to tie back into the existing SJPLs.
- A disinfection building housing 12 UV reactors, cleaning equipment, and ancillary equipment.
- A chemical storage and feed facility for sodium hypochlorite, hydrofluorsilicic acid (i.e., fluoride), and carbon dioxide.
- Office, laboratory, and control facilities, emergency engine generators, and security related site and access road improvements.

CUW38701 - Tesla Portal Disinfection Station

The Tesla Portal Disinfection Facility is located where the San Joaquin Pipelines (SJPLs) converge into the Coast Range Tunnel and provides primary disinfection of the Hetch Hetchy water supply. The facility is one of the key water quality monitoring and compliance locations for the San Francisco Public Utilities Commission (SFPUC). The Tesla Portal Disinfection Station Project includes the planning of a new disinfection facility that will provide reliable disinfection to the Hetch Hetchy water supply.

This project has been combined with the "CUW38401 - Tesla Treatment Facility Project"; therefore, the respective budgets for the Environmental, Design, Bid & Award, Construction, Construction Management, and Close-out Phases have been transferred to the "CUW38401 - Tesla Treatment Facility Project".

Note that this project has been terminated and the remaining scope & budget has been combined with the "CUW38401 - Tesla Treatment Facility" project.

CUWSJI0101- WSIP Closeout - San Joaquin

• **Supplemental Solar Panel Installations** – The CUW37301 San Joaquin Pipeline System, including the western segment, eastern segment and facilities, and crossover pipeline projects, achieved final completion in 2013, 2014 and 2015, respectively. During the initial course of operations it was noted the solar panel arrays designed to provide power for the facility equipment were not sufficient to meet all modes of operational demands. This sub-project will re-evaluate the existing photo-voltaic systems and will provide additional solar panels, if needed, to cover power shortfalls and allow the facility to better meet its water delivery reliability LOS goal. This sub-project consists of three sites: Oakdale, Knight Ferry Throttling Station, and San Joaquin Junction No. 4. The scope of work includes:

- o Re-evaluation of the existing photo-voltaic systems at these three (3) locations before proceeding with modifications to the existing arrays,
- o If determined necessary to meet current power demands, furnish and install new supplemental solar arrays mounted on concrete pads within security fence enclosures,
- o Connection to and integration of the new solar panels into the existing power system and controls, and
- o Installation of batteries for solar power storage on-site.

• **Tesla Portal Facility Interior Floor Slab** – The Tesla Portal Facility, a sub-project of the CUW38401 Tesla Treatment Facility, was completed in January 2015. During construction, the concrete interior floor slab was deleted from the project construction documents to allow easier access to repair corrosion of the existing pipelines discovered during construction beneath the new Tesla Portal Facility. Due to drainage issues at the site, the Operations staff at the facility requested the interior slab be incorporated into the structure with a small access opening for future maintenance and corrosion repairs of the existing buried pipelines. This sub-project will be

constructed through use of a job order contract including:

- o A new interior concrete slab slope to drain to a new catch basin,
- o A new catch basin with grating and sump, and
- o A small sump pump and drain through the slab or existing concrete wall to a discharge point.

SUNOL VALLEY REGION

CUW35201 - Alameda Creek Recapture Project

The planned facilities for this project are based on Alternative 4-1 from the Updated Alternatives Analysis Report (AAR) dated January 30, 2009, with some refinements described below. The planned facilities include the following components: four identical vertical turbine pumps mounted on floating barges located in existing Pond F2 (including a mooring system); four flexible discharge pipelines extending from each pump to a new pipe manifold located on shore; approximately 100-feet of 36-inch pipeline connection between the new pipe manifold and the existing Sunol Pipeline to discharge the recaptured water to the SFPUC system; throttling valves and a flow meter; electrical control building; 1,600 feet of power lines from the existing Hetch Hetchy Water & Power Calaveras Electrical Substation installed on 10 new power poles; and general site improvements. In addition, the scope includes conveyance of the water to various existing storage sites within the Sunol Valley or the Sunol Valley Water Treatment Plant, as necessary. Some minor refinements were made in the March 2016 Notice of Changes to eliminate on-shore booster pumps in favor of a single set of pumps located on barges in Pond F2 and the elimination of the flexibility to allow multiple sources of water from Pond F2 and Calaveras Reservoir to be blended and sent to San Antonio Reservoir (SAR) in the future.

CUW35501 - Standby Power Facilities - Various Locations (Completed)

The project consists of installing standby electrical power facilities at six sites in the East Bay and on the Peninsula. Each site is either provided with an emergency generator or electrical receptacles to accommodate a portable emergency generator.

The five sites are: Alameda West Portal, and San Antonio Reservoir & Dam; Harry Tracy Water Treatment Plant; Millbrae Yard; San Pedro Valve Lot; and Capuchino Valve Lot.

CUW35901 - New Irvington Tunnel (Completed)

This project consists of an 18,660-foot long tunnel in a horseshoe shape with excavated dimensions of approximately 13 feet by 14 feet. The final tunnel lining will be mortar-lined, welded steel pipe, resulting in a finished diameter of 8.5 feet. Extra thick steel liner segments will also be used at low cover areas near the portals and beneath Interstate 680 where the tunnel intersects inactive fault zones, and where the tunnel passes through areas of poor ground conditions.

Major project elements include:

- Conventional mining methods are being used in a westward direction from the Alameda West Portal, in both an eastward and westward direction from an intermediate shaft located near Vargas Road just off Interstate 680, and in an eastward direction from Irvington Portal. Tunneling is being completed by multiple road header tunneling machines and limited, controlled detonation in areas of hard rock. Spoils disposal is being taken to fill sites just north of the San Antonio Pump Station (SAPS) near the intersection of Calaveras Road and Interstate 680. When completed the spoils fills will create a visual barrier to a new quarry operation located near Calaveras Road. Potentially contaminated spoils will be screened, separated, and, if found to contain contaminants, hauled to a permitted landfill.

- At the Irvington Portal, the tunnel connections to Bay Division Pipelines (BDPL) will include control valves directly buried with instrumentation and electrical gear in a small control building. At the Alameda West Portal, the tunnel will be connected to the discharge of the new mixing manifold to be constructed as part of the Alameda Siphons # 4 Project and to the existing overflow shaft. The project includes a new isolation valve between the mixing manifold and the portal.

- The NIT Project will include construction of a new access bridge across Alameda Creek to accommodate temporary construction traffic and

on-going SFPUC Alameda West Portal operations.

- A Groundwater Management Program has been developed that includes two years of pre-construction monitoring of wells, springs, creeks, ponds, and wetlands; environmental habitat construction mitigation measures; and two years of monitoring after construction to minimize the impact to the local groundwater.

- At both the existing Irvington and Alameda West Portal facilities, other security-related site improvements will be constructed, including undergrounding of portal structures and new card access controlled gates and security fences.

CUW35902 - Alameda Siphon #4 (Completed)

This project consists of a 66-inch diameter welded steel pipeline; a 96-inch diameter "blending structure" near the Alameda West Portal that will blend SVWTP and Hetch Hetchy water; new isolation/throttling valves on Alameda Siphons Nos. 3 and 4; new isolation valves on Alameda Siphons Nos. 1 and 2; ventilation improvements at Alameda East Portal; new chemical injection facilities on Siphon No. 4; relocation and extension of the overflow pipe; and road improvements at the intersection with Calaveras Road.

CUW37001 - Pipeline Repair & Readiness Improvements (Completed)

The project consists of three phases for implementation: Phase A (completed) involves the procurement of varied lengths and sizes of welded steel pipe and fitting for stockpiling at seven locations west of the Coast Range Tunnel; Phase B (completed) includes procurement and installation of a pipe rolling facility at the Sunol Yard; Phase C (completed) involves the development of a pipeline repair prioritization plan as well as on-call emergency repair procedures, contracts, and mutual assistance agreements.

CUW37401 - Calaveras Dam Replacement

Project elements primarily include:

- Constructing a new 210-foot high earth and rock fill dam designed to accommodate a maximum credible earthquake on the Calaveras

Fault. The dam will be constructed immediately downstream of the existing dam and will have a crest length of 1,210 feet, a base thickness of 1,180 feet, and a crest thickness of 80 feet. The total volume of the dam will be approximately 2.8 million cubic yards.

- The materials for construction will primarily originate from onsite sources, while surplus excavated material will be placed at disposal sites around the rim of the Calaveras Reservoir, including two in-water disposal sites and several upland disposal sites.

- The existing spillway will be removed, and a new spillway and stilling basin will be constructed. The overflow weir of the new spillway will be 307 feet long. The spillway will vary from 60 to 80 feet wide and will be 1,100 feet long. The stilling basin below the spillway will be 80 feet wide and 155 feet long.

- A new intake tower and shaft will be constructed. The drain line and three adits from the existing facility will be connected to the new shaft. The existing outlet conduit from the tower will be extended 1,250 feet downstream (beneath the replacement dam) and will be equipped with a high capacity fixed-cone discharge valve (relocated from the existing facility) to accommodate water releases from the reservoir. Fish screens will be added to the existing adits of the intake tower.

- The existing dam will largely remain in place. The downstream face will, however, be partially removed and re-graded, and a channel will be excavated through the dam to form the approach to the new spillway.

- A new 525-foot long fish ladder and flow bifurcation systems at Alameda Creek Diversion Dam (ACDD) will be used in conjunction with new low-flow capacity valves to be added at the base of the replacement Calaveras Dam to provide flows downstream of these facilities to support native aquatic resources and future populations of steelhead trout that are being restored to the Alameda Creek Watershed.

- The fish ladder and a total of four new fish protection screens will be added on the right abutment (looking downstream) of the ACDD. In addition, conveyance pipes will be installed to allow water from Alameda Creek to be delivered

to the Calaveras Reservoir via the Alameda Creek Diversion Tunnel (ACDT).

- Landslide A removal beneath the northern half of the left abutment slope located on the left side of the valley (when looking downstream) as well as other associated changes as previously noted in the March 2013 Notice of Change.

- Landslide B removal within the lower left abutment slope as well as other associated change.

- Additional slope reinforcement in Borrow Area B and import of offsite rockfill to supplement rockfill mined from Borrow Area B to mitigate schedule impacts.

- Repairs to a portion of Calaveras Road where a landslide occurred due to unusually wet weather in February 2017.

- Repairs to the West Haul Road which was inundated by the reservoir elevation rise due to unusually wet weather in February 2017.

- For the ACDD fish ladder, to address potential landslide hazard and further protect the fish passage structure, an extension to the contract landslide stabilization wall and an additional reinforced concrete panel wall with tie-backs to reinforce a section of the soil nail wall.

CUW37402 - Calaveras Reservoir Upgrades (Completed)

The project consists of a new hypolimnetic oxygenation system and cryogenic equipment installed near the dam to help maintain reservoir water quality.

CUW37403 - San Antonio Backup Pipeline (Completed)

The SABPL consists of 6,600 feet of 66-inch-diameter steel pipe and extends from the Alameda Siphons at the SAPS to Sunol quarry, SMP-24, near the intersection of Calaveras Road and San Antonio Creek. There are three tie-in facilities with air gap provisions from the SABPL: one connecting to Alameda Siphon No. 3, a second to the SAPL near SAPS, and a third to the SAPL on the west side of Calaveras Road before the SAPL alignment turns and heads west to quarry SMP-24. The alignment of the SABPL parallels that of the existing SAPL, terminating with a control valve and concrete energy

dissipation structure in quarry SMP-24. The project includes new chemical storage, feed, and water-quality-monitoring facilities for de-chlorination and pH adjustment of any discharges through the SABPL, the existing SAPL, and the Alameda East Portal overflow pipe. Water discharged into the SMP-24 quarry pond will be recovered with two submersible pumps and a short section of 24-inch diameter steel pipe which will connect to the existing SAPL to convey water to San Antonio Reservoir. Power to the water recovery pumps will be supplied from the nearby Calaveras Substation, which is owned and operated by Hetch Hetchy Water & Power. Construction of a slurry wall around the quarry pond to minimize groundwater intrusion and to ensure slope stability is also included.

CUW38101 - SVWTP Expansion & Treated Water Reservoir (Completed)

The project consists of a plant expansion which will increase the sustainable capacity to 160 mgd by adding a new flocculation/sedimentation basin, by retrofitting some of the existing filters, by adding a new 17.5-million gallon (MG) circular treated water reservoir (TWR) with a new 3.5-MG rectangular chlorine contact tank on the northern portion of the existing plant site, by adding new chemical storage and feed facilities for disinfection, and by construction of approximately 2,700 feet of 78-in pipe to connect the new TWR to the existing plant.

CUW38102 - SVWTP Calaveras Road

The project consists of safety related improvements to Calaveras Road near the SVWTP access road. The project was deleted because it does not contribute to the WSIP Level of Service goals. This project deletion was approved by the Commission in February of 2008.

CUW38201 - SVWTP Treated Water Reservoir

The project consists of providing improvements to the SVWTP disinfection facilities, including new chemical feed equipment and a 5 MG chlorine contact tank. Additionally, two 8.75 MG balancing reservoirs are planned. These improvements were determined in response to a DOHS requirement.

NOTE THAT THIS PROJECT WAS TERMINATED AND THE REMAINING SCOPE & BUDGET WAS COMBINED WITH PROJECT "CUW38101 - SVWTP EXPANSION & TREATED WATER RESERVOIR."

CUW38601 - San Antonio Pump Station Upgrade (Completed)

The project consisted of:

- Replacement of three 1,000-horsepower electrical pumps.
- Addition of two 1.5-megawatt emergency generators. The generators are sized to power the three electric pumps.
- Seismic retrofit of the pump station, including reinforcement of the walls, foundation improvements, and connection of the roof to the walls.

CUWSVI0101- WSIP Closeout - Sunol Valley

• **AS4 Carrier Water System Modifications** - The CUW35902 Alameda Siphon No. 4 Project was completed in 2013. Since that time, new facilities being brought on-line as well as other changes occurring in water operations have resulted in an apparent drop in water pressure and volume at the Sunol Valley Chloramination Facility. This has reduced the available water needed for the current system to pump the necessary water treatment chemicals into the system. This new sub-project is designed to resolve the deficiency and allow the facility to meet its water delivery reliability LOS goal. This sub-project will be constructed by a job order contract including:

- o Modifications of the current chemical injection system to overcome lack of water system pressure and volume,
- o New supplemental water facilities, including possible new storage tanks, and monitoring and regulating equipment as needed, and
- o Plumbing and control connections between the new facilities and the current system.

• **Erosion Repair at Pond F3 East** - The recently completed CUW37403 San Antonio Backup Pipeline Project included drainage improvements on the east side bank of Quarry Pond F3 East. After completion of construction, it was noted that the rock riprap below a 12-inch drainage pipe had eroded away and undermined the

downstream section of the pipe. This sub-project will repair the erosion with new rockfill and restore the drainage pipe including;

- o Grading to remove loose bank debris and prepare the subgrade slope to receive the riprap,
- o Extension of the existing drain pipe downslope to the water line of the pond,
- o Installation of new rockfill on the east bank of the quarry pond from the current drain pipe to the toe of the bank, and
- o Temporary access improvements at the side bank of the pond for a crane and other equipment to deliver and place rock riprap and other materials into the repair area.

• **Sunol Valley Water Treatment Plant Polymer Feed Facility.** The Sunol Valley Water Treatment Plant Expansion and Treated Water Reservoir Project was completed in 2014 and included addition of a new fifth flocculation sedimentation basin (Basin 5) to the existing four (4) basins at the plant. During operations after completion, it was noted that Basin 5 was not able to achieve the optimal water production goal of 40 million gallons per day consistently. This sub-project was originally scoped to change the flocculation aid composition for Basin 5. The March 2018 scope refinement is to build a polymer feed facility that will serve not only Basin 5, but also the four (4) older basins (Basins 1 to 4), to optimize plant water production, and allow this facility to better meet its water quality and delivery reliability LOS goals. The portion of the facility cost attributed to Basin 5 will be funded under the WSIP; the portion of the facility cost attributed to Basins 1 to 4 will be funded under the Water 10-Year Capital Improvement Program. This sub-project will be constructed by a bid contract including:

- o Addition of new flocculant aid polymer to optimize water production from the four older basins and the new Basin 5
- o Water testing to develop a range of polymer doses for the range of different water quality expected at the plant
- o Construction of new structures and facilities to store, monitor and control the application of the new polymer

• **Miscellaneous Work at AWP, IVP and SABPL.** The CUW35901 New Irvington Tunnel (NIT) was completed in 2017, and the CUW37403 San

Antonio Backup Pipeline (SABPL) was completed in 2016. This subproject will include the following work:

- o Installation of new security doors at Alameda West Portal (AWP) and Irvington Portal (IVP)
- o Installation of new couplings between the valve stem and actuator for the cathodic protection at AWP and IVP
- o Refurbishment of uninterruptible power supply (UPS) and installation of new enclosures for the UPS at AWP and IVP
- o Installation of discharge pipe lateral supports, safety railings, ladder stiffening supports, and sunshades for electrical equipment on SABPL

• **NIT Water Quality Equipment Relocation.** The CUW35901 New Irvington Tunnel (NIT) project installed new water quality monitoring equipment in an underground vault to monitor water quality on Irvington Portal 2 (IP2). After the equipment was installed, problems were noted that related to safe access and water drainage. This sub-project is to relocate the water quality monitoring equipment to Building B10 for Irvington Portal 1 (IP1), and install a new pump to pump water from Irvington Tunnel 2 (IT2) to Irvington Tunnel 1 (IT1) to provide IT2 water for the water quality monitoring.

• **San Antonio Backup Pipeline Carrier Water System Modifications.** The CUW37403 San Antonio Back Pipeline was completed in 2016. Since that time, changes in operations have resulted in an apparent drop in water pressure in the carrier water system for two (2) chemicals including Calcium Thiosulfate for dechlorination and Hydrofluorosilicic acid for pH adjustment. The purpose of this sub-project is to modify the carrier water and chemical injection system to ensure the chemicals will be injected properly.

BAY DIVISION REGION

CUW35301 - BDPL Nos. 3 & 4 Crossover/ Isolation Valves (Completed)

This project is 100 percent complete and has been closed out. The project consists of:

- Two large vaults that are primarily below-ground installations with only the top 30 inches of the structure exposed. Above-ground facilities include security fencing and satellite

communication dishes. The vaults are approximately 2,400 feet apart along the BDPL Nos. 3 and 4.

- Each vault includes four mainline isolation valves and a crossover valve. The isolation valves are hydraulically operated, while the crossover valves are electrically operated.
- The existing BDPL No. 3 is a 78-inch-diameter reinforced concrete pipe, and BDPL No. 4 is a 96-inch-diameter PCCP. At each vault, approximately 170 feet of each pipeline will be replaced with welded steel pipe.
- Each facility will be equipped with connections for portable electric generators, and a battery system will provide immediate emergency power to operate the hydraulic system.
- Valve actuators will have remote monitoring and operating capability through the SFPUC SCADA system.

CUW35302 - Seismic Upgrade of BDPL Nos. 3 & 4 (Completed)

The project primarily consists of:

BDPL No. 3:

- A new 300-foot-long concrete vault will be constructed under Mission Boulevard near the I-680 Interchange where Fault Trace B is located. A new 300-foot segment of 72-inch welded steel BDPL No. 3 will be installed inside the vault. Within the vault and on either end of the fault trace zone, 72-inch-diameter ball joints and slip joints will be installed that will accommodate pipeline displacement during a seismic event.
- For the crossing under I-680 at Trace A, about 400 feet of 78-inch-diameter welded steel pipe will be installed in an existing, unused corrugated metal pipe.
- About 1,450 feet of additional new 78-inch diameter welded steel pipe will connect the existing and new segments between the two vaults, and will be buried.

BDPL No. 4:

- About 400 feet of new 80-inch steel liner will be installed inside BDPL No. 4 at Hayward Fault Trace C.
- BDPL No. 4 will be encased with concrete outside the existing slip joint vault at Hayward Fault Trace B.
- Modifications to the existing slip joint vault will

be made including enlarging BDPL No. 4 pipe penetrations in the vault, new drainage systems, new roof panels, and adjustments to the existing slip joint.

- Modifications to the existing BDPL No. 3 (to be abandoned in place) to collect and divert water from the area and prevent the undermining of the new BDPL No. 3.
- About 400 feet of new 90-inch diameter welded steel pipe will be installed at Trace A of the Hayward Fault.
- Relocation of the following utilities: two Alameda County Water District water pipelines, one Union Sanitary District sewer pipeline, one conduit of AT&T phone lines, and one six-inch diameter PG&E gas pipeline.

CUW36301 - SCADA System - Phase II (Completed)

The project primarily consists of:

- Establish a common software platform and migrate all elements to this platform.
- Connect existing flow meters and new pressure transmitters, and provide communication to SCADA master station at five major Bay Area Water Supply and Conservation Agency (BAWSCA) customer sites.
- Install pressure transmitters, perform piping modifications, and provide communication to SCADA master station at seven existing regulating valves in the City of San Francisco distribution system.
- Install new flow and pressure monitoring devices at 23 key locations in the City distribution system.

CUW36801 - BDPL Reliability Upgrade - Tunnel (Completed)

- The tunnel extends 5 miles under San Francisco Bay and is adjacent to the marshlands between the vicinity of the Ravenswood Valve Lot and the Newark Valve Lot. The tunnel will be constructed with a Tunnel Boring Machine (TBM). The final tunnel lining will consist of a 9-foot diameter welded steel pipeline. The tunnel will terminate on each end with vertical shafts and a connection to the BDPL Nos. 1, 2, and 5 piping manifolds. The two piping manifolds are provided under the BDPL Reliability Upgrade - Pipeline Project. The

tunnel spoils are anticipated to be used as part of the conversion of adjacent salt ponds to marshland. The portion of the existing BDPL Nos. 1 and 2 that are replaced by the tunnel will be capped on each end and will be abandoned in place.

- Two facilities are proposed to be added to the original scope of work and are necessary to ensure the project will meet LOS goals:

1) SCADA Communications system at Newark Valve Lot

This added scope provides for the installation of a SCADA communications system and integrating such system into the existing water quality monitoring equipment located in the Newark Valve Lot Control Building. The work consists of installing communications equipment, telephone line, wires, conduits, and electrical cabinets.

2) 42-inch diameter Bay Division Pipeline No. 2 (BDPL2) Bypass

The supply from the Newark Valve Lot to the City of Hayward is currently being fed from both Bay Division Pipelines (BDPL) No. 1 and No. 2. Upon the completion of the Bay Tunnel Project, Hayward supply will be fed only by BDPL2. BDPL2, built in the mid-1930s, is a mixture of reinforced concrete cylinder pipe and wrought steel pipe. Thus, with the current scope of the Bay Tunnel project, the reliability of the Hayward service line could be reduced when the project is completed.

The scope of work for this change will provide for the installation of 640 linear feet of new 42-inch diameter welded steel pipe, replacing a portion of BDPL2, thereby increasing the reliability of the Hayward service.

CUW36802 - BDPL Reliability Upgrade - Pipeline (Completed)

The project primarily consists of:

- In the East Bay, 7 miles of 72-inch-diameter pipe will be constructed between the Irvington Portal and the Newark Portal of the new Bay Tunnel. On the Peninsula, 9 miles of 60-inch diameter pipe will be constructed between the Ravenswood Portal of the new Bay Tunnel and the portal of the Pulgas Tunnel.

- A seismically resistant crossing of the Hayward Fault will be constructed. The crossing will

include a new crossover valve vault on each side of the fault. The valves will be hydraulically actuated and will include emergency batteries. The pipe between the vaults will be higher strength and will be installed on a special foundation or trench section.

- Isolation valves and an interconnecting pipe manifold will be constructed at each portal of the new Bay Tunnel. The facilities will include new or rehabilitated control buildings with new emergency generators.

- New crossover valves between BDPL Nos. 2 and 5 will be installed at a location in Redwood City. The crossover facility will include a new or rehabilitated control building and connections for a portable emergency generator.

- A new throttling valve will also be added on BDPL No. 5 at the Pulgas Valve Lot. The throttling valve will include a new or rehabilitated control building.

- The project originally included underground concrete vaults for crossover facilities at Newark, Ravenswood, and Redwood City Valve Lots. The current project eliminates the concrete vaults and directly buries the valves with full access to valve actuators at these facilities.

CUW36803 - BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2 (Completed)

This project is 100 percent complete and has been closed out. The project includes relocation of approximately 600 feet of each pipeline (BDPL Nos. 1 and 2) at the BART/railroad crossings. The pipe segments to be relocated will be installed inside new casings that will be placed by the construction contractor doing the other development work in the area. The encased pipes are being installed in accordance with a utility agreement between the City of Fremont and the SFPUC.

CUW38001 - BDPL Nos. 3 & 4 Crossovers (Completed)

The three proposed crossover facilities are located near the Guadalupe River in Santa Clara, near Barron Creek in Palo Alto, and near Bear Gulch in Atherton. The facilities include vaults that are largely below-ground, with only the top 30 inches exposed. They are very similar to one another,

consisting of four mainline valves and a crossover valve. Emergency engine generators will be included as an optional bid item.

CUW38901 - SFPUC/EBMUD Intertie (Completed)

The project primarily consists of:

- Providing new 36-inch-diameter piping and valving at the Newark Turnout to provide an additional connection between BDPL Nos. 1 and 2 to the existing City of Hayward system.
- Using the existing City of Hayward system for conveyance and providing six new valves for isolation.
- Providing 1.3 miles of new 36-inch-diameter pipe to connect the City of Hayward system to the EBMUD system and providing a new pump station along this alignment.

CUW39301 - BDPL No. 4 Condition Assessment PCCP Sections (Completed)

- This project is 100 percent complete and has been closed out. This project includes a detailed condition assessment of the two PCCP segments along BDPL No. 4. The first reach of concern (Reach 1) is 8.6 miles long and 96-inches in diameter. The second reach of concern (Reach 4) is 8.0 miles long and 84-inches in diameter. The condition assessment consists of an electromagnetic survey, seismic risk analysis, corrosion survey, visual inspection, and field investigations.
- The assessment identified six reaches of pipe (144 feet total out of 16 miles) that are potentially distressed. During initial investigations, the condition of one distressed pipe segment (Pipe 1558) was determined visually to be particularly deteriorated, and immediate emergency repair was recommended. The project funded and completed emergency repair using post-tension exterior tendon repair for this segment. For the other five potentially distressed pipe segments that were identified using electromagnetic survey, and determined to be of lower priority, recommendations were made for future excavation to confirm pipe condition in these areas, and repair if needed. A number of future follow-up investigations were recommended, including monitoring of groundwater acidity for a

period of one year in the area of Edgewood Road and additional excavations of lower priority pipe pieces. Any additional required repairs will be scheduled based on urgency and funded through the Water Enterprise's Repair and Replacement (R&R) Program.

CUWBDP0101- WSIP Closeout - Bay Division

- **Site Drainage and Pipe Coating Repairs** - This sub-project will focus on providing a drainage system solely within SFPUC's Right-of-Way to address an erosion issue that developed after the construction of the CUW35302 Seismic Upgrades of BDPL Nos. 3 & 4. In addition, this sub-project will include repairs to coatings on the pipe and pipe supports of the Bay Division Pipeline (BDPL) No. 3 to address issues that developed inside the articulated vault after construction was completed. The sub-project includes design, construction, and management of the drainage system work.

- **Bay Tunnel Warranty Inspection and BDPL 1 & 2 EIR Mitigation** - This sub-project advances the planning for a decommissioning study of the existing BDPL Nos. 1 and 2 until such time that the funding for a new Water 10-Year Capital Improvement Project (CIP) to further study mitigation alternatives and pursue removal of the BDPL Nos. 1 and 2 within the Don Edwards San Francisco Bay National Wildlife Refuge becomes available in FY2020-21.

- **Hydro-seeding at Bay Tunnel Project** - The scope of this sub-project provides for monitoring of hydro-seeded areas, removal of noxious weeds, and potentially re-seeding some of the areas at the tunnel portals in Menlo Park and Newark if the storm water performance objectives are not met.

- **Newark Valve Lot Additional Gravel Placement** - The Bay Tunnel Project design plans call for a portion of the Newark Valve Lot to be landscaped and hydro-seeded. However, Operations staff requested that gravel be placed in this area since it will be a high traffic area during shutdowns and other maintenance work. Accordingly, this sub-project provides for the purchase and placement of the gravel.

- **Corrosion Protection for Valve E50U** - The E50U Valve was installed in 2011 as part of the CUW36802 BDPL Reliability Upgrade - Pipeline

Project. Immediately prior to the Bay Tunnel Project in-service/commissioning date in early Fall 2015, the Bay Tunnel Contractor completed the flanged connection of the manifold to the existing E50U Valve. However, during the installation and testing of the new flanged connection, the Bay Tunnel Contractor discovered an inconsistency in the corrosion protection isolation system of the existing valve E50U (high corrosion potential). It was decided to not authorize a Change Order to fix the corrosion problem of the E50U Valve at that time due to the risk of high cost delays to the Bay Tunnel Project, if leaks were to occur after the solution was implemented. Accordingly, this sub-project includes excavating and shoring the area around the valve, and removal of one bolt at a time for testing, and replacement if necessary. A gasket will be purchased and may be installed if there are leaks that develop after the bolts are removed, cleaned, and replaced.

• **Ventilation and Sump Pump Systems Installation.** This sub-project provides improvements for inspection, monitoring and maintenance associated with the construction of the CUW35302 Seismic Upgrades of BDPL Nos. 3 and 4. The BDPL No. 3 pipe, slip joint, ball joints and pipe supports and seismic monitoring equipment inside the articulated vault require on-going inspection, monitoring and maintenance. The type and frequency of inspection and maintenance were not well defined during the design phase; it is now clear that a fixed ventilation system is required for the BDPL No. 3 vault. Furthermore, the BDPL No. 4 expansion joint vault also requires access for inspection and monitoring; installation of a sump pump is required to remove water from the vault prior to inspections. Accordingly, the scope of this sub-project is to install a fixed ventilation system and a sump pump system to eliminate the need for removing access hatches and installing temporary fans and sump pump prior to accessing the vaults for frequent inspection and maintenance needs.

PENINSULA REGION

CUW35401 - Lower Crystal Springs Dam

Improvements (Completed)

The project consists of:

- Spillway modifications that include widening the spillway, constructing two bridge piers within the spillway to accommodate rebuilding of a San Mateo County Bridge, removing the existing timber stop-log system, constructing a new weir system within the spillway, installing access cat-walks for operation and maintenance, and eliminating water ponding on top of the dam.
- Parapet wall modifications that include increasing the height of the wall that is located on top of the upstream face of the dam and increasing the height of the approach walls to the spillway.
- Stilling basin modifications at the base of the spillway that include removing the existing basin, constructing a new larger basin, and adding downstream riprap protection at the toe of the basin.

CUW35601 - New Crystal Springs Bypass Tunnel (Completed)

The project consists of:

- A 4,200-foot long tunnel with 8-foot diameter welded steel liner.
- Vertical shafts on each end of the tunnel to accommodate a tunnel boring machine and future maintenance. The southern shaft will include a connection to the existing Crystal Springs Bypass Pipeline; the northern shaft will tie into the southern ends of both Crystal Springs Pipeline No. 2 and Sunset Supply Line.
- New isolation valves and valve vaults.
- Standby power near valve vault G40.

CUW35701 - Adit Leak Repair - Crystal Springs/Calaveras (Completed)

The project consists of :

- Crystal Springs Outlet Tower No. 1: repairing leaks inside the tower, blasting and recoating piping and valves, replacing roof, structurally retrofitting the access footbridge, and installing a marine hatch at the tower drain.
- Crystal Springs Outlet Tower No. 2: installing a marine hatch at the tower drain.
- Calaveras Outlet Tower: installing a dewatering pump, replacing a deteriorated valve actuator, and providing ladder fall protection.

- San Antonio Outlet Tower: installing a dewatering pump and repairing leaks inside the tower.

CUW36101 - Pulgas Balancing - Inlet/Outlet Work (Completed)

The project consists of new inlet and outlet piping designed to direct the path of the water in such a manner as to promote better mixing. The shutdowns associated with construction of these improvements provided an opportunity to perform a condition assessment of the reservoir interior that has been used to help identify work associated with CUW36103 - Pulgas Balancing Reservoir - Structural Rehabilitation and Roof Replacement project. This project was successfully completed in May 2006.

CUW36102 - Pulgas Balancing - Discharge Channel Modifications (Completed)

The project consists of raising the channel walls, repairing concrete cracks and exposed reinforcing steel, strengthening and interconnecting the channel floor sections, and strengthening the wall near the Pulgas Tunnel as needed. The project will restore the Discharge Channel capacity for accommodating flow up to 250 mgd.

CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement (Completed)

The project consists of the seismic retrofit of the walls, installation of a new steel frame roof, and repair of concrete cracks and exposed reinforcing steel. The project scope also includes installing a new ventilation system and sampling ports, replacing utility piping, and upgrading the electrical system.

CUW36104 - Pulgas Balancing - Laguna Creek Sedimentation (Completed)

This project consists of the execution of the Laguna Creek Habitat Management and Revegetation Plan. This is a mitigation measure for the Non-WSIP Pulgas Dechlorination Facility Project, which involves the restoration of the Laguna Creek Sedimentation Basin, a 6-8 acre catchment basin that provides habitat for the San Francisco Garter Snake and the California Red Legged Frog. In coordination with regulatory

agencies, a strategy was developed to accomplish this habitat restoration, and to have it measured under the Habitat Reserve Program (HRP). This project was closed in December 2007 and combined with Project CUW38802-Habitat Reserve Program (HRP).

CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility (Completed)

The project consists of various improvements to the dechloramination and pH control facilities that are necessary to address immediate compliance issues. Anticipated improvements include modifications to the flow measurement and control systems, and to the various process control and chemical feed systems.

CUW36501 - Cross Connection Controls (Completed)

The project consists of providing improvements at 304 different sites to address potential cross connections. The work varies from site to site due to specific site conditions. The major work elements typically include: Install air gaps at blow-off locations and at air valves; install backflow prevention devices; reconstruct or raise existing vaults; install new vault covers; replace existing air valves; and/or modify, relocate, or remove existing blow-off facilities.

CUW36601 - HTWTP Short-Term Improvements (Demo Filters) (Completed)

The project consists of retrofitting two filters and performing full-scale performance demonstration testing of the retrofitted filters. The project was successfully completed in November 2006.

CUW36602 - HTWTP Short-Term Improvements - Remaining Filters (Completed)

This project consists of filtration modification to eight of the ten existing filters, replacement of effluent control valves and backwash supply valves, provision for a filter to waste system, installation of new underdrains and media, and seismic retrofit of basin walls. Combined with CUW36603 - HTWTP Short-term Improvements - Coagulation & Flocculation project.

CUW36603 - HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters (Completed)

The project consists of improvements to both the coagulation and flocculation systems. The coagulation improvements include restoring and improving operation of the pumped-jet flash-mix system, increasing capacity of the flash-mix pumps, providing the pumps with variable speed controls to improve efficiency, providing an automated dilution water system, and reconfiguring the chemical injectors to improve performance. Flocculation improvements include reconfiguring the baffling system, adding new mechanical mixers with variable speed controls, and seismically retrofitting the walkways and basin walls.

CUW36701 - HTWTP Long-Term Improvements (Completed)

The project consists of seismic and hydraulic improvements in various treatment units and expansion of the filtration process capacity by the addition of five new filters. In addition, a new 11 million gallon Treated Water Reservoir will be built to replace the two existing treated water reservoirs. The project also includes improvements to the sludge handling and washwater systems and provides a new additional washwater tank to enhance the plant's performance. Additional improvements are also planned for the electrical system, including a new substation, switchgear, and motor control center. The project also includes improvement to key valves and pipelines conveying the raw water supply to the Plant and treated water to the distribution system.

CUW36702 - Peninsula Pipelines Seismic Upgrade (Completed)

The scope of this project includes geotechnical investigations to characterize the Serra Fault in the vicinity of the pipelines and to confirm assumptions about sub-surface conditions along the length of the pipelines (SAPL2 and SAPL3 from HTWTP to San Pedro Valve Lot, SSBPL from HTWTP to Capuchino Valve Lot, and Sunset Supply Pipeline (SSPL) from Capuchino Valve Lot to San Pedro Valve Lot). In addition,

hydraulic modeling has been performed to review system/facility requirements to meet system goals. The objectives of the investigations were: 1) to determine the potential fault offset at the Serra Fault crossings and the potential response from the three pipelines to these offsets, and 2) to determine potential for pipeline rupture due to displacement from liquefaction, landslides, and other seismically-triggered hazards along the pipeline alignments. The extensive geotechnical and modeling analyses performed to date have been carefully reviewed to identify specific project recommendations.

The refined project scope (Phase 1) currently includes the following components at five locations on the San Francisco Peninsula:

- Colma Site - Replacement of an approximately 700-ft segment of SAPL2
- South San Francisco Site - Replacement of an approximately 720-ft segment of SAPL2
- San Bruno North Site - Stabilization of SAPL2 where it extends through a tunnel
- San Bruno South Site - Replacement of an approximately 1,170-ft segment of SAPL2 and an approximately 1,050-ft segment of SAPL3; and
- Millbrae Site - Replacement of an approximately 900-ft segment of SSBPL

A common staging area is planned to be located at SFPUC Baden Valve Lot in South San Francisco on El Camino Real.

Phase 2 of the project will include installation of two new isolation valves near the Baden Valve Lot on SAPL No. 2 and No. 3 in the City of South San Francisco. The WSIP construction contract will include both Phases 1 and 2.

Phase 3 has been identified as a non-WSIP project, and includes condition assessment and improvements to SAPL2, installation of new isolation valves, and the potential addition of flexible connections along the alignment within the City of San Francisco.

CUW36901 - Capuchino Valve Lot Improvements (Completed)

The project consists of replacing two existing isolation valves, providing new electric actuators for valve operation, performing concrete crack repair to prevent water leakage into the vault, providing new instrumentation and control

systems for valve operation and pressure monitoring, and relocating the existing electrical and instrumentation systems outside the vault.

CUW37101 - Crystal Springs/San Andreas Transmission Upgrade (Completed)

The project consists of improvements to facilities necessary to transport water from Upper Crystal Springs Reservoir, through the lower Crystal Springs Reservoir to San Andreas Reservoir, and ultimately, to the Harry Tracy Water Treatment Plant (HTWTP) Raw Water Pump Station. Specifically, improvements will be made to the Upper Crystal Springs Dam discharge culverts, the Lower Crystal Springs outlet structures, the Crystal Springs Pump Station (CSPS), the Crystal Springs/San Andreas Pipeline, and the San Andreas outlet structures.

CUW37801 - Crystal Springs Pipeline No. 2 Replacement (Completed)

The project consists of:

- Seismic reliability improvements, which include replacing or relocating a total of 1.7 miles of pipe at 12 locations, sliplining 3.5 miles of pipe, retrofitting pipe bridge pier supports at two creek crossings, providing a new connection at the Crystal Springs Pump Station, and providing a connecting segment with a blind flange for later connection to the New Crystal Springs Bypass Tunnel.
- Facility improvements, which include installing fences and enclosures for exposed facilities, and concealing exposed portions of pipe.
- Upgrading the cathodic protection system along the length of the pipeline.

CUW37901 - San Andreas Pipeline No. 3 Installation (Completed)

The project consists of installation of 4.4 miles of 36-inch-diameter pipe from San Pedro Valve Lot in Daly City to Merced Manor Reservoir in San Francisco. There will be three jack and bore crossings along 19th Avenue and John Daly Boulevard. Work will also include installation of five customer service connections, a new cathodic protection system along the length of the new pipeline, three interconnections to the San Andreas Pipeline No.2, various valves, and a flow

meter.

CUW39101 - Baden and San Pedro Valve Lots Improvements (Completed)

This project consists of upgrades to valve vaults, valves, and piping in the Baden Valve Lot and the San Pedro Valve Lot. It also includes the installation of a pressure reducing valve and associated system valving to allow transfer of a portion of the flow from the HTWTP high-pressure zone to the low-pressure zone during emergencies.

CUWPWI0101- WSIP Closeout - Peninsula

• LCSD Stilling Basin Modifications & Dissipation Structure Riprap

- This sub-project is provided in response to concerns that fish may be "trapped" in the Lower Crystal Springs Dam (LCSD) stilling basin during low flow summer periods, and that high flow discharges from the new LCSD dissipation structure and potential high water levels in Pool 2 may cause erosion of the bank adjacent to the dissipation structure. The dissipation structure includes 60-inch diameter pipes with a maximum flow of 600 cubic feet per second (cfs) each and two 8-inch diameter pipes with maximum flow of 7 cfs each. During flow testing of the dissipation structure, released water could be observed flowing over the dissipation structure, potentially eroding the bank adjacent to the structure. It was also observed that during summer periods, of low flow in the channel downstream of the stilling basin, fish trapped in the basin were dying due to warm water temperatures. The purposes of this sub-project are to hydraulically connect the stilling basin with Pool 2 in order to allow fish to escape the basin in summer, and to add rip-rap behind the dissipation structure to prevent erosion. Specifically, this sub-project consists of:

- o A new deeper channel between the dissipation structure and the Pool 2, which would prevent fish from being trapped in the stilling basin,
- o Installation of a new SCADA controls to the existing 8-in discharge pipeline and re-routing one line to the stilling basin,
- o Installation of additional rip-rap around the dissipation structure,
- o Installation of a new 24-inch HDPE pipeline

through an existing abandoned 60-inch pipe directed to the stilling basin

- o Coordination and facilitation of access for a piezometer drilling contractor during periods of concurrent work in the stilling basin

- o Deletion of landscaping around the new Crystal Springs Pump Station

- o Addition of tree, shrub and grass plantings along the creek bank in accordance with the approved re-vegetation plan

- **LCSD Valve H53/ Pipeline Investigation & Fisheries Release Valve** - As stipulated by the US Army Corps of Engineers 404 permit and the associated biological opinion by NOAA's National Marine Fisheries Service (NMFS) covering the SFPUC activities at the Crystal Springs Pump Station (CSPS), the SFPUC is to take measures to protect the threatened Central California Coast (CCC) steelhead present in San Mateo Creek at CSPS site. One measure requires the release of fresh water at a rate of 3 to 17 cubic feet per second (cfs) depending on the season in recorded dry and wet years. This sub-project will utilize modification of an existing pipeline to release the required flows to the LCSD stilling basin feeding San Mateo Creek. Specifically, this sub-project consists of:

- o Condition assessment of the existing 60-in diameter pipeline from Valve H-53 to the stilling basin. In addition, valve H-53 will be exposed and visually inspected to determine its condition, requiring excavation and shoring of a pit approximately 20 feet long by 20 feet wide by 20 feet deep.

- o Depending on the verified condition, viable alternatives, including abandonment of the option to use H-53 pipeline, will be evaluated.

- o The approved option will include a SCADA controlled 12-inch valve installed at the discharge end of the pipeline. Depending on the condition of the pipeline, the approved option may also include repairs to the pipeline lining. Options may also include slip-lining the existing line with a smaller diameter pipeline such as 12 to 24-in diameter flexible polypropylene pipe.

- o Use of a temporary pipeline "line stop" and associated shoring upstream of Valve H-53 to allow for potential installation of a permanent blind flange.

- o Replacement of leaking plug valves that discharge from an existing concrete vault to the stilling basin with new knife gate valves.

- o Installation of new flow control valves, isolation valves and appurtenances for Pool 2.

- o Connections to the existing 72-inch pipeline using hot taps.

- o Construction of a new concrete walkway from the access road to the existing stairs at the flow dissipation structure adjacent to the stilling basin.

- **New Crystal Springs Bypass Tunnel Electrical Modifications** - The New Crystal Springs Bypass Tunnel (CUW35601) was commissioned in July 2011, and the project administratively closed in August 2012. Various inspections of the above ground facilities discovered excessive groundwater intrusion and resultant corrosion of equipment and electrical components. This sub-project will develop a thorough documentation of the above ground facilities at the north and south shafts, and design and implement repairs as warranted. Possible repairs may include replacement of damaged equipment and electrical components, water proofing of the affected vaults, and rechanneling of surface runoff as necessary. Preliminary inspections identified the following in the South Shaft: groundwater seepage into the venturi meter and valve G32 vaults through pipe/conduit wall penetrations, resulting in coating failure and localized corrosion. In the North Shaft, preliminary investigations identified surface runoff is entering electrical boxes. In addition, groundwater is seeping through wall penetrations into G36 and G38 vaults. Due to the high moisture, some electrical switches and two actuators failed and required replacement. This sub-project developed a thorough documentation of the above ground facilities at the north and south shafts and designed and implemented repairs as warranted. Repairs included replacement of damaged equipment and electrical components, water proofing of the affected vaults, and rechanneling of surface runoff as necessary. This subproject is 100% complete and has been closed out.

- **Closeout of DSOD Permit Applications for LCSDI and CSSA Projects** - California Department of Water Resources, Division of

Safety of Dams (DSOD) issued Alteration Permits allowing the start of construction of CUW35401, Lower Crystal Springs Dam Improvements (LCSDI) Project (Application No. 10-6) and the construction of CUW37101, Crystal Springs / San Andreas Transmission Upgrade (CSSA) Project (Application No.10-10). In June 2015, DSOD issued an approval of the completed work and requested the SFPUC to submit the final documentation of each project. Under this sub-project, the following information and documents will be extracted from the project files and submitted in a format acceptable to DSOD: affidavit of actual costs of construction and design; full size as-built drawings stamped and signed by a California registered Civil Engineer; and final concrete testing summary reports.

- **Coordination with San Mateo County Bridge Construction over LCSI** - The implementation of the CUW35401 Lower Crystal Springs Dam Improvement (LCSDI) Project required the demolition of an existing San Mateo County (SMC) Bridge that spanned over the LCSD crest. With the completion of the LCSDI Project, SMC awarded the construction contract for the new bridge and gave notice-to-proceed to the construction contractor in January 2016. To support this, SMC and the SFPUC executed a Memorandum of Understanding outlining the roles and responsibilities and expectations of both organizations. Accordingly, this sub-project will support the coordination between the SFPUC and SMC Bridge Project team. Typical activities may include response to relevant Requests for Information (RFI) such as existing site conditions, existing dam design, coordination with SFPUC Operations and Watershed groups; field inspection of placement of the bridge piers over the dam and the construction of the SFPUC funded catwalk; attendance at construction meetings; and activities concerning the water quality in Lower Crystal Springs Reservoir, security measures, and other aspects of SFPUC assets.

- **Harry Tracy Water Treatment Plant (HTWTP) Improvements.** The Harry Tracy Long-Term Improvements Project (CUW36701) was completed in 2014. Since 2014, the following needs were identified to address construction

issues and improve operations at the plant to fully meet the LOS goals and objectives:

- o Automate the 12-inch gate valve at the High Rate Clarifiers' filter to waste manhole to eliminate the need for Operations to manually operate the valve on a frequent basis
- o Modify Sludge Tank No. 1 piping to eliminate cavitation in the washwater pumps
- o Upgrade the filters of three (3) emergency generators from passive filters to active filters to increase the effectiveness of the exhaust filtration and to reduce the need for Operations to constantly clean the filters
- o Repair leaks in the filter gallery channels where stainless steel angle plates were added to support several concrete walls
- o Automate flushing of the sludge transfer pumps and piping to eliminate the need for Operations to manually flush on a frequent basis
- o Replace and relocate failed variable frequency drives (VFDs) for the wash water and sludge transfer pumps to address an over-heating issue
- o Install double containment for the diesel fuel supply lines for the exterior generator to protect against leaks into the environment
- o Provide training and programming modifications to the Raw Water Pump Station switchgear equipment to enable remote SCADA control
- o Install vibration control monitoring system on the electrical panels at the Raw Water Pump Station to replace the existing obsolete system
- o Evaluate/Assess condition of failed mixers in the equalization basin

- **Crystal Springs/San Andreas Pipeline (CSSA) Erosion Repairs.** The heavy winter storms of 2017 exacerbated erosion at two (2) watershed culvert locations, OW-13 and OW-18, along the CSSA Pipeline. Erosion has caused the CSSA Pipeline to be exposed and potentially undermined. The scope of this sub-project is to repair the erosion with systems consistent with the requirements of permitting agencies such as the State Water Resources Control Board.

SAN FRANCISCO REGIONAL REGION

CUW30103 - Regional Groundwater Storage and Recovery

The goal of the project is to provide up to 7.2 million gallons per day (mgd) of dry year water supply over 7.5 years. The original project design included the construction of up to 16 groundwater wells and well stations in the South Westside Basin to be connected to three wholesale customers on the Upper Peninsula and the SFPUC transmission system to achieve the water supply goal. Phase 1 included the installation of 13 well stations to produce approximately 6.2 mgd, and the original scope of Phase 2 included construction of 2 to 3 additional well stations, based upon well yield. Due to difficulties with siting well stations in the central portion of the groundwater basin, Phase 2 has been modified to install up to 3 test wells (Ludeman North, Ludeman South and Centennial Trail), complete the South San Francisco Main well and pipeline, and complete other Phase 1 scope items, including chemical system monitoring, sampling and storage at various sites. The Phase 2 test wells will not be converted to production wells at this time, but will allow for determination as to whether the identified sites could be viable future production wells, and will provide valuable information related to water quality and potential pumping capacities that can be used for future planning and decision making.

CUW35801 - Sunset Reservoir - North Basin (Completed)

This project consists of:

- Seismic rehabilitation, which includes stabilization of the soil dam embankment; a retrofit of the walls and roof using seismic joints, shear walls, diagonal bracing, and struts; and foundation improvements.
- General rehabilitation, which includes repairing deteriorated concrete, replacing part of the reservoir lining material, replacing inlet piping, installing security fencing, upgrading the landscaping, and other miscellaneous site improvements.

CUW37201 - University Mound Reservoir - North Basin (Completed)

This project consists of:

- Seismic rehabilitation of the reservoir walls and roof using seismic joints, shear walls, diagonal

bracing, and struts and foundation improvements. A geotechnical investigation was conducted that verified that the reservoir embankments are not subject to seismically induced failure.

- General rehabilitation, which includes repairing deteriorated concrete; replacing the reservoir lining material; replacing inlet/outlet, drain, and overflow piping; replacing outlet and drain valves; and performing landscaping and other miscellaneous site improvements.

SUPPORT PROJECTS

CUW36302 - System Security Upgrades

The purpose of this project is to develop and integrate security components at critical water system facilities including those identified in previous vulnerability assessments and to ensure that security functions such as deterrence, detection, assessment, delay, and response will be effective. As part of this project, SFPUC Security has evaluated all WSIP projects. The project includes the identification of all necessary security components including security fencing, intrusion detection, and vehicle barriers for applicable WSIP projects. The project provides for the necessary planning and design of these facilities, while the individual WSIP projects will fund the installation and construction of civil security work such as conduit lay out, fencing, and gate installation. This project will fund the furnishing and installation of Access Control and Alarm Monitoring System (ACAMS) and Digital Video Surveillance System (DVSS) equipment, and necessary security systems.

CUW38801 - Programmatic EIR (Completed)

A Program Environmental Impact Report (PEIR) has been prepared for the WSIP under the California Environmental Quality Act (CEQA). The WSIP includes a number of projects that will improve the Regional Water System with respect to water quality, seismic reliability, delivery reliability, and water supply. The PEIR will (1) identify and analyze, at a programmatic level, the potential environmental impacts of proposed system improvements, (2) describe and evaluate feasible alternatives to the proposed program,

and (3) propose mitigation measures.

CUW38802 - Bioregional Habitat Restoration

The Bioregional Habitat Restoration project was created to provide a coordinated and consolidated approach to compensate for habitat impacts that may result from implementation of the WSIP projects in the San Joaquin, Sunol Valley, Bay Division, and Peninsula Regions of the SFPUC Regional Water System. The previously approved scope of the Bioregional Habitat Restoration project included projects to preserve, enhance, restore, or create approximately 2,350 acres of tidal marsh, vernal pools, white alder riparian forest, sycamore alluvial woodland, arroyo willow riparian habitat, oak woodland and savannah, sage scrub habitat, serpentine grasslands, coastal live oak woodland, annual grasslands, and oak riparian forest.

The project includes design, environmental permitting, construction, construction management, maintenance and performance monitoring during a 3-year plant establishment period.

The wide variety of the types of impacts from WSIP projects resulted in the need for development of 18 compensation sites on SFPUC property and for contracting with 7 property owners to secure compensation on property outside the Alameda and Peninsula watersheds. There are 7 compensation sites on SFPUC property in the Alameda watershed with an average size of 250 acres, demonstrating a significant commitment to the continued protection of species habitat. Although the average size of the 11 Peninsula compensation sites is 15 acres, the projects have been strategically placed to best benefit the San Francisco garter snake and the fountain thistle. The increase in habitat compensation addresses mitigation for the fountain thistle and for changes in the Calaveras Dam Replacement Project.

Under the March 2014 Revised WSIP, some scope for the Bioregional Habitat Restoration project associated with Lower Crystal Springs Dam and long term monitoring and maintenance of the compensation sites was reduced. The remaining wetland development at Upper San Mateo Creek and Boat Ramp and most of the oak woodland

compensation for the Lower Crystal Springs Dam Improvement Project has been deferred until the operating elevation of the reservoir has increased, estimated to be around 2020. This work will be completed in the future by SFPUC Water Enterprise.

CUW38803 - Vegetation Restoration of WSIP Construction Sites (Completed)

The Vegetation Restoration of WSIP Construction Sites is a WSIP project that received Commission approval on October 9, 2012. This project is required to comply with the CEQA and resource agency permit requirements to restore and re-vegetate habitat areas temporarily impacted by construction at the various WSIP sites to preconstruction condition.

CUW38804 - Long Term Mitigation Endowment

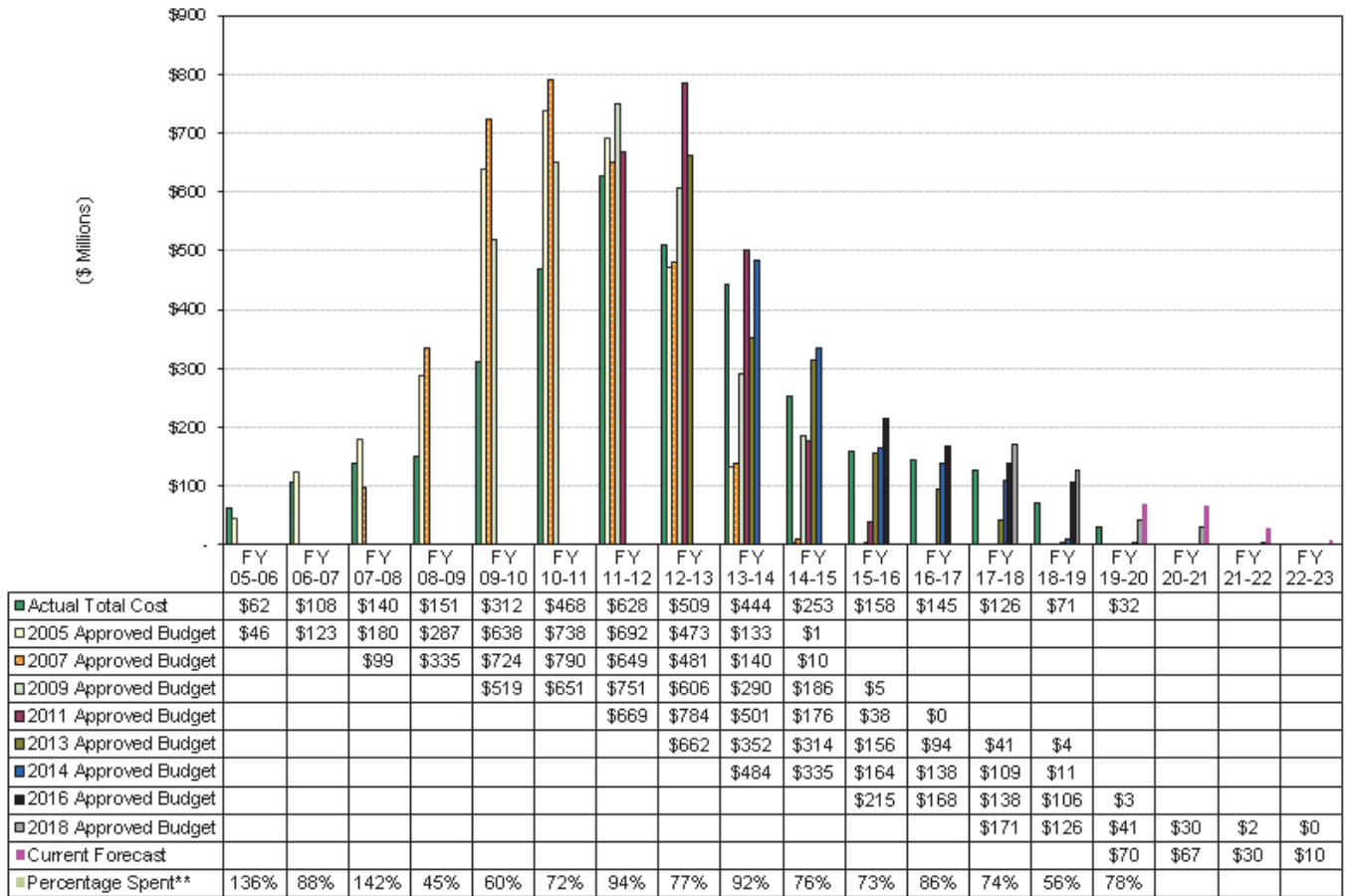
The scope of work and budget for this Long Term Mitigation Endowment was previously included and reported within the WSIP Regional project CUW38802 Bioregional Habitat Restoration; however, the office of the City Controller has established a separate project, specific for this endowment fund, in project CUW38804 Long Term Mitigation Endowment. This perpetual endowment fund, was required by the United States Army Corps of Engineers and California Department of Fish and Wildlife permits issued for WSIP projects. It provides a secure source of funds for the perpetual monitoring and maintenance of the Bioregional Habitat Restoration sites constructed in the SFPUC watershed.

CUW39401 - Watershed and Environmental Improvement Program

The Watershed and Environmental Improvement Program (WEIP) includes the comprehensive identification and protection of critical watershed lands and ecosystem restoration needs within the hydrologic boundaries of the Alameda Creek, Peninsula (San Mateo and Pilarcitos Creeks) and Tuolumne River watersheds, and prioritizes the protection and/or restoration of these lands. Projects under this program will protect source water quality, native species, and their habitat as well as identifying critical watershed lands for

protection through purchase of fee title or perpetual conservation easement. The program also supports projects that enhance public awareness and provide education opportunities related to water quality, water supply, conservation, and environmental stewardship. Consistent with the SFPUC Water Enterprise Environmental Stewardship Policy, a portion of the funding under the WEIP will be allocated to support projects that enhance public awareness and provide education opportunities related to water quality, water supply, conservation, and environmental stewardship issues. Accordingly, construction of the Southern Skyline Boulevard Ridge Trail Extension will be funded using a portion of the WEIP funds.

APPENDIX B. BUDGET AND EXPENDITURE HISTOGRAM*



All costs are shown in \$ Millions.

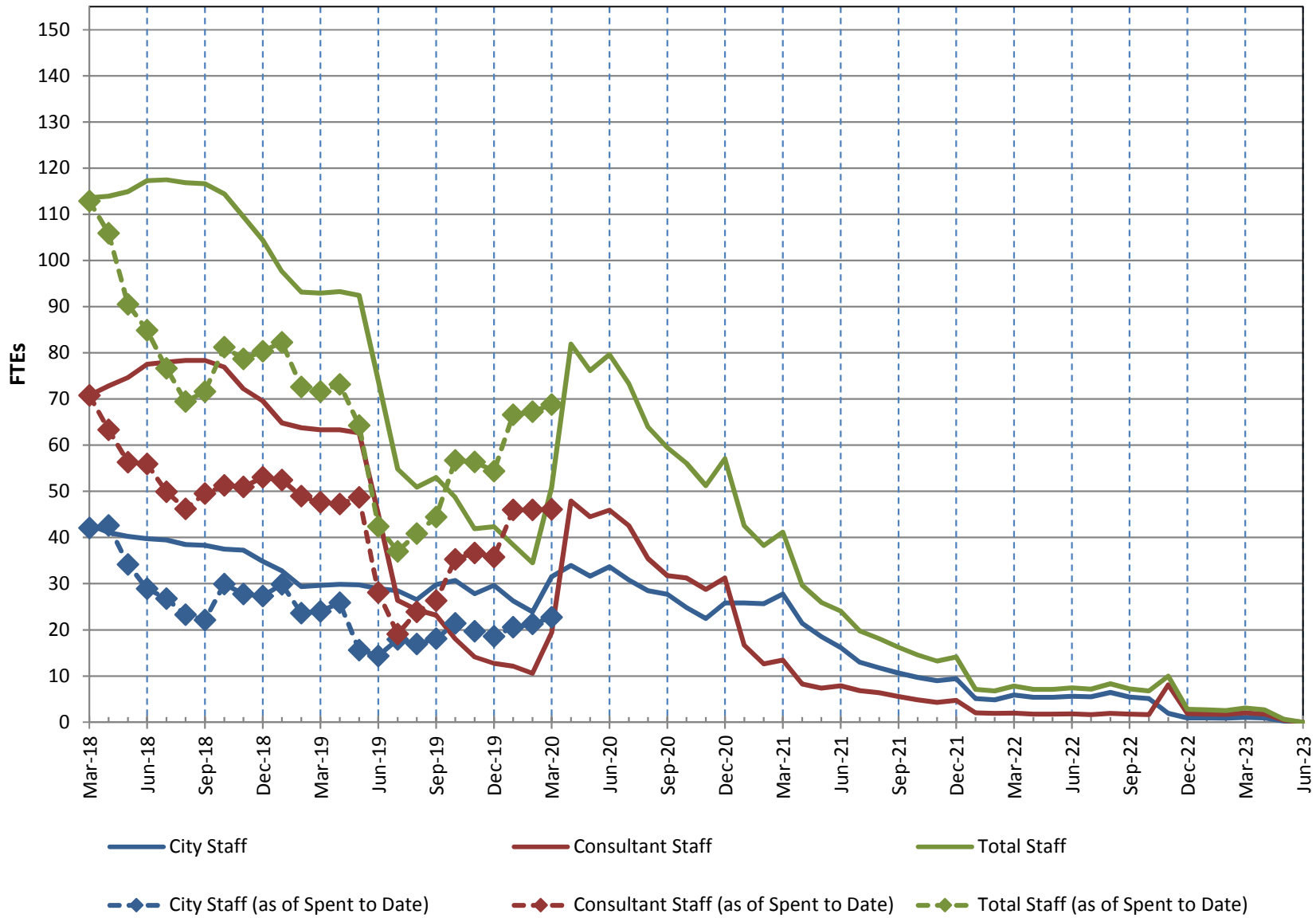
* The histogram does not reflect budget and expenditures prior to FY 2005-2006.

** Percentage Spent calculated as Actual Expenditures over the most current Approved Budget for each individual Fiscal Year.

Figure B: Annual Budgeted Spending Plans vs. Actual Expenditures

Figure B compares the spending plans associated with the various WSIP Approved Budgets to Actual Expenditures. It shows total annual expenditures from FY05-06 through Q3/FY19-20 and cost projections (Current Forecast) from FY19-20 through program completion currently forecast for May 2023. Actual annual expenditures have ranged from 45% to 142% of planned expenditures

Appendix C. WSIP Regional Program Staffing Plan













APPENDIX E. PROJECTS WITHIN BUDGET AND SCHEDULE

CUWSJI0101 - WSIP Closeout - San Joaquin

Project Description: This project includes miscellaneous improvements to ensure the WSIP Level of Service (LOS) goals and objectives are fully achieved in the San Joaquin Region. The work will be completed by means of two sub-projects: (1) re-evaluation of existing photo-voltaic systems and potential addition of new solar panels to supplement existing solar panels for existing onsite equipment operations at San Joaquin No.4 Junction, at the Throttling Station at Knight’s Ferry, and at Oakdale Portal, eliminating the need for propane generators at these sites; and (2) the installation of an interior concrete slab and drainage improvements at Tesla Portal as the original slab was deleted during the portal construction to allow access for repairs of existing corroded pipelines beneath the slab.

Region: San Joaquin	Project Status: Construction	Environmental Status: Not Applicable
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Project Cost:		Project Schedule:	
Approved 	\$4.38 M	Approved Jun-16 	Mar-21
Forecast* 	\$3.88 M	Forecast* Jun-16 	Mar-21
Actual 	\$0.71 M	Project Percent Complete: 42.8%	
 Approved;  Actual Cost; * Forecast Status:  Meet Requirements  Need Attention  Exceed Limits			

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	N/A	N/A	Various	Various

Progress and Status:

During the reporting period, NTPs were issued to Big Valley for JOC 71R-5 for Oakdale Portal Valve House #4, and to Boyer Construction for JOC 65R-13 for SJPL#3 and #4 Throttling Station and JOC 65R-14 for SJPL#4 Junction Valve. Project teams continued to work with Contractors to review submittals and RFI.

Issues and Challenges:

None at this time.








Oakdale Valve House No. 4 Solar Facilities

CUW37401 - Calaveras Dam Replacement

Project Description: The main construction project at Calaveras Reservoir provides for construction of a new 210-foot-high earth and rock fill dam, spillway, stilling basin, and intake tower and shaft to replace the existing facilities. A fish ladder will be added on the right abutment (looking downstream) of the Alameda Creek Diversion Dam (ACDD), a dam which acts to divert water through the Alameda Creek Diversion Tunnel (ACDT) to Calaveras Reservoir.

Region: Sunol Valley	Project Status: Construction	Environmental Status: Completed (EIR)
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Project Cost:	Project Schedule:
Approved  \$823.09 M	Approved Sep-02  Mar-21
Forecast*  \$813.07 M	Forecast* Sep-02  Mar-21
Actual  \$779.07 M	Project Percent Complete: 99.9%

 Approved;  Actual Cost; * Forecast Status:  Meet Requirements  Need Attention  Exceed Limits

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction+ NTP	Construction+ Final Completion
Current Forecast	01/27/11✓	(A) 01/31/11✓ (B) 01/04/16✓	(A) 08/15/11✓ (B) 04/19/16✓	(A) 07/12/19✓ (B) 12/31/20

+ Project includes multiple construction contracts.

(A) Calaveras Dam Replacement (WD-2551); (B) Alameda Creek Diversion Dam (WD-2729)

Progress and Status:

WD-2551 CDRP: NTP was issued to R&S contractor (JOC 77-04) on March 19, 2020 to address a few minor outstanding items. The project team continues to perform dam monitoring inspections. Given that there was no heavy rainfall during this reporting period, the reservoir didn't reach the appropriate level to perform Initial Fill Plan inspections.

WD-2729 ACDD: The project team continued to plan for the remaining portion of the wet testing that did not occur in March 2019 but might happen in the next quarter depending on whether there is sufficient flow in the creek. R&S (JOC 77-02) continued to work on a few minor outstanding items that could not be completed as part of the WD-2729 contract.

Issues and Challenges:











None at this time.



CDRP Aerial View

CUWSVI0101 - WSIP Closeout - Sunol Valley

Project Description: The project includes miscellaneous improvements to ensure WSIP Level of Service (LOS) goals and objectives are fully achieved in the Sunol Valley Region. The work will be completed by means of six sub-projects: (1) JOC-60-14 - AS4 Carrier Water System Modifications will modify the chemical injection system of the Alameda Siphons No.4 Pipeline to overcome lack of water system volume and pressure needed to inject water treatment chemicals; (2) JOC-59-20 - Erosion Repairs at Pond F3 East will repair the existing outfall pipe erosion at Quarry Pond F3 East with new rockfill and restore the drain pipe. The outfall drainage system was originally installed as part of the San Antonio Backup Pipeline; (3) Sunol Valley Water Treatment Plant (SVWTP) Polymer Feed Facility will build a polymer feed facility that will serve all five sedimentation basins to optimize plant water production (only the portion of the facility cost attributable to basin No. 5 will be funded under the WSIP); (4) JOC-54-02 - Miscellaneous Work at Alameda West Portal (AWP), Irvington Portal (IVP), and San Antonio Backup Pipeline (SABPL) will install security doors at AWP, provide cathodic protection at IVP, refurbish uninterruptable power supply (UPS) at AWP and IVP, and install discharge pipe lateral supports, safety railings, ladder stiffening supports, and sunshades for electrical equipment at SABPL; (5) JOC-60-20 - NIT Water Quality Equipment Relocation will relocate water quality monitoring equipment from an underground vault to a dedicated building together with a pump to the building to provide the water for water quality monitoring; (6) JOC-60-23 - San Antonio Backup Pipeline Carrier Water System Modifications will modify the carrier water and chemical injection systems to ensure proper chemical injection.

Region: Sunol Valley	Project Status: Construction	Environmental Status: Completed (Various)
Project Cost:		Project Schedule:
Approved  \$5.99 M	Approved Jul-16  Jun-21	
Forecast*  \$5.99 M	Forecast* Jul-16  Jun-21	
Actual  \$3.17 M	Project Percent Complete: 78.3%	
 Approved;  Actual Cost; * Forecast Status:  Meet Requirements  Need Attention  Exceed Limits		

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	Various	Various	Various	Various

Progress and Status:

Subprojects (1) JOC-60-14 and (4) JOC-54-02 were completed.
 (2) JOC-59-20 Pond F3 East Erosion Repair - This subproject is part of WD-2855, Turner Dam Spillway Erosion Repair project (a non-WSIP project). Sukut Construction completed construction of the Project on 1/24/2020. Final Completion (FC) was achieved on 1/24/2020. Subproject Completion on 6/30/2020.
 (3) SVWTP Polymer Feed Facility - The JOC 60-27 Mobile Pilot Plant (MPP) change order continued. Water Quality Bureau plans to start the pilot testing in the next reporting quarter. The design for the Polymer Feed Facility continued. Subproject Completion 6/30/21.
 (5) JOC-60-20 - All the closeout documents were completed on 2/7/2020. Subproject Completion 3/31/20.
 (6) JOC-60-23 - Contractor (CalState) completed the installation of the HVAC and chemical analyzers.

Currently waiting for the STO to be issued to continue with the remaining miscellaneous items. FC is 12/31/20. Subproject Completion on 6/30/21.







Issues and Challenges:

None at this time.

CUWBDP0101 - WSIP Closeout - Bay Division

Project Description: This project includes miscellaneous improvements to ensure the WSIP Level of Service (LOS) goals and objectives are fully achieved in the Bay Division Region. The work will be completed by means of six sub-projects, including: (1) providing a drainage system to address erosion issues that developed after Seismic Upgrades to Bay Division Pipeline Nos. 1 and 2 was constructed; (2) planning for a decommissioning study of the existing BDPL Nos. 1 and 2 pending funding for removal of the portion within the Don Edwards San Francisco Bay Wildlife Refuge and other mitigation measures; (3) monitoring of hydro-seeded areas at the Bay Tunnel Project; (4) placement of gravel at the Newark Valve Lot; (5) uncovering of previously installed valve E50U to provide for removal, cleaning, and re-installation of bolts for corrosion protection purposes; and (6) installation of a ventilation and sump pump system to improve conditions for inspection and monitoring of the pipe, slip, ball joints, and pipe supports inside the articulated vaults of Bay Division Pipeline Nos. 3 and 4.

Region: Bay Division	Project Status: Construction	Environmental Status: Not Applicable
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Project Cost:		Project Schedule:	
Approved	 \$4.40 M	Approved Jul-16	 Dec-20
Forecast*	 \$3.80 M	Forecast* Jul-16	 Dec-20
Actual	 \$2.32 M	Project Percent Complete: 100.0%	
			

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	N/A	N/A	Various	Various

Progress and Status:

- Subprojects (3) completed on 4/24/17, (4) completed on 7/29/16, (5) completed on 10/20/2017 and (6) completed on 9/30/2019

(1) BDPL 3&4 Site Drainage and Pipe Coating Repairs – NTP has been issued to Power Engineering (JOC Contractor) during the reporting period. Due to the COVID19 Shelter-In-Place order, the manufacturer of some project equipment on order reported that the delivery may be delayed. While waiting for the equipment to be fabricated, the contractor continues to provide RFIs and submittals.

(2) BDPL 1&2 EIR Mitigation – The Project team continued to finalize the CER. After CER, remaining work is being performed under the 10-year Water Enterprise Capital Improvement Program (WECIP). Progress and status for the project will thereafter be reported under the WECIP. Subproject Completion is on 6/30/2020.

Issues and Challenges:







None at this time.



Ventilation and Sump Pump Project

CUWPWI0101 - WSIP Closeout - Peninsula

Project Description: This project consists of miscellaneous improvements to ensure the WSIP Level of Service (LOS) goals and objectives are fully achieved in the Peninsula Region. The work will be completed by means of seven sub-projects: (1) the Lower Crystal Springs Dam (LCSD) stilling basin modifications and dissipation structure riprap; (2) valve modifications to accommodate stipulated releases of fresh water into San Mateo Creek for fish passage at the same site; (3) New Crystal Springs Bypass Tunnel electrical modifications due to groundwater intrusion into vaults housing it; (4) closeout of California Division of Safety of Dams permit applications; (5) coordination with San Mateo County for bridge construction over LCSD; (6) Harry Tracy Water Treatment Plant Improvements in automating operations to aid reliability in meeting LOS goals; and (7) Crystal Springs/San Andreas pipeline erosion repairs.

Region: Peninsula	Project Status: Construction	Environmental Status: Not Applicable
Project Cost:		Project Schedule:
Approved  \$13.58 M	Approved Jul-16  Aug-21	
Forecast*  \$13.58 M	Forecast* Jul-16  Aug-21	
Actual  \$10.60 M	Project Percent Complete: 98.4%	
		

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	N/A	Various	Various	Various

Progress and Status:

Lower Crystal Springs Dam: (1) WD-2822R2 - Lower Crystal Springs Dam (LCSD) Stilling Basin Connecting Channel - The Notice to Proceed for Anvil Builders was issued on 4/8/19, and Final Completion (FC) is 11/4/20. Subproject completion is 8/5/21. Construction is 90% complete. Completed installation of dam drainage, additional security upgrade, flowmeter, and pipe extension. Submittal for the long lead item material is under review.

(2) LCSD Bridge Replacement - joint project with San Mateo County. A few remaining warranty issues are being addressed. (2.1) JOC 76R-01 North Parapet Wall Extension closes a gap between the LCSD north parapet wall and the new bridge abutment. The gap repair construction was completed in March 2020. The only remaining activity is the fence work. Subproject Completion is 9/2/20. (2.2) To close out the Memorandum of Agreement (MOA) with San Mateo County, a draft LCSD Security Assessment report was completed, and is under review. The security work at the Crystal Springs Pump Station has started. Subproject completion is 6/30/20. (2.3) The repairs of the drainage channel atop the south side of LCSD was completed. Subproject Completion is 3/13/20.

Harry Tracy Water Treatment Plant: [1] JOC 59-01 Electrical & Mechanical Piping Modifications - Scope of work for generator integration into SCAD

A and training is being finalized and has been determined to be not a part of WSIP. This will be the last time this project is reported on. [2] JOC-59-17 Emergency Generators Filters Upgrades - In closeout. Subproject completion is 1/31/20. This will be the last time this project is reported on. [3] Equalization Basin Mixers - Mixers were installed, tested and commissioned. Closeout is in progress with subproject completion in 1/31/20. This will be the last time this project is reported on. [4] Erosion on CSSA Pipeline - completed 4/30/19. All work has been completed. This will be the last time this project is reported on.







Issues and Challenges:

None at this time.

CUW39401 - Watershed and Environmental Improvement Program

Project Description: The Watershed and Environmental Improvement Program (WEIP) includes the comprehensive identification of critical watershed lands and ecosystem restoration needs within the hydrologic boundaries of the Alameda Creek, Peninsula (San Mateo and Pilarcitos Creeks), and Tuolumne River watersheds, and prioritizes the protection and/or restoration of these lands. This program will manage watershed activities and resources to protect source water quality, native species, and their habitat and to identify critical watershed lands, key ecosystem restoration needs, and restoration priorities. The program also supports projects that enhance public awareness and provide educational opportunities related to water quality, water supply, conservation, and environmental stewardship issues. Consistent with the SFPUC Water Enterprise Stewardship Policy, a portion of the WEIP funding will be used to fund construction of the Southern Skyline Boulevard Ridge Trail Extension.

Region: Support Projects	Project Status: Not Applicable	Environmental Status: Active (CatEx)
---------------------------------	---------------------------------------	---

Project Cost:		Project Schedule:	
Approved	 \$20.00 M	Approved Jan-07	 Jan-21
Forecast*	 \$20.00 M	Forecast* Jan-07	 Jan-21
Actual	 \$16.64 M	Project Percent Complete: 26.2%	
			

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	03/31/20	N/A	N/A	N/A

Progress and Status:

The purchase of a 164.5 acre parcel in the Alameda Creek watershed is going to the SFPUC for approval on April 28, 2020. With the purchase the SFPUC will own 38,168 acres in the Alameda Creek watershed. SFPUC staff continues to work with several partners (local governmental agencies and non-profit organizations) on the purchase of a 50,000+ acre property located in Alameda, Santa Clara, San Joaquin and Stanislaus counties. Approximately 9,800 acres of the property are within the Alameda Creek watershed and drains into Calaveras and San Antonio reservoirs. The appraisal of the property has been completed and negotiations with the property owners are on-going.



Upper Alameda Creek Watershed

Issues and Challenges:

None at this time.

APPENDIX F. LIST OF ACRONYMS


AAR	Alternative Analysis Report	IVP	Irvington Portal
AC	Asphalt Concrete	JOC	Job Order Contract
ACAMS	Access Control and Alarm Monitoring System	LCSD	Lower Crystal Springs Dam
ACDD	Alameda Creek Diversion Dam	LCSDI	Lower Crystal Springs Dam Improvements
ACDT	Alameda Creek Diversion Tunnel	LOS	Levels of Service
AGM	Assistant General Manager	MG	Million Gallons
ARM	Active Risk Manager	MGD	Million Gallons per Day
AWP	Alameda West Portal	MND	Mitigated Negative Declaration
BART	Bay Area Rapid Transit	MOA	Memorandum of Agreement
BAWSCA	Bay Area Water Supply and Conservation Agency	MOU	Memorandum of Understanding
BDPL	Bay Division Pipeline	MPP	Mobile Pilot Plant
BHR	Bioregional Habitat Restoration	N/A	Not Applicable
CATEX	Categorical Exemption	NEG DEC	Negative Declaration (also shown as ND)
CCSF	City and County of San Francisco	NEPA	National Environmental Policy Act
CDD	City Distribution Division	NIT	New Irvington Tunnel
CDRP	Calaveras Dam Replacement Project	NMFS	National Marine Fisheries Service (under NOAA)
CEQA	California Environmental Quality Act	NOAA	National Oceanic and Atmospheric Agency
CER	Conceptual Engineering Report	NTP	Notice to Proceed
CIP	Capital Improvement Program	O&M	Operation and Maintenance
CM	Construction Management	PCCP	Pre-stressed Concrete Cylinder Pipe
CMB	Construction Management Bureau	PEIR	Program Environmental Impact Report
CMIS	Construction Management Information System	PG&E	Pacific Gas and Electric Company
CO	Change Order	PLC	Programmable Logic Control
COVID-19	Coronavirus Disease 2019	PV	Photovoltaic
CPI	Cost Performance Index	RFI	Request For Information
CSPS	Crystal Springs Pump Station	ROW	Right-of-Way
CSSA	Crystal Springs/San Andreas	SABPL	San Antonio Backup Pipeline
DB	Design, Build	SAPL	San Antonio Pipeline
DSOD	Division of Safety of Dams (State of California)	SAPS	San Antonio Pump Station
DVSS	Digital Video Surveillance System	SCADA	Supervisory Control and Data Acquisition
EBMUD	East Bay Municipal Utility District	SFPUC	San Francisco Public Utilities Commission
EIR	Environmental Impact Report	SJPL	San Joaquin Pipeline
EIS	Environmental Impact Statement	SMC	San Mateo County
EV	Earned Value	SMP	Surface Mining Permit
EVM	Earned Value Management	SPI	Schedule Performance Index
FC	Final Completion	SQS	Supplier Quality Surveillance
FTE	Full-Time Equivalent	SSBPL	Sunset Supply Branch Pipeline
FY	Fiscal Year	SSPL	Sunset Supply Pipeline
HH	Hetch Hetchy		
HHWP	Hetch Hetchy Water and Power		
HTWTP	Harry Tracy Water Treatment Plant		

WSIP Quarterly Report

SVWTP	Sunol Valley Water Treatment Plant
TBD	To be determined
TBM	Tunnel Boring Machine
TM	Technical Memorandum
TWR	Treated Water Reservoir
UM	University Mound
UPS	Uninterruptable Power Supply
UV	Ultra Violet
VFD	Variable Frequency Drive
WECIP	Watershed Environmental Improvement Program
WEIP	Water Enterprise Capital Improvement Program
WSIP	Water System Improvement Program
WSTD	Water Supply and Treatment Division

DATE: August 04, 2020

TO: Commissioner, Ann Moller Caen, President
Commissioner, Francesca Vietor, Vice President
Commissioner, Anson Moran
Commissioner, Sophie Maxwell
Commissioner, Tim Paulson

FROM: Harlan L. Kelly, Jr., General Manager  on behalf of

RE: WSIP Regional Projects Quarterly Report
4th Quarter / Fiscal Year 2019-2020

Enclosed please find the Water System Improvement Program (WSIP) Regional Projects Quarterly Report for the 4th Quarter (Q4) of Fiscal Year (FY) 2019-2020. The primary intent of the report is to provide the San Francisco Public Utilities Commission (“Commission”), stakeholders, and the public with a status summary of the program’s regional projects for the period of April 1, 2020 through June 30, 2020.

In their April 3, 2018 letter, the Bay Area Water Supply and Conservation Agency (BAWSCA) requested additional information be included in the WSIP Quarterly reports. On June 5, 2018 SFPUC representatives met with BAWSCA and agreed that beginning with the Q1FY2018-2019 report, the SFPUC will (1) add a section to the cover letter for the WSIP Quarterly Report to highlight the use of contingency, (2) provide documentation on the sufficiency of the contingency to deliver WSIP within budget, and (3) highlight, and provide in the cover letter documentation regarding, work force reduction and other efficient practices and procedures to control soft costs as the program is completed. This information can be found in the sections below entitled “Status on Use of Construction Contingency” and “Status on Workforce Reduction and Other Efficient Practices to Control Soft Costs”.

As mentioned last quarter, on March 16, 2020, the Department of Public Health issued a shelter-in-place order, Order No. C19-07, effective March 17, 2020. In compliance with this order, nearly 1,200 SFPUC employees have been working remotely. Employees who have been deemed essential to continue operations by reporting to SFPUC facilities are doing so to deliver water, power and sewer services to the communities we serve.

London N. Breed
Mayor

Ann Moller Caen
President

Francesca Vietor
Vice President

Anson Moran
Commissioner

Sophie Maxwell
Commissioner

Tim Paulson
Commissioner

Harlan L. Kelly, Jr.
General Manager



Following the shelter-in-place order, on March 18, 2020, SFPUC issued a memo to the construction contractors stating that public works construction projects are considered an “essential activity” and work is expected to continue, but contractors are required to stop work temporarily and submit a revised Site-Specific Health and Safety Plan to address COVID-19 safety and protective work practices for SFPUC review by close of business on March 20, 2020.

On March 20, 2020, a letter was issued to contractors from the City Administrator. The letter noted that The City was prepared to partner with contractors to take steps to make projects as safe as possible for employees to help keep projects moving forward and determine if Social Distancing Requirements can be met.

On March 31, 2020, the Health Officer issued Health Order No. C19-07b, replacing the earlier March 16, 2020 order. The order requires the City Administrator, in consultation with the Health Officer, to specifically designate certain public works projects as an Essential Government Function if they are to continue during this shelter-in-place order.

Additionally, contractors were provided with the Construction Safety Guidelines, dated April 1, 2020, developed by City representatives and the San Francisco Building and Construction Trades Council, with input from construction industry contractors’ associations. This document provides industry guidelines for safe practices at construction work sites. Accordingly, Contractors were required to prepare and submit updated Site-Specific Health and Safety Plan to address COVID-19 issues at each site.

Furthermore, on April 15, 2020, the City Administrator’s Office issued Procedures for Implementation and Enforcement of COVID-19 Field Safety Guidelines for Public Works Projects.

And, on April 29, 2020, the Health Officer issued Health Order No. C19-07c, extending the shelter-in-place through the end of May. This new order went into effect on May 4, 2020 and all construction was allowed to resume as long as specific safety measures are in place. The Health Order C19-07c also provides Safety protocols for both small and large construction projects. Lastly, on May 5, 2020, the Health Officer issued a directive requiring that each contractor for a City public works project to comply with all aspects of these safety protocols.

During the months following, staff coordinated with the Enterprises to implement worksite health screenings and communication plans. The SFPUC’s construction management teams developed procedures and practices to fulfill the City’s role as mandated by the “Public Works Project Safety Protocol for COVID-19” through inspection of worksites to assure worker compliance with the contractors’ approved Health and Safety Plans.

Due to anticipated financial impacts from the pandemic, staff worked on revising the 10-year Capital Improvement Program (CIP) budget to ensure we can continue essential services to the public and maintain our financial sustainability. As a result of this effort, a Revised CIP plan was submitted to the Commission on July 14, 2020.

STATUS AND PERFORMANCE SUMMARY

Overall, WSIP regional projects are 98.6% complete as of June 30, 2020.

As of the end of the reporting period, planning, environmental, design, and construction activities are 100%, 99.9%, 98.9%, and 98.9% complete, respectively. The following table shows the number of WSIP Regional projects and the total approved value of these projects that are active in various project phases.

Status of WSIP Regional Projects (as of June 30, 2020)

Project Phase	No. of Projects	Percent by No. of Projects	Total Project Value (\$M) ¹	Percent by Project Value
Planning	0	0%	\$0	0%
Design	1	2%	\$35	1%
Bid & Award	0	0%	\$0	0%
Construction	6	12%	\$1,021	27%
Close-Out	1	2%	\$96	3%
Completed	42	81%	\$2,619	69%
Not Applicable ²	2	4%	\$32	1%
Total	52	100%	\$3,803	100%

Notes: (1) "Total Project Value" for various phases includes proportional allocation of approved program management budget. Projects active in multiple phases are counted as being in the phase with the greatest amount of project activities.

(2) "Not Applicable" category is for the two projects that do not include construction: Long-Term Mitigation Endowment and Watershed and Environmental Improvement Program.

PROGRAM UPDATE

As of the end of the reporting period, six (6) regional projects with a total value of \$1,021M are in construction and forty-three (43) projects with a total value of \$2,715M are in close-out or have been completed. Forty-one (41) out of forty-three (43) Regional WSIP projects with specific Level of Service (LOS) goals have achieved their LOS goals to date. The one Regional project remaining in pre-construction is the Alameda Creek Recapture Project.

As of the end of the reporting period, the forecasted total program cost (regional and local projects) is \$4,787.8M, which is the same as the current Commission Approved Budget. As of the end of the reporting period, all approved change orders (COs) in contracts total \$439.16M, and

the current remaining construction contingency is \$15.37M. Also, as of the end of the reporting period, all pending and potential COs, and trends total \$8.1M. Therefore, if all pending and proposed COs and trends become approved COs, the current forecasted remaining construction contingency is \$7.29M.

The current forecasted date to complete the overall WSIP is May 2023, which is the same as the current approved completion date.

UPDATE ON PROJECTS IN PRE-CONSTRUCTION

Alameda Creek Recapture

During this quarter, the Final Environmental Impact Report (FEIR) was certified by the Planning Commission, and the SFPUC Commission adopted the CEQA Findings and approved the Project. The regulatory permit application was drafted and submitted for review. The 95% design was issued for review. The project team continued to coordinate with Hanson Quarry on the seven (7) erosion areas occurring around Pond F2 and options to repair one area close to the planned project facilities. The project team started coordinating with a geotechnical engineering consultant to perform additional geotechnical investigation work in the area to confirm the previous findings.

WSIP Closeout Projects

Steady progress was made on WSIP Closeout Projects for each of the San Joaquin, Sunol Valley, Bay Division, and Peninsula Regions in the reporting quarter.

In the San Joaquin Region, the two Job Order Contract (JOC) contractors, Big Valley and Boyer Construction, have completed all submittals. Equipment and materials were ordered and will be delivered to the sites in the next quarter for installation.

In the Sunol Valley Region, the JOC contractor, CalState, continued to modify and upgrade the Mobile Pilot Plant (MPP) for the Sunol Valley Water Treatment Plant (SVWTP) Polymer Feed Facility (aka Basin 5) project. SFPUC Water Quality Division has postponed the use of the MPP during the reporting period due to the shelter-in-place order. For the SABPL Water Carrier System Modification Phase 2, a Supplemental Task Order (STO) was issued for the remaining miscellaneous work, and construction work will continue in the next quarter.

In the Bay Division Region, JOC contractor, Power Engineering, completed installation of the hillman rollers and coating of the pipe. V-ditch work will be started in the next quarter. For the BDPL 1&2 EIR Mitigation, the team has completed the CER, which concludes the planning phase of the project and the entire scope required to be completed under the WSIP.

In the Peninsula Region, (1) Lower Crystal Springs Dam (LCSD) Stilling Basin Connecting Channel construction is 90% complete. (2) LCSD Bridge Replacement (joint project with San Mateo County) is mostly complete, but a few remaining warranty issues still need to be addressed. (2.1) JOC 76R-01 North Parapet Wall Extension closes a gap between the LCSD north parapet wall and the new bridge abutment. The gap repair construction was completed in March 2020. This project is in closeout; this will be the last time this project is reported on. (2.2) To fulfill the requirements to close out the Memorandum of Agreement with San Mateo County, the final LCSD Security Assessment report was completed. A briefing to Water Enterprise staff

has been scheduled for next month to present the security work that will be implemented as part of this project. (2.3) The repairs of the drainage channel atop the south side of LCSD were completed. This will be the last time this work is reported on. Harry Tracy Water Treatment Plant project is in closeout, and this will be the last time this project is reported on.

UPDATE ON PROJECTS IN CONSTRUCTION

Steady progress was reported on the remaining ongoing WSIP construction activities. As of the end of June 2020, WSIP regional construction contracts (including active, completed, and future contracts) are 99.9% complete overall, a continuation of the same percentage as last quarter.

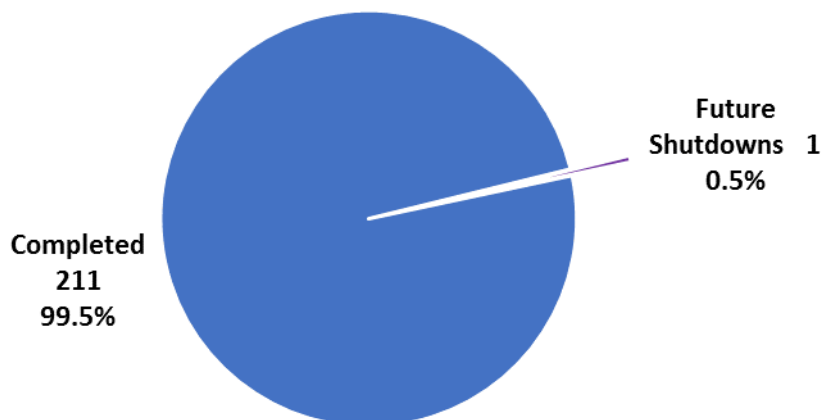
A review of the construction work hours recorded over the last five (5) years shows continued ramping down of construction activities, with monthly workhours peaking at 206,400 in August 2012, compared to a total of 1,424.5 work hours recorded in June 2020. The monthly average workhours in the reporting quarter was 1,375, a significant decrease compared to the 13,584 monthly average workhours for the same period in 2019.

As of the end of June 2020, monitored exposure hours on WSIP regional projects totaled 9.8 million construction person-hours¹. Since the implementation of the WSIP Safety Approach in April 2009, the total lost time incidence rate is at 0.51, compared to the U.S. Bureau of Labor Statistics (BLS) industry average rate (2016) of 1.7.

To date, 211 out of 212 (99.5%) of the planned shutdowns and hot taps have been completed. One (1) shutdown on the Bay Division Pipelines was completed during the quarter. Currently, there is one (1) future planned shutdown.

The following is a summary of the progress made, issues encountered, and/or milestones achieved on the key WSIP regional projects currently active in construction.

WSIP Shutdowns & Hot Taps



¹ This includes the addition of 41,882 labor hours worked by the Construction Management teams and inadvertently left off of reporting for the quarters of Q4FY2018-2019 through Q3FY2019-2020 by projects active in construction during those quarters, and now correctly added to the total of monitored exposure hours on WSIP regional projects.

Regional Groundwater Storage and Recovery

Overall progress on the Regional Groundwater Storage and Recovery Phase 1 construction contract (Contract B) is reported at 98.6% as of the end of the quarter. The 4-day testing at Hickey, Poncetta Drive (Lake Merced Golf Club) and Millbrae Well and Treatment Facilities have been completed. The conditional approval to operate the Mission Blvd (Treasure Island Trailer) Well and Treatment Facility has been received from the Division of Drinking Water (DDW). Modifications are being made to address issues arising from sand intrusion and decline of pump performance for two well pump systems, undersized carrier water pumps, chemical system deficiencies, transmission line flowmeters reliability, programming and access requirements. A recent decline of well pump performance at Mission Street (Treasure Island) Well & Treatment Facility has occurred; the potential reasons for the performance decline are being investigated. The Regional Groundwater Storage and Recovery Phase 2 subproject is in the design phase and is 20% complete. The 35% and 65% design have been completed. The 95% design has started.

Fish Passage Facilities within the Alameda Creek Watershed (Sub-project to Calaveras Dam Replacement)

Construction of the Fish Passage Facilities within the Alameda Creek Watershed remains at 99% complete as of the end of this quarter. The contractor continued to submit closeout documentation. The project team continued to plan for the two remaining items on the punch list, which are repairs to the debris rake/rack system that are anticipated to begin next quarter and additional wet testing. Wet testing was not possible this quarter due to insufficient flow in the creek and will be rescheduled for Winter 2020/2021. As a result of these remaining issues, final construction completion forecast is December 2020, and final administrative project closeout is forecasted for March 2021.

MAJOR PROGRAM TRENDS AND RISKS

Actual and potential impacts to the cost and schedule of WSIP projects are identified and tracked using change orders (COs), trends, and risks. COs and trends are managed using the Construction Management Information System (CMIS), while risks are managed using Active Risk Manager (ARM). Active COs on the WSIP are categorized based on their status as follows: Approved COs are changes that have been negotiated, have been certified by the City Controller, and are now part of the contract (exact magnitude of change is known); Pending COs are changes that have been negotiated but have yet to be certified by the City Controller (exact magnitude of change is known); and Potential COs are changes that have been proposed by either the SFPUC or the contractor but are still being negotiated (magnitude of change is unknown). Any known issue with a probable impact to the approved schedule and/or contract amount that has yet to be proposed as a Potential CO is captured as a trend. In addition, project teams assess and quantify conceivable risks to their projects with the goal to mitigate the conditions which might cause them to materialize.

WSIP Management submits to the Commission on a quarterly basis a separate report on the status of Change Orders. This section summarizes the major program trends and risks being tracked as of June 30, 2020.

The trends for the WSIP Active Regional construction contracts totaled \$2.7M as of the end of the reporting period, a decrease of \$0.5M during the period. This is due to changes in trends for Regional Groundwater Storage and Recovery (RGSR) since all the remaining trends belong to RGSR. The following table lists the trend totals for active projects:

WSIP Active Regional Projects Trend Totals (as of June 30, 2020)

Project	Trends (\$ Million)	Percent Completion ¹
Regional Groundwater Storage & Recovery (Contract B)	\$2.7	99%

1. Refers to percent completion of the current construction contract (including all Approved COs).

The WSIP Risk Management System ranks risks based on a combination of likelihood of occurrence and potential cost impact to the SFPUC. As of June 30, 2020, the Regional Groundwater Storage and Recovery project is the only active construction project with remaining risk, and this contract, with a total of nine (10) remaining risks, is now 99% complete.

Regional Groundwater Storage and Recovery

This project is currently reporting on fifteen (15) active trends that total \$2.7M, a decrease of \$0.5M during the quarter. This decrease is mainly due to four (4) trends becoming change orders for RGSR.

The largest trend addresses the decline in Serra Bowl Well pump performance. The second largest trend relates to well pump maintenance and warranty. The third highest trend addresses the miscellaneous costs for startup testing. Other high value trends include costs for: miscellaneous plumbing and chemical changes; repairs and/or replacement of flowmeters; change from use of aqueous ammonia to use of liquid ammonium sulfate; rental of generators to provide temporary power; installation of PG&E power for the Lake Merced Golf Club and Treasure Island; new injection quill, water quality supplies, and equipment; and commissioning. A new minor trend was added this quarter regarding rebuilding Sierra Bowl Well pump.

Other relevant trends include the potential for revisions to the Programmable Logic Control (PLC) programming and for resetting of the security system.

The 80% risk confidence level at the end of the reporting period is estimated at \$2.4M, an increase of \$0.2 since last quarter. Since this is the only WSIP contract in construction, all the WSIP risks are now from this project. The risks are ranked based on likelihood of occurrence and potential cost impact. This contract has a total of ten (10) risks. The current largest risk is due to COVID-19 related issues (delays and costs). The second highest risk is associated with the change of chemical to be used for water treatment during operation from aqueous ammonia to

ammonium sulfate. The third highest risk is associated with multiple source water quality challenges. Additional risks include design errors and omissions, unexpected challenges that may arise during testing, challenges in meeting regulatory and operational requirements during testing, and delays in finalizing permanent easements (utilities and right of way).

STATUS ON USE OF CONSTRUCTION CONTINGENCY

The following table shows the status of approved construction contingency for projects that are in active construction as of the end of the reporting period. The forecast remaining contingency shown in the table for each project is after accounting for all approved, pending, and potential change orders as well as all current trends.

Contract	Final Construction Completion	Current Approved Contingency	Current Approved, Pending, and Potential Change Orders Plus Trends	Remaining Contingency	% Completion
CUW37401 Alameda Creek Diversion Dam Fish Passage Facility (WD-2729)	12/31//20	\$15.8M	\$14.5M	\$1.3M	99%
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	3/6/21	\$21.6M	\$20.2M	\$1.4M	99%

The Fish Passage Facilities at Alameda Creek Diversion Dam is currently estimated to have remaining construction contingency of \$1.3 million as of the end of the reporting period.

The Regional Groundwater Storage and Recovery (Contract B) is currently estimated to have remaining construction contingency of \$1.4M as of the end of the reporting period. The remaining risk, estimated at \$2.4 million (at the 80% risk confidence level), means that it is likely some additional contingency may be needed for this construction contract. Funding is available from the remaining Director’s Reserve, currently at \$18.6 million for the entire WSIP, to satisfy such additional contingency needs for this project.

STATUS ON WORKFORCE REDUCTION AND OTHER EFFICIENT PRACTICES TO CONTROL SOFT COSTS

As has been the practice since the program was established, the WSIP Director will continue to meet with project teams in order to review status of every budget line item at least twice quarterly. As a result of these meetings, staffing adjustments are made in real time to ensure project teams work within the existing budgets, and budget forecasts and resources are adjusted as necessary to help ensure successful completion of every project.

The current staff transition plan for the remainder of WSIP is included on page 42 of the attached WSIP Quarterly Report. As can be seen in the chart on that page, the overall staffing levels in June 2018 were approximately 85 full-time equivalents (FTEs), which has decreased to approximately 35 FTEs in June 2020. The decrease is attributable to both City and consultant staff ramping down activities as projects complete construction and close out. Actual staffing levels will continue to be tracked monthly against this plan, and appropriate staff adjustments made accordingly, to ensure staffing levels stay within the remaining available budget.

In addition, we are continuing to implement our industry best practice Construction Management (CM) Business Processes and Procedures to ensure available funds are used efficiently and effectively, with emphasis on identification of cost savings wherever possible. The primary features of the best practice processes and procedures that facilitate monitoring and control of WSIP construction include: change management, trends management, risk management, claims avoidance, schedule management, program CM project audits, monthly and quarterly project review meetings, and lessons learned reports.

CLOSING

Despite the challenges described above, the WSIP team continues to make steady progress in the delivery of the program as described in the attached WSIP Quarterly Report. It should be noted that the challenges encountered in the field and reported herein are not unusual for infrastructure programs of the size and complexity of the WSIP.

The SFPUC continues to be committed to working collaboratively with other City departments, its Regional Wholesale customers, and all program stakeholders and partners to ensure the successful delivery of the WSIP.

Enclosure



HETCH HETCHY
WATER SYSTEM IMPROVEMENT PROGRAM



QUARTERLY REPORT

Regional Projects
Q4 FY 2019 | 2020
April 2020 — June 2020

Rebuilding Today for a Better Tomorrow

Published: 08/04/2020

Quarterly Report - Q4 FY2019/2020

Water System Improvement Program - Regional Projects

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1. PROGRAM DESCRIPTION

The Water System Improvement Program (WSIP) is a \$4.8 billion, multi-year capital program to upgrade the City of San Francisco's regional and local drinking water systems. The program will deliver improvements that enhance the City's ability to provide reliable, affordable, high quality drinking water to its 26 wholesale customers and regional retail customers in Alameda, Santa Clara, and San Mateo Counties, and to 800,000 retail customers in San Francisco, in an environmentally sustainable manner. The WSIP is structured to cost-effectively meet water quality requirements, improve seismic and delivery reliability, and achieve water supply goals.

Built in the early to mid-1900s, the water system has many components nearing the end of their working life, with crucial facilities crossing or in close proximity to, three major earthquake faults. The San Francisco Public Utilities Commission (SFPUC) initiated the WSIP to repair, replace, and seismically upgrade the system's deteriorating pipelines, tunnels, dams, reservoirs, pump stations, storage tanks, and treatment facilities.

The program consists of 35 local projects located within San Francisco and 52 regional projects spread over seven different counties from the Sierra foothills to San Francisco. Local projects only benefit San Francisco residents whereas regional projects benefit both City residents and the 26 wholesale agencies that receive water from the SFPUC. The management of regional projects is divided into 6 regions - San Joaquin, Sunol Valley, Bay Division, Peninsula, San Francisco Regional, and Support Projects.

The WSIP is funded through the issuance of revenue bonds. Local Measures A and E, which were approved by San Francisco voters in November 2002, allowed for the financing of improvements to the City's water system using revenue bonds and/or other forms of revenue financing. Increases in the water rates of retail and wholesale customers are used to pay back the debt service on the bonds.

The program budget and schedule were originally adopted by the San Francisco Public Utilities Commission on March 1, 2003. The program at the time was referred to as the Capital Improvement Program (CIP). The scope of the CIP was changed significantly following the adoption of Level of Service (LOS) goals in early 2005. The program changes were so substantial that the program was renamed the WSIP and a new program budget and schedule were adopted on November 29, 2005. Since the scope of the 2005 Revised WSIP is in general representative of the program that is in the end stage of being implemented today, the 2005 budget and schedule are considered the "Baseline Budget and Schedule."

Subsequently, the WSIP Baseline Budget and Schedule were revised in 2007, 2009, 2011, 2013, 2014, 2015, 2016, 2017, 2018 and 2020, and these revisions were approved by the San Francisco Public Utilities Commission on February 26, 2008, July 28, 2009, July 12, 2011, April 23, 2013, April 22, 2014, December 8, 2015, April 26, 2016, February 14, 2017, April 10, 2018, and April 14, 2020, respectively. Refer to Appendix A for a scope description of all the regional projects included in the WSIP.

Program Revision	Commission Approval	Budget (\$Million)	Schedule(*)
2003 (Original)	March 1, 2003	\$3,628	03/15/16
2005 (Baseline)	November 29, 2005	\$4,343	06/30/14
2007 (Revised)	February 26, 2008	\$4,392	12/18/14
2009 (Revised)	July 28, 2009	\$4,586	12/04/15
2011 (Revised)	July 12, 2011	\$4,586	07/29/16
2013 (Revised)	April 23, 2013	\$4,640	04/11/19
2014 (Revised)	April 22, 2014	\$4,765	05/24/19
2015 (Revised)	December 8, 2015	\$4,765	05/24/19
2016 (Revised)	April 26, 2016	\$4,845	12/20/19
2017 (Revised)	February 14, 2017	\$4,845	12/20/19
2018 (Revised)	April 10, 2018	\$4,788	12/30/21
2020 (Revised)	April 14, 2020	\$4,788	05/05/23

* Final Program Completion Date

2. PROGRAM STATUS

This fourth (4th) Quarterly Report for Fiscal Year (FY) 2019-2020 presents the progress made on the WSIP regional projects between April 1, 2020 and June 30, 2020. The program’s schedule and budget were last approved by the San Francisco Public Utilities Commission (SFPUC or Commission) on April 14, 2020. The progress made on the local projects of the WSIP is presented in a separate quarterly report.

Figure 2.1 shows the total Current Approved Budget for the regional projects remaining in each phase of the program as of June 30, 2020. The number of projects currently active in each phase is shown in parentheses.

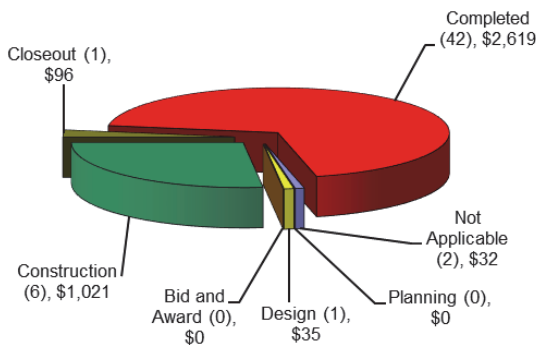


Figure 2.1 Total Current Approved Budget for Projects Active in Each Phase (\$Million)

Figure 2.2 shows the number of regional projects in the following stages of the program as of June

30, 2020: Pre-construction, Construction, and Post-construction.

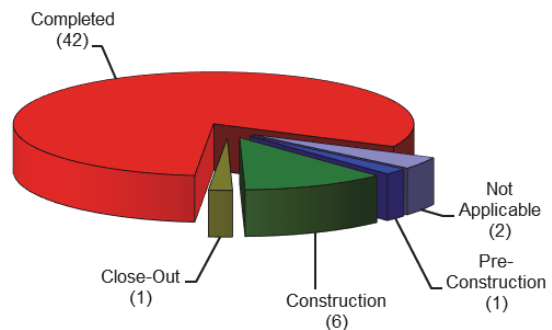


Figure 2.2 Number of Projects in Pre-construction, Construction, and Post-construction

Figure 2.3 summarizes the environmental review and permitting status of the WSIP’s 52 regional projects as of June 30, 2020.

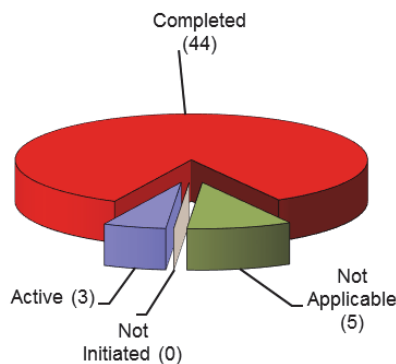


Figure 2.3 Program Environmental and Permitting Status

2.1 Progress Towards Meeting Level of Service (LOS) Goals

The scope of the WSIP is based on the following Level of Service (LOS) goals for the Regional Water System: Seismic Reliability, Delivery Reliability, Water Quality Reliability, and Water Supply Reliability. Each project that reaches construction substantial completion contributes to increasing the overall reliability of the system and achieving progress towards meeting the overall LOS goals for the system.

Table 2.1 lists the projects with their individual Primary (P) and Secondary (S) contributions towards LOS goals, and indicates which projects have met their respective LOS goals. As can be seen in Table 2.1, the actual operational service start dates indicate that 41 of the 43 Regional WSIP projects with specific LOS goals have achieved their LOS goals to date. The other 9 Regional WSIP projects do not have specific LOS goals. The WSIP team remains committed to achieving the overall LOS goals established for the system.

Table 2.1 Progress Towards Meeting LOS Goals ⁽¹⁾

Project No.	Project Name / Construction Contract	Actual / Approved Substantial Completion Date	LOS Goals (P =Primary, S =Secondary)				Actual Operational Service Start	Construction Progress Toward LOS Goals
			Water Quality	Seismic Reliability	Delivery Reliability	Water Supply		
San Joaquin Projects								
CUW36401	Lawrence Livermore Water Quality Improvement <i>(Completed)</i>	08/31/10	P				08/31/10	100%
CUW37301	San Joaquin Pipeline System <i>(Completed)</i> (A) HH935A Crossovers (B) HH935B Western Segment (C) HH935C Eastern Segment	(A) 01/06/12 (B) 05/27/13 (C) 06/21/13			P		(A) 01/06/12 (B) 05/27/13 (C) 06/21/13	100%
CUW37302	Rehabilitation of Existing San Joaquin Pipelines (Roselle Crossover; <i>Completed</i>)	05/13/11			P		05/13/11	100%
CUW38401	Tesla Treatment Facility <i>(Completed)</i> (A) DB116 Tesla Treatment Facility Design-Build Contract (B) HH953 Tesla Portal Protection	(A) 06/24/11 (B) 08/05/13	P	S	S		(A) 06/24/11 (B) 08/05/13	100%
Sunol Valley Projects								
CUW35201	Alameda Creek Recapture	11/30/20				P		0%
CUW35501	Standby Power Facilities - Various Locations <i>(Completed)</i> (A) WD-2553 East Bay - Standby Power Facilities (B) WD-2511 Peninsula - Standby Power Facilities	(A) 09/11/08 (B) 04/15/10		P	S		(A) 09/11/08 (B) 04/15/10	100%
CUW35901	New Irvington Tunnel <i>(Completed)</i>	09/19/15		S	P		02/27/15	100%
CUW35902	Alameda Siphon #4 <i>(Completed)</i>	12/16/11		P	S		12/16/11	100%
CUW37001	Pipeline Repair & Readiness Improvements <i>(Completed)</i> (A) WD-2530 Phase A 8 Pipe Storage Sites (B) WD-2530 Phase B Pipe Rolling Machine Facility @ Sunol Yard	(A) 02/09/07 (B) 07/14/08		P	S		(A) 02/09/07 (B) 07/14/08	100%
CUW37401	Calaveras Dam Replacement (A) WD-2551 Calaveras Dam Replacement (B) WD-2729 Alameda Creek Diversion Dam	(A) 04/12/19 (B) 02/15/19		S	P	S	(A) 04/12/19 (B) 02/15/19	(A) 100% (B) 99%
CUW37402	Calaveras Reservoir Upgrades <i>(Completed)</i>	10/06/05	P				10/06/05	100%
CUW37403	San Antonio Backup Pipeline <i>(Completed)</i>	12/31/14			P		12/31/14	100%
CUW38101	SVWTP Expansion & Treated Water Reservoir <i>(Completed)</i>	05/17/13	P		P		05/17/13	100%
CUW38601	San Antonio Pump Station Upgrade <i>(Completed)</i>	06/30/11			P		06/30/11	100%

WSIP Quarterly Report

Project No.	Project Name / Construction Contract	Actual / Approved Substantial Completion Date	LOS Goals (P =Primary, S =Secondary)				Actual Operational Service Start	Construction Progress Toward LOS Goals
			Water Quality	Seismic Reliability	Delivery Reliability	Water Supply		
Bay Division Projects								
CUW35301	BDPL Nos. 3 & 4 Crossover/Isolation Valves <i>(Completed)</i>	11/15/07		P			11/15/07	100%
CUW35302	Seismic Upgrade of BDPL Nos. 3 & 4 <i>(Completed)</i>	10/26/15		P			06/20/14	100%
CUW36301	SCADA System - Phase II <i>(Completed)</i>	11/29/10			P		11/29/10	100%
CUW36801	BDPL Reliability Upgrade – Tunnel <i>(Completed)</i>	05/20/15		P	S		10/15/14	100%
CUW36802	BDPL Reliability Upgrade – Pipeline <i>(Completed)</i> (A) WD-2541 East Bay (B) WD-2542 Peninsula (C) WD-2665 Cordilleras	(A) 12/09/11 (B) 06/13/12 (C) 03/05/13		P	S		(A) 12/09/11 (B) 06/13/12 (C) 03/05/13	100%
CUW36803	BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2 <i>(Completed)</i>	05/28/10			P		05/28/10	100%
CUW38001	BDPL Nos. 3 & 4 - Crossovers <i>(Completed)</i>	08/15/12		P	S		08/15/12	100%
CUW38901	SFPUC/EBMUD Intertie <i>(Completed)</i>	09/07/07			P		09/07/07	100%
CUW39301	BDPL No. 4 Condition Assessment PCCP Sections <i>(Completed)</i>	02/06/09		P	S		02/06/09	100%
Peninsula Projects								
CUW35401	Lower Crystal Springs Dam Improvements <i>(Completed)</i>	11/20/11			P	S	11/20/11	100%
CUW35601	New Crystal Springs Bypass Tunnel <i>(Completed)</i>	07/14/11		P	S		07/14/11	100%
CUW35701	Adit Leak Repair - Crystal Springs/Calaveras <i>(Completed)</i>	11/30/07			P		11/30/07	100%
CUW36101	Pulgas Balancing - Inlet/Outlet Work <i>(Completed)</i>	02/02/06	P		S		02/02/06	100%
CUW36102	Pulgas Balancing - Discharge Channel Modifications <i>(Completed)</i>	10/23/09			P		10/23/09	100%
CUW36103	Pulgas Balancing - Structural Rehabilitation & Roof Replacement <i>(Completed)</i>	07/26/11	P		S		07/26/11	100%
CUW36105	Pulgas Balancing - Modifications of the Existing Dechloramination Facility <i>(Completed)</i>	08/27/12	P		S		08/27/12	100%
CUW36501	Cross Connection Controls <i>(Completed)</i>	11/26/08	P				11/26/08	100%
CUW36601	HTWTP Short-Term Improvements - Demo Filters <i>(Completed)</i>	01/11/06		P	S		01/11/06	100%
CUW36603	HTWTP Short-Term Improvements - Coagulation & Flocculation/Remaining Filters <i>(Completed)</i>	12/21/09		P	S		12/21/09	100%
CUW36701	HTWTP Long -Term Improvements <i>(Completed)</i>	09/08/15		P	S		09/08/15	100%
CUW36702	Peninsula Pipelines Seismic Upgrade <i>(Completed)</i>	10/30/15		P			10/30/15	100%
CUW36901	Capuchino Valve Lot Improvements <i>(Completed)</i>	02/14/08			P		02/14/08	100%
CUW37101	Crystal Springs/San Andreas Transmission Upgrade <i>(Completed)</i>	06/30/14		P	S		09/02/14	100%
CUW37801	Crystal Springs Pipeline No. 2 Replacement <i>(Completed)</i>	01/31/13		P	S		01/31/13	100%
CUW37901	San Andreas Pipeline No. 3 Installation <i>(Completed)</i>	03/29/11		P	S		03/29/11	100%
CUW39101	Baden & San Pedro Valve Lots Improvements <i>(Completed)</i>	03/31/11		P	S		03/31/11	100%

Project No.	Project Name / Construction Contract	Actual / Approved Substantial Completion Date	LOS Goals (P =Primary, S =Secondary)				Actual Operational Service Start	Construction Progress Toward LOS Goals
			Water Quality	Seismic Reliability	Delivery Reliability	Water Supply		
San Francisco Regional Projects								
CUW30103	Regional Groundwater Storage and Recovery (A) WD-2600 Test Well Drilling (B) WD-2668 Regional Groundwater Storage and Recovery (Phase 1) (C) Regional Groundwater Storage and Recovery (Phase 2)	(A) 07/23/12 (B) 12/31/17 (C) 02/28/21				P	(A) 07/23/12	(A) 100% (B) 99% (C) 0%
CUW35801	Sunset Reservoir - North Basin <i>(Completed)</i>	09/19/08		P	S		09/19/08	100%
CUW37201	University Mound Reservoir - North Basin <i>(Completed)</i>	05/25/11		P	S		05/25/11	100%

Notes:

- 1 Support projects and WSIP Closeout projects are not listed in the table above since these projects do not have specific Level of Service (LOS) goals.

3. PROGRAM COST SUMMARY

Table 3.1 provides an overall program-level cost summary of the WSIP Regional Program. It shows the Expenditures to Date; the 2005 Baseline, 2020 Approved, Current Approved and Q4/FY19-20 Forecasted Budgets; and the Cost Variance between the Current Approved and Forecasted Budgets.

The total Current Approved WSIP Budget (including Regional and Local Programs, Local Water Supply Projects, and Financing Costs) and

Current Forecasted Cost at completion are both \$4,787.8 million. The Current Approved WSIP Budget and Forecasted Cost at completion for the Regional Program (including construction contingency) are \$3,803.1 million and \$3,802.6 million (\$0.5 million under the Current Approved Budget). The Current Approved WSIP Budget and Forecasted Cost at completion for the Local Improvement Projects are \$331.4 million and \$331.9 million (\$0.5 million over the Current Approved Budget). Refer to Appendix B for a graphical representation of how the WSIP budget and actual expenditures have changed over time.

Table 3.1 Program Cost Summary

Cost Categories	Expenditures To Date (\$ Million) (A)	2005 Baseline Budget (\$ Million) (B)	2020 Approved Budget (\$ Million) (C)	Current Approved Budget ⁽⁷⁾ (\$ Million) (D)	Q4/FY19-20 Forecasted Costs (\$ Million) (E)	Cost Variance (\$ Million) (F = D - E)
Regional Improvement Projects	\$2,998	\$3,181	\$3,081.4	\$3,076.4	\$3,089.9	(\$13.5)
Construction Costs ⁽¹⁾	\$2,019	\$2,322	\$2,065.9	\$2,063.9	\$2,053.0	\$11.0
Program Delivery Costs ⁽²⁾	\$954	\$758	\$984.8	\$982.8	\$990.0	(\$7.2)
Other Costs ⁽³⁾	\$26	\$101	\$30.7	\$29.7	\$47.0	(\$17.3)
Support Projects ⁽⁴⁾	\$232	\$33	\$244.9	\$244.9	\$258.3	(\$13.4)
Construction Contingency for Regional & Support Projects ⁽⁵⁾	\$435	\$193	\$476.8	\$481.8	\$454.4	\$27.4
REGIONAL PROGRAM WITH CONTINGENCY	\$3,666	\$3,407	\$3,803.1	\$3,803.1	\$3,802.6	\$0.5
Local Improvement Projects	\$332	\$383	\$331.4	\$331.4	\$331.9	(\$0.5)
Local Water Supply Projects ⁽⁶⁾⁽⁸⁾	\$180	-	\$281.3	\$281.3	\$281.3	-
Finance	\$372⁽¹¹⁾	\$552⁽⁹⁾	\$372.0⁽¹⁰⁾	\$372.0	\$372.0	-
PROGRAM TOTAL	\$4,550	\$4,343	\$4,787.8	\$4,787.8	\$4,787.8	-

Notes:

- Construction Costs** include the Construction Base Bid and owner-provided equipment/material for all regional and support projects. Those costs do not include any construction contingency. That contingency is reflected as a separate cost category.
- Delivery Costs** include project management, planning, environmental (CEQA, permitting, construction compliance), design, construction management, and engineering support during construction.
- Other Costs** include environmental mitigation, art enrichment, security improvements, and real estate expenses.
- Support Projects** include (1) System Security Upgrades, (2) Programmatic EIR, (3) Bioregional Habitat Restoration, (4) Vegetation Restoration of WSIP Construction Sites, (5) Long Term Mitigation Endowment, (6) Program Management, and (7) Watershed and Environmental Improvement Program. Please note that the cost reflected above for support projects only includes "Delivery" and "Other" costs, and "Construction" cost for these projects is included in "Construction Costs" under the Regional Improvement Projects.
- Expenditures to Date for Construction Contingency for Regional and Support projects correspond to the Total Approved Change Orders on those projects. For projects with ongoing or completed construction, the 2020 Approved Budget for construction contingency includes all change orders and trends as identified at the time of the March 2020 Revised WSIP, as well as additional contingency funding allocated to cover the 80% confidence level risks identified at the time of the March 2020 Revised WSIP. For projects in pre-construction, the 2020 Approved Budget for construction contingency includes 10% of the estimated construction base bid

6. Local Water Supply Projects managed as part of the Water Enterprise Capital Improvement Program (CIP) are (1) Lake Merced Water Level Restoration, (2) San Francisco Groundwater Supply, (3) San Francisco Westside Recycled Water, (4) Harding Park Recycled Water, and (5) San Francisco Eastside Recycled Water.
7. The budget approved as part of the March 2020 Revised WSIP, plus any additional budget changes approved by the Commission as part of additional contingencies on construction contracts.
8. The WSIP Local Water Supply projects underwent a September 2013 re-baseline. Only the original WSIP portion of the re-baselined costs is reported here. The remaining budget is funded under the Water Enterprise CIP and is managed outside the purview of the WSIP.
9. The original \$522M estimate of financing cost was based on a memorandum to the Commission dated November 23, 2005.
10. The financing cost budget of \$372M that was included in the March 2020 Revised WSIP includes all financing costs appropriated to date.
11. The actual financing cost is assumed to match the budgeted financing cost. Final reconciliation of all associated financing costs will occur upon WSIP completion.

Table 3.2 provides the current remaining construction contingency. For each region, it shows the 2020 Approved Construction Contingency; the Total Approved Change Orders prior to the reporting quarter; Change Orders Approved during the reporting quarter; Total Approved Change Orders through the reporting quarter; Project Savings Moved to Contingency/ Funds Moved out of Contingency during the Reporting Quarter; the Q4/FY19-20 Forecasted Construction Contingency; and the Remaining

Contingency as of the end of the reporting quarter. As of June 30, 2020, the Forecasted Construction Contingency is \$454.5 million, and the Current Remaining Contingency is \$15.4 million.

The total costs of Change Orders approved in Q4/FY19-20 are shown in Table 3.2. Table 3.3 provides further information at the construction contract level for all approved change orders during the reporting quarter.

Table 3.2 Current Remaining Construction Contingency

Region	Q3/FY19-20 Forecasted Construction Contingency ⁽¹⁾ (\$ Million) (A)	Total Approved Change Orders as of Q3/FY19-20 ^(2,3) (\$ Million) (B)	Change Orders Approved in Q4/FY19-20 ⁽²⁾ (\$ Million) (C)	Total Approved Change Orders as of Q4/FY19-20 (\$ Million) (D = B+C)	Project Savings or Director's Reserves (+) Moved to Contingency/ Funds (-) Moved out of Contingency during Q4/FY19-20 ⁽⁴⁾ (\$ Million) (E)	Q4/FY19-20 Forecasted Construction Contingency (\$ Million) (F = A + E)	Q4/FY19-20 Remaining Contingency (\$ Million) (G = F - D)
San Joaquin Region	\$0.21	-	-	-	-	\$0.21	\$0.21
Sunol Valley Region	\$365.26	\$355.50	\$2.81	\$358.31	\$1.00	\$366.26	\$7.95
Bay Division Region	\$8.21	\$8.06	-	\$8.06	\$0.02	\$8.23	\$0.17
Peninsula Region	\$57.38	\$56.79	-	\$56.79	-	\$57.38	\$0.59
San Francisco Regional Region	\$22.31	\$16.12	-	\$16.12	-	\$22.31	\$6.18
Support Projects	\$0.14	(\$0.12)	-	(\$0.12)	-	\$0.14	\$0.26
Regional Total	\$453.51	\$436.35	\$2.81	\$439.16	\$1.03	\$454.53	\$15.37

Notes:

1. Construction Contingency approved as part of the March 2020 Revised WSIP, plus any regional projects' savings moved to contingency.
2. Approved Change Orders are changes that have received all required approvals, including that of the City Controller.
3. This table only reports change orders for the active construction contracts as of this reporting cycle.
4. Values only reflect savings realized following the Commission's adoption of the March 2020 Revised WSIP.

Table 3.3. Details on Transactions Out of and Into Contingency

Project No. - Contract	Transactions Out of Contingency			Transactions Into Contingency		
	Approved Change Orders (\$ Million) (A)	Budget Underrun at Project Completion / Director's Reserve Moved Out of Project (\$ Million) (B)	Sub Total (\$ Million) (C = A + B)	Savings Due to Low Bid (\$ Million) (D)	Budget Overrun at Project Completion / Director's Reserve Moved to Project (\$ Million) (E)	Sub Total (\$ Million) (F = D + E)
Sunol Valley Region	\$2.81	-	\$2.81	-	\$1.00	\$1.00
CUW37401 Calaveras Dam Other Construction WD-2729	\$2.81		\$2.81	-	-	-
CUWSVI0101 WSIP Closeout - Sunol Valley	-		-	-	\$1.00	\$1.00
Bay Division Region	-	-	-	-	\$0.02	\$0.02
CUWBDF0101 - WSIP Closeout - Bay Division		-	-		\$0.02	\$0.02
Regional Total	\$2.81	-	\$2.81	-	\$1.03	\$1.03

Table 3.4 Forecasted Remaining Construction Contingency

Region	Q4/FY19-20 Remaining Construction Contingency ⁽¹⁾ (\$ Million) (A)	Pending Change Orders as of Q4/FY19-20 ⁽²⁾ (\$ Million) (B)	Potential Change Orders as of Q4/FY19-20 ⁽³⁾ (\$ Million) (C)	Trends as of Q4/FY19-20 ⁽⁴⁾ (\$ Million) D	Q4/FY19-20 Forecasted Remaining Construction Contingency (\$ Million) (E = A-B-C-D)
San Joaquin Region	\$0.21	-	-	-	\$0.21
Sunol Valley Region	\$7.95	\$4.01	-	-	\$3.95
Bay Division Region	\$0.17	-	-	-	\$0.17
Peninsula Region	\$0.59	-	-	-	\$0.59
San Francisco Regional Region	\$6.18	\$0.89	\$0.48	\$2.70	\$2.12
Support Projects	\$0.26	-	-	-	\$0.26
Regional Total	\$15.37	\$4.90	\$0.48	\$2.70	\$7.29

Notes:

1. Same as Column G in Table 3.2.
2. Pending Change Orders are changes that have been negotiated and approved by the SFPUC but have to be approved by the City Controller.
3. Potential Change Orders are changes that have been requested and entered into CMIS but are still being negotiated.
4. Trends are any expected impact that the CM team believes has a high probability of becoming a change but are yet to be entered into CMIS as a Potential Change

Table 3.4 provides the forecasted remaining construction contingency. For each region as of Q4/FY19-20, it shows the Remaining Construction Contingency, Pending Change Orders, Potential Change Orders, Trends, and Forecasted Remaining Construction Contingency. As of June 30, 2020, the Total Forecasted Remaining Construction Contingency is \$7.3 million. This amount does not include funds that are currently held in Director's Reserve.

The Program Management project includes programmatic activities that span multiple regions and benefit several WSIP projects (Table 3.5). The project provides funding for the following functions and resources: SFPUC Staff assigned to the management of the overall program; consultants supporting SFPUC staff at the program level (program, project and pre-construction management consultant, program

construction management consultant, program control consultant); labor relations, including management of the project labor agreement; communication and public outreach; programmatic legal support; real estate acquisitions; program controls, including the tracking and reporting of all WSIP efforts; and program-level construction management activities associated with quality assurance, risk management, the Supplier Quality Surveillance (SQS) Program, operations assistance, safety, and training.

The activities under the Program Management project are organized into five categories that are tracked and monitored on a monthly basis. These categories are Management Support, Project Labor Agreement, Planning and Project Development, Program Control, and Program Construction Management.

Table 3.5 Status of Program Management Project Cost Breakdown

Category	Expenditures To Date (\$ Million) (A)	2020 Approved Budget (\$ Million) (B)	Current Approved Budget (\$ Million) (C)	Q4/FY19-20 Forecasted Cost* (\$ Million) (D)	Cost Variance (\$ Million) (E = C-D)
Management Support	\$37.3	\$42.8	\$42.8	\$42.6	\$0.2
Project Labor Agreement	\$3.7	\$3.8	\$3.8	\$3.8	-
Planning and Project Development	\$18.0	\$18.3	\$18.3	\$18.3	-
Program Controls	\$20.2	\$19.8	\$19.8	\$20.2	(\$0.4)
Program Construction Management	\$27.8	\$28.0	\$28.0	\$27.8	\$0.2
Program Management Total	\$106.9	\$112.7	\$112.7	\$112.7	-

The spending pattern for the project is very similar from month to month as the project primarily funds program-level positions occupied by both SFPUC staff and consultants. The Current Approved and the Forecasted Total Program Management Cost are \$112.7 million.

4. PROGRAM SCHEDULE SUMMARY

Figure 4.1 and Table 4.1 compare the 2005 Baseline, 2020 Approved, Current Approved, and Q4/FY19-20 Forecasted Schedules for the WSIP Regional Program. Refer to the “Cost and Schedule Status” notes in Section 5 for the criteria associated with the three color-coded Forecast Status levels in Figure 4.1 - Meet Requirements, Need Attention, and Exceed Limits. The Current Approved and Forecasted Schedule completion for the overall WSIP (including Regional and Local Programs) are both May 2023. Refer to Appendix C for a graphical presentation of the WSIP Approved Project-Level Schedule.

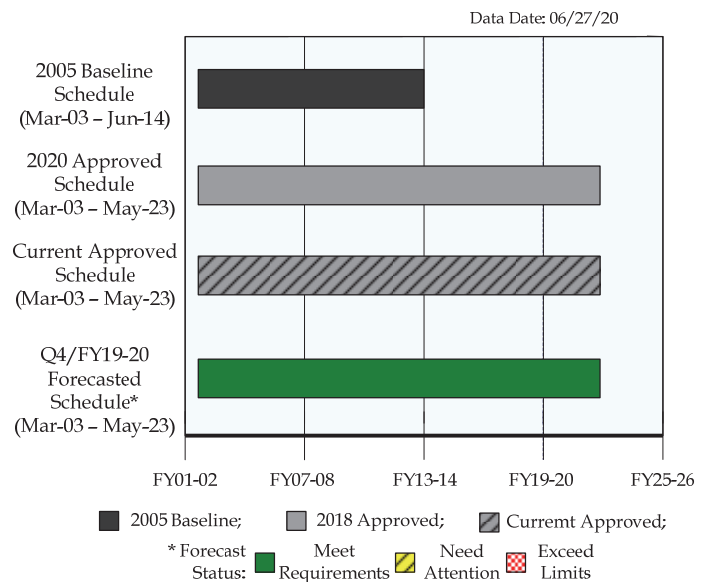


Figure 4.1 Program Schedule Summary

Table 4.1 2020 Approved vs. Q4/FY19-20 Forecasted Schedule Dates

Category	2005 Baseline Start	2020 Approved Start	Current* Approved Start	Actual Start	2005 Baseline Finish	2020 Approved Finish	Current* Approved Finish	Q4/FY19-20 Forecasted Finish	Schedule Variance (Months)
Regional Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/30/14	05/05/23	05/05/23	05/05/23	-
Local** Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/28/13	7/31/18	7/31/18	06/03/20✓	22.1 (Late)
Overall WSIP	03/01/03	03/01/03	03/01/03	03/01/03✓	06/30/14	05/05/23	05/05/23	05/05/23	-

* The budget and schedule approved as part of the March 2020 WSIP, plus any additional budget and schedule changes approved by the Commission as part of additional contingencies on construction contracts.

** Excluding Local Water Supply Projects

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5. PROJECT PERFORMANCE SUMMARY*

All costs are shown in \$1,000s as of 06/27/20

Project Name	Active Phase (**)	2005 Baseline Budget (a)	2020 Approved Budget (b)	Current Approved Budget (c)	Q4/FY19-20 Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f= c - d)	Cost Status (+)	2005 Baseline Completion (g)	2020 Approved Completion (h)	Current Approved Completion (i)	Q4/FY19-20 Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
San Joaquin Region															
CUWSJI0101 - WSIP Closeout - San Joaquin	CN		\$ 4,376	\$ 4,376	\$ 3,876	\$ 788	\$ 500	★			03/31/21	03/31/21	-	★	See Appendix E
Sunol Valley Region															
CUW35201 - Alameda Creek Recapture Project	DS	\$ 18,809	\$ 34,000	\$ 34,000	\$ 37,645	\$ 13,640	(\$3,645)	●	05/25/12		05/05/23	05/05/23	-	★	See Section 6
CUW37401 - Calaveras Dam Replacement	CN	\$ 256,511	\$ 823,092	\$ 823,092	\$ 812,619	\$ 780,412	\$ 10,473	★	05/25/12		03/31/21	03/31/21	-	★	See Appendix E
CUWSVI0101 - WSIP Closeout - Sunol Valley	CN		\$ 5,990	\$ 5,990	\$ 5,990	\$ 3,399	-	★			06/30/21	06/30/21	-	★	See Appendix E
Bay Division Region															
CUWBDP0101 - WSIP Closeout - Bay Division	CN		\$ 4,399	\$ 4,399	\$ 3,801	\$ 2,582	\$ 598	★			12/31/20	12/31/20	-	★	See Appendix E
Peninsula Region															
CUWPW10101 - WSIP Closeout - Peninsula	CN		\$ 13,580	\$ 13,580	\$ 13,580	\$ 10,857	-	★			08/05/21	08/05/21	-	★	See Appendix E
San Francisco Regional Region															
CUW30103 - Regional Groundwater Storage and Recovery	CN	\$ 39,233	\$ 138,793	\$ 138,793	\$ 148,350	\$ 108,859	(\$9,557)	⚠	02/27/14		12/30/21	10/21/22	9.7 mo. Late	●	See Section 6
Support Projects															
CUW38804 - Long Term Mitigation Endowment ++	NA		\$ 12,000	\$ 12,000	\$ 12,000	\$ 0	-	★			09/30/21	09/30/21	-	★	NA
CUW39401 - Watershed and Environmental Improvement Program	NA	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 16,740	-	★	06/28/13		01/08/21	01/08/21	-	★	See Appendix E

* Excludes projects with completed construction and projects that are no longer active (i.e., deleted projects, closed projects, and projects combined with other projects)

**** Phase Status Legend**

PL	Planning	DS	Design	BA	Bid & Award
CN	Construction	NA	Not Applicable		

For projects active in multiple phases, the table shows the phase in which a majority of the works is taking place.

+ Cost and Schedule Status

- ★ Meet Requirements: Forecasted Cost/Schedule is within Current Approved Budget/Schedule.
- ⚠ Need Attention: Forecasted Cost is over Current Approved Budget by greater than 1% and less than 10%. Or Forecasted Schedule is over Current Approved Schedule by greater than 2 months and less than 6 months and less than 10%.
- Exceed Limits: Forecasted Cost is over Current Approved Budget by 10% or more. Or Forecasted Schedule is over Current Approved Schedule by greater than 6 months or 10% or more.

++ The Long Term Mitigation Endowment (LTME) fund provides an initial deposit to secure a source of funds for perpetual monitoring and maintenance of the Bioregional Habitat Restoration sites constructed in the SFPUC watershed, as required by the United States Army Corps of Engineers and California Department of Fish and Wildlife permits. The LTME fund does not involve construction activities to secure land purchases.






6. PROJECTS NOT WITHIN BUDGET AND/OR SCHEDULE

CUW35201 - Alameda Creek Recapture Project

Project Description: The scope of this project includes conveyance of the water to various existing storage sites within the Sunol Valley to the Sunol Valley Water Treatment Plant by addition of the following:

- Four vertical turbine pumps mounted on floating barges located in existing Pond F2.
- Flexible discharge pipelines which are connected between the new pipe manifold and the existing Sunol Pipeline to discharge the recaptured water to the SFPUC system.
- Throttling valves, a flow meter, and other electrical and general site improvements.

Region: Sunol Valley	Project Status: Design	Environmental Status: Active (EIR)
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Project Cost:		Project Schedule:	
Approved 	\$34.00 M	Approved Sep-03 	May-23
Forecast* 	\$37.65 M	Forecast* Sep-03 	May-23
Actual 	\$13.64 M	Project Percent Complete: 41.0%	

 Approved;  Actual Cost; * Forecast Status:  Meet Requirements  Need Attention  Exceed Limits

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	04/28/20✓	08/15/20	01/15/21	11/07/22

Progress and Status:

The Final Environmental Impact Report (FEIR) was certified by the Planning Commission, and the SFPUC Commission adopted the CEQA Findings and approved the project on April 28, 2020.

The regulatory permit application was drafted and submitted for review. The 95% design was issued for review. The project team continued to coordinate with Hanson Quarry (Hanson) on the 7 erosion areas occurring around Pond F2 and to review options to repair one area close to the planned facilities. The team coordinated with Geotech consultant to perform additional Geotech investigation work in the area in order to confirm findings.

Issues and Challenges:

The forecast project budget is \$37,645,000. The variance between the approved and forecast project budget and schedule is due to the extensive effort to prepare additional analyses and recirculate the Draft Environmental Impact Report, including re-analyzing stream flow data, meeting with Regulatory Agencies and Fisheries Workgroup, revising and reviewing the document sections, and incorporating comments and updating the design. The increases are also due to an increase in the construction duration, and increases in the construction estimate, contingency and escalation costs. A new challenge is that Pond F2 is experiencing erosion in an area near the proposed site for the ACRP pipelines. Hanson is preparing a design, cost estimate, and schedule for the repair of the erosion. The repair









Current Condition of Pond F2 Access Road

schedule may not allow Hanson to complete the work prior to the rainy season and the start of ACRP construction work. To ensure the safety of the facilities, the repair work for the erosion area may be incorporated into the ACRP project. Remaining erosion repair work would be addressed by Hanson after construction of ACRP is substantially completed. A cost share for the repair work will need to be negotiated with Hanson. A second challenge is that the ADEIR included language requiring monitoring of water levels in two adjacent ponds and sharing of the resulting data with outside agencies. The design, cost and schedule impacts for both of the two challenges will be prepared and evaluated in the next reporting period.

CUW30103 - Regional Groundwater Storage and Recovery

Project Description: The goal of the project is to provide up to 7.2 million gallons per day (mgd) of dry year water supply over 7.5 years. The original project design included the construction of up to 16 groundwater wells and well stations to be connected to three wholesale customers on the Upper Peninsula and the SFPUC transmission system to achieve the water supply goal. Phase 1 included the installation of 13 well stations to produce approximately 6.2 mgd, and the original scope of Phase 2 included construction of 2 to 3 additional well stations, based upon well yield. Due to difficulties with siting well stations in the central portion of the groundwater basin, Phase 2 has been modified to install up to 3 test wells (Ludeman North, Ludeman South and Centennial Trail), complete the South San Francisco Main well and pipeline, and complete other Phase 1 scope items, including chemical system monitoring, sampling and storage at various sites. The Phase 2 test wells will not be converted to production wells at this time, but will allow for determination as to whether the identified sites could be viable future production wells, and will provide valuable information related to water quality and potential pumping capacities that can be used for future planning and decision making.

Region: San Francisco Regional	Project Status: Construction	Environmental Status: Active (Various)
Project Cost:		Project Schedule:
Approved  \$138.79 M	Approved Jun-03  Dec-21	
Forecast*  \$148.35 M	Forecast* Jun-03  Oct-22	
Actual  \$108.86 M	Project Percent Complete: 81.9%	
		

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction+ NTP	Construction+ Final Completion
Current Forecast	(A) 09/07/09✓ (B) 08/07/14✓ (C) 11/10/20	(A) 09/07/11✓ (B) 09/22/14✓ (C) 11/18/20	(A) 01/30/12✓ (B) 04/06/15✓ (C) 04/22/21	(A) 09/05/12✓ (B) 03/06/21 (C) 04/22/22

+ Project includes multiple construction contracts.

(A) Test well drilling; (B) Well station construction; (C) Well sites in Millbrae and South San Francisco

Progress and Status:

For Phase 1 (Contract B), 4-day testing at Hickey, Poncetta Drive (Lake Merced Golf Club) and Millbrae Well and Treatment Facilities has been completed. The conditional approval to operate the Mission Blvd (Treasure Island Trailer) Well and Treatment Facility has been received from the Division of Drinking Water (DDW). Modifications are continuing to two well pump systems to address problems from decline of pump performance, most likely due to sand intrusion. The project team continues addressing other issues such as undersized carrier water pumps; chemical system modifications; retrofit of existing transmission line flowmeters; and other changes to programming, access, and treatment testing.

For Phase 2 (associated with Contract C), the 35% and 65% designs have been completed. The 95% design has started. The 65% design has been presented to Cal Water. Coordination with local governments and utility agencies including City of South San Francisco, BART, CALTRANS, and PG&E has started.

Issues and Challenges:

The variance between the Approved and Forecasted cost for Phase 1 (Contract B) is due to recent decline of well pump performance at Mission Street (Treasure Island) Well & Treatment Facility; Investigation and retrofit of the pumping system as well as other issues described above have delayed the 4-day testing, resulting in the overall delay of construction final completion.

The variances between the Approved and Forecasted cost and schedule for Phase 2 (Contract C) are due to the addition of remaining work from Contract B to Contract C. Also, the delay in reaching agreement on a Nondisclosure Agreement (NDA) requested by Cal Water has delayed transmittal of design documents critical to completing the design. As-builts and other information from Cal Water is necessary to progress in the design of the Antoinette Lane (SSF Main) Well, which will be connected to Cal Water’s groundwater treatment facility.

7. On-Going Construction

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion*	Q4/FY19-20 Forecasted Construction Final Completion**	Approved Contract Cost +	Q4/FY19-20 Forecasted Cost++	Schedule (Cal. Days)	Cost	
Sunol Valley Region								
CUW37401 - Alameda Creek Diversion Dam (Contract B)	04/19/16	12/16/18	12/31/20	\$ 39,414,211	\$ 43,422,940	(746)	(\$4,008,729)	99.0%
San Francisco Regional Region								
CUW30103 - Regional GW Storage and Recovery (Contract B)	04/06/15	03/06/20	03/06/21	\$ 59,103,489	\$ 60,471,651	(365)	(\$1,368,162)	98.6%

Program Total for On-Going Construction	Approved Contract Cost	Q4/FY19-20 Forecasted Cost*	Variance	
			Cost	Percent
	\$ 98,517,701	\$ 103,894,591	(\$5,376,890)	(5.5%)

Note:

* Approved Construction Final Completion Date includes approved change orders.
 ** The Forecasted Construction Final Completion Date includes all approved, pending, and potential change orders and trends.

+ Approved Contract Cost includes awarded contract amount and approved change orders.
 ++ The Forecasted Cost includes awarded contract amount and all approved, pending, and potential change orders.

8. PROJECTS IN CLOSE-OUT

Project Title	2005 Baseline Construction Phase Completion	2020 Approved Construction Phase Completion	Current Approved Construction Phase Completion	Actual Construction Phase Completion	2005 Approved Project Completion	2020 Approved Project Completion	Current Approved Project Completion	Forecasted Project Completion	2005 Baseline Construction Phase Budget	2020 Approved Construction Phase Budget	Current Approved Construction Phase Budget	Construction Phase Expenditures To Date
Support Projects												
CUW38802 - Bioregional Habitat Restoration		05/31/18	05/31/18	05/31/18		09/30/21	09/30/21	09/30/21		\$ 52,299,498	\$ 51,636,156	\$ 50,648,762
TOTAL										\$ 52,299,498	\$ 51,636,156	\$ 50,648,762

9. COMPLETED PROJECTS

Project Title	2005 Baseline Project Completion	2020 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2020 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
San Joaquin Region								
CUW36401 - Lawrence Livermore Water Quality Improvement	11/07/11	07/31/13	07/31/13	07/31/13	\$ 4,235,258	\$ 4,198,247	\$ 4,198,247	\$ 4,198,247
CUW37301 - San Joaquin Pipeline System	03/25/14	03/31/16	03/31/16	03/31/16	\$ 352,732,000	\$ 203,178,014	\$ 203,178,015	\$ 203,178,015
CUW37302 - Rehabilitation of Existing San Joaquin Pipelines	06/30/14	10/31/14	10/31/14	10/31/14	\$ 80,000,000	\$ 21,153,622	\$ 21,153,622	\$ 21,153,622
CUW38401 - Tesla Treatment Facility	07/01/11	01/30/15	01/30/15	01/30/15	\$ 101,643,001	\$ 113,211,607	\$ 113,211,607	\$ 113,211,607
Sunol Valley Region								
CUW35501 - Standby Power Facilities - Various Locations	12/06/10	12/22/10	12/22/10	12/22/10	\$ 9,949,735	\$ 12,950,566	\$ 12,950,566	\$ 12,950,566
CUW35901 - New Irvington Tunnel	09/17/13	03/31/18	03/31/18	03/31/18	\$ 214,650,004	\$ 340,406,358	\$ 340,406,358	\$ 339,901,806
CUW35902 - Alameda Siphon #4	04/14/11	06/28/13	06/28/13	06/28/13	\$ 78,577,000	\$ 64,950,507	\$ 64,950,507	\$ 64,950,507
CUW37001 - Pipeline Repair & Readiness Improvements	03/30/07	04/16/09	04/16/09	04/16/09	\$ 5,591,770	\$ 5,195,381	\$ 5,195,381	\$ 5,195,381
CUW37402 - Calaveras Reservoir Upgrades	02/17/06	07/28/06	07/28/06	07/28/06	\$ 1,740,055	\$ 1,690,552	\$ 1,690,552	\$ 1,690,552
CUW37403 - San Antonio Backup Pipeline	06/29/12	06/30/16	06/30/16	06/30/16	\$ 7,677,000	\$ 53,594,683	\$ 53,594,683	\$ 53,594,683
CUW38101 - SVWIP Expansion & Treated Water Reservoir	07/09/13	10/31/14	10/31/14	10/31/14	\$ 133,108,002	\$ 129,593,674	\$ 129,593,674	\$ 129,593,674
CUW38601 - San Antonio Pump Station Upgrade	12/12/11	06/29/12	06/29/12	06/29/12	\$ 41,854,000	\$ 12,894,592	\$ 12,894,592	\$ 12,894,592
Bay Division Region								
CUW35301 - BDPL Nos. 3 & 4 Crossover/Isolation Valves	09/30/08	07/31/09	07/31/09	07/31/09	\$ 27,600,158	\$ 27,039,149	\$ 27,039,149	\$ 27,039,149
CUW35302 - Seismic Upgrade of BDPL Nos. 3 & 4	10/15/12	07/30/18	07/30/18	07/30/18	\$ 66,792,849	\$ 73,623,296	\$ 73,623,296	\$ 70,556,621
CUW36301 - SCADA System - Phase II	02/24/12	05/28/13	05/28/13	05/28/13	\$ 36,098,999	\$ 9,470,922	\$ 9,470,922	\$ 9,470,923
CUW36801 - BDPL Reliability Upgrade / Tunnel	01/31/14	08/30/16	08/30/16	08/30/16	\$ 572,022,634	\$ 272,364,089	\$ 272,364,089	\$ 271,823,525
CUW36802 - BDPL Reliability Upgrade - Pipeline	-	03/31/16	03/31/16	03/31/16	-	\$ 216,871,156	\$ 216,871,156	\$ 216,722,172
CUW36803 - BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2	-	05/28/10	05/28/10	05/28/10	-	\$ 3,046,981	\$ 3,046,981	\$ 3,046,981
CUW38001 - BDPL Nos. 3 & 4 Crossovers	04/24/13	06/30/14	06/30/14	06/30/14	\$ 36,616,911	\$ 29,910,449	\$ 29,910,449	\$ 29,910,449
CUW38901 - SFPUC/EBMUD Intertie	02/07/07	03/20/14	03/20/14	03/20/14	\$ 8,598,851	\$ 9,167,306	\$ 9,167,306	\$ 9,167,306
CUW39301 - BDPL No. 4 Condition Assessment PCCP Sections	05/01/08	02/06/09	02/06/09	02/06/09	\$ 2,000,000	\$ 1,937,599	\$ 1,937,599	\$ 1,937,599
Peninsula Region								
CUW35401 - Lower Crystal Springs Dam Improvements	08/16/11	12/28/12	12/28/12	12/28/12	\$ 27,752,222	\$ 34,859,040	\$ 34,859,040	\$ 34,859,040
CUW35601 - New Crystal Springs Bypass Tunnel	10/28/10	08/17/12	08/17/12	08/17/12	\$ 83,222,790	\$ 81,466,732	\$ 81,466,732	\$ 81,466,732
CUW35701 - Adit Leak Repair - Crystal Springs/Calaveras	07/03/08	07/31/08	07/31/08	07/31/08	\$ 3,748,452	\$ 2,787,322	\$ 2,787,322	\$ 2,787,322
CUW36101 - Pulgas Balancing - Inlet/Outlet Work	05/11/06	05/11/06	05/11/06	05/11/06	\$ 1,667,532	\$ 1,765,938	\$ 1,765,938	\$ 1,765,938

Project Title	2005 Baseline Project Completion	2020 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2020 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
Peninsula Region								
CUW36102 - Pulgas Balancing - Discharge Channel Modifications	08/05/13	07/30/10	07/30/10	07/30/10	\$ 8,111,422	\$ 2,910,007	\$ 2,910,007	\$ 2,910,007
CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement	01/29/13	12/28/12	12/28/12	12/28/12	\$ 36,712,846	\$ 20,238,716	\$ 20,238,716	\$ 20,238,716
CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility	-	03/20/13	03/20/13	03/20/13	-	\$ 5,390,031	\$ 5,390,031	\$ 5,390,031
CUW36501 - Cross Connection Controls	05/15/09	04/30/09	04/30/09	04/30/09	\$ 6,111,779	\$ 3,948,944	\$ 3,948,944	\$ 3,948,944
CUW36601 - HTWTP Short-Term Improvements (Demo Filters)	07/03/06	11/14/06	11/14/06	11/14/06	\$ 4,381,375	\$ 3,067,903	\$ 3,067,903	\$ 3,067,903
CUW36603 - HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters	09/08/10	07/28/10	07/28/10	07/28/10	\$ 9,741,617	\$ 18,604,937	\$ 18,604,937	\$ 18,604,937
CUW36701 - HTWTP Long-Term Improvements	04/08/14	12/30/16	12/30/16	12/30/16	\$ 167,570,000	\$ 274,081,969	\$ 274,081,969	\$ 273,833,162
CUW36702 - Peninsula Pipelines Seismic Upgrade	-	07/06/16	07/06/16	07/06/16	-	\$ 38,825,346	\$ 38,825,346	\$ 38,773,912
CUW36901 - Capuchino Valve Lot Improvements	07/24/09	08/19/08	08/19/08	08/19/08	\$ 3,573,782	\$ 2,803,153	\$ 2,803,153	\$ 2,803,153
CUW37101 - Crystal Springs/San Andreas Transmission Upgrade	04/01/14	06/30/15	06/30/15	06/30/15	\$ 148,582,655	\$ 190,309,453	\$ 190,309,453	\$ 189,816,066
CUW37801 - Crystal Springs Pipeline No. 2 Replacement	04/27/12	12/31/14	12/31/14	12/31/14	\$ 93,926,000	\$ 56,070,509	\$ 56,070,509	\$ 56,070,509
CUW37901 - San Andreas Pipeline No. 3 Installation	06/09/11	08/30/12	08/30/12	08/30/12	\$ 42,029,941	\$ 27,495,558	\$ 27,495,558	\$ 27,495,558
CUW39101 - Baden and San Pedro Valve Lots Improvements	10/12/11	03/29/13	03/29/13	03/29/13	\$ 47,319,999	\$ 24,990,803	\$ 24,990,803	\$ 24,990,803
San Francisco Regional Region								
CUW35801 - Sunset Reservoir - North Basin	05/06/09	09/10/10	09/10/10	09/10/10	\$ 61,975,999	\$ 64,270,725	\$ 64,270,725	\$ 64,270,725
CUW37201 - University Mound Reservoir - North Basin	03/10/11	03/29/13	03/29/13	03/29/13	\$ 102,882,610	\$ 43,266,552	\$ 43,266,552	\$ 43,266,552
Support Projects								
CUW36302 - System Security Upgrades	-	09/28/18	09/28/18	04/09/19	-	\$ 15,201,310	\$ 15,201,310	\$ 14,444,954
CUW38801 - Programmatic EIR	06/20/07	06/30/09	06/30/09	06/30/09	\$ 9,271,001	\$ 10,730,684	\$ 10,730,684	\$ 10,730,684
CUW38803 - Vegetation Restoration of WSIP Construction Sites	-	06/30/16	06/30/16	06/30/16	-	\$ 2,111,546	\$ 2,111,546	\$ 2,099,755
TOTAL					\$ 2,640,070,249	\$ 2,531,645,931	\$ 2,531,645,931	\$ 2,525,823,383

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APPENDICES

- A. PROJECT DESCRIPTIONS**
- B. WSIP BUDGET AND EXPENDITURES HISTOGRAM**
- C. WSIP REGIONAL PROGRAM STAFFING PLAN**
- D. WSIP APPROVED PROJECT-LEVEL SCHEDULE**
- E. PROJECTS WITHIN BUDGET AND SCHEDULE**
- F. LIST OF ACRONYMS**

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APPENDIX A. PROJECT DESCRIPTIONS

SAN JOAQUIN REGION

CUW36401 - Lawrence Livermore Water Quality Improvement (Completed)

The project consists of:

- Ultraviolet (UV) disinfection, including two 150-gallon-per-minute, parallel UV units and ancillary facilities. The units will be installed in the existing Thomas Shaft building.
- Two pumps that will pump water from the Coastal Range Tunnel to the new disinfection system.

CUW37301 - San Joaquin Pipeline System (Completed)

The project consists of:

- Pipeline crossover facilities at Emery Road (including 10 valves) and Pelican Road (including 12 valves).
- Installation of a portion of new pipeline, the Western Segment, from the San Joaquin River to the Tesla Portal. The pipeline will be 78-inches in diameter, approximately 10.3 miles in length and will include tunneled crossings of several highways, a railroad, and an irrigation canal. The pipeline will cross over the top of the California Aqueduct.
- Installation of a portion of new pipeline, the Eastern Segment, from the Oakdale Portal to a new connection point approximately 6.7 miles downstream on SJPL No. 3. This segment will also be 78-inches in diameter.
- Installation of valve facilities on SJPL Nos. 3 and 4 along the Eastern Segment to provide for operational needs to divide and isolate segments of these lines for maintenance and to regulate flow and control pressure in the system.
- Security related site improvements at Oakdale Portal.

CUW37302 - Rehabilitation of Existing San Joaquin Pipelines (Completed)

The project scope is to assure that existing San Joaquin Pipelines will meet Delivery Reliability LOS goals by establishing a program of routine maintenance, repair, and replacement activities for long-term implementation and by addressing

the highest priority rehabilitation measures identified during the timeframe of the WSIP:

- Rehabilitation of and security-related site improvements at the existing Roselle Crossover.
- Establishment of a program of pipelines conditions assessment, including upgrading and renewal as required, of pipe coating and lining systems.
- Upgrade of the existing SJPL cathodic protection system.
- Upgrade of the existing SJPL Supervisory Control and Data Acquisition (SCADA) system.

CUW38401 - Tesla Treatment Facility (Completed)

The project consists of:

- Isolation valves and piping to divert SJPL flow to the new treatment facility, large-diameter piping and valves located within the treatment facilities, and a single discharge pipeline to tie back into the existing SJPLs.
- A disinfection building housing 12 UV reactors, cleaning equipment, and ancillary equipment.
- A chemical storage and feed facility for sodium hypochlorite, hydrofluorsilicic acid (i.e., fluoride), and carbon dioxide.
- Office, laboratory, and control facilities, emergency engine generators, and security related site and access road improvements.

CUW38701 - Tesla Portal Disinfection Station

The Tesla Portal Disinfection Facility is located where the San Joaquin Pipelines (SJPLs) converge into the Coast Range Tunnel and provides primary disinfection of the Hetch Hetchy water supply. The facility is one of the key water quality monitoring and compliance locations for the San Francisco Public Utilities Commission (SFPUC). The Tesla Portal Disinfection Station Project includes the planning of a new disinfection facility that will provide reliable disinfection to the Hetch Hetchy water supply.

This project has been combined with the "CUW38401 - Tesla Treatment Facility Project"; therefore, the respective budgets for the Environmental, Design, Bid & Award, Construction, Construction Management, and Close-out Phases have been transferred to the "CUW38401 - Tesla Treatment Facility Project".

Note that this project has been terminated and the remaining scope & budget has been combined with the "CUW38401 - Tesla Treatment Facility" project.

CUWSJI0101- WSIP Closeout - San Joaquin

• **Supplemental Solar Panel Installations** – The CUW37301 San Joaquin Pipeline System, including the western segment, eastern segment and facilities, and crossover pipeline projects, achieved final completion in 2013, 2014 and 2015, respectively. During the initial course of operations it was noted the solar panel arrays designed to provide power for the facility equipment were not sufficient to meet all modes of operational demands. This sub-project will re-evaluate the existing photo-voltaic systems and will provide additional solar panels, if needed, to cover power shortfalls and allow the facility to better meet its water delivery reliability LOS goal. This sub-project consists of three sites: Oakdale, Knight Ferry Throttling Station, and San Joaquin Junction No. 4. The scope of work includes:

- o Re-evaluation of the existing photo-voltaic systems at these three (3) locations before proceeding with modifications to the existing arrays,
- o If determined necessary to meet current power demands, furnish and install new supplemental solar arrays mounted on concrete pads within security fence enclosures,
- o Connection to and integration of the new solar panels into the existing power system and controls, and
- o Installation of batteries for solar power storage on-site.

• **Tesla Portal Facility Interior Floor Slab** – The Tesla Portal Facility, a sub-project of the CUW38401 Tesla Treatment Facility, was completed in January 2015. During construction, the concrete interior floor slab was deleted from the project construction documents to allow easier access to repair corrosion of the existing pipelines discovered during construction beneath the new Tesla Portal Facility. Due to drainage issues at the site, the Operations staff at the facility requested the interior slab be incorporated into the structure with a small access opening for future maintenance and corrosion repairs of the existing buried pipelines. This sub-project will be

constructed through use of a job order contract including:

- o A new interior concrete slab slope to drain to a new catch basin,
- o A new catch basin with grating and sump, and
- o A small sump pump and drain through the slab or existing concrete wall to a discharge point.

SUNOL VALLEY REGION

CUW35201 - Alameda Creek Recapture Project

The planned facilities for this project are based on Alternative 4-1 from the Updated Alternatives Analysis Report (AAR) dated January 30, 2009, with some refinements described below. The planned facilities include the following components: four identical vertical turbine pumps mounted on floating barges located in existing Pond F2 (including a mooring system); four flexible discharge pipelines extending from each pump to a new pipe manifold located on shore; approximately 100-feet of 36-inch pipeline connection between the new pipe manifold and the existing Sunol Pipeline to discharge the recaptured water to the SFPUC system; throttling valves and a flow meter; electrical control building; 1,600 feet of power lines from the existing Hetch Hetchy Water & Power Calaveras Electrical Substation installed on 10 new power poles; and general site improvements. In addition, the scope includes conveyance of the water to various existing storage sites within the Sunol Valley or the Sunol Valley Water Treatment Plant, as necessary. Some minor refinements were made in the March 2016 Notice of Changes to eliminate on-shore booster pumps in favor of a single set of pumps located on barges in Pond F2 and the elimination of the flexibility to allow multiple sources of water from Pond F2 and Calaveras Reservoir to be blended and sent to San Antonio Reservoir (SAR) in the future.

CUW35501 - Standby Power Facilities - Various Locations (Completed)

The project consists of installing standby electrical power facilities at six sites in the East Bay and on the Peninsula. Each site is either provided with an emergency generator or electrical receptacles to accommodate a portable emergency generator.

The five sites are: Alameda West Portal, and San Antonio Reservoir & Dam; Harry Tracy Water Treatment Plant; Millbrae Yard; San Pedro Valve Lot; and Capuchino Valve Lot.

CUW35901 - New Irvington Tunnel (Completed)

This project consists of an 18,660-foot long tunnel in a horseshoe shape with excavated dimensions of approximately 13 feet by 14 feet. The final tunnel lining will be mortar-lined, welded steel pipe, resulting in a finished diameter of 8.5 feet. Extra thick steel liner segments will also be used at low cover areas near the portals and beneath Interstate 680 where the tunnel intersects inactive fault zones, and where the tunnel passes through areas of poor ground conditions.

Major project elements include:

- Conventional mining methods are being used in a westward direction from the Alameda West Portal, in both an eastward and westward direction from an intermediate shaft located near Vargas Road just off Interstate 680, and in an eastward direction from Irvington Portal. Tunneling is being completed by multiple road header tunneling machines and limited, controlled detonation in areas of hard rock. Spoils disposal is being taken to fill sites just north of the San Antonio Pump Station (SAPS) near the intersection of Calaveras Road and Interstate 680. When completed the spoils fills will create a visual barrier to a new quarry operation located near Calaveras Road. Potentially contaminated spoils will be screened, separated, and, if found to contain contaminants, hauled to a permitted landfill.

- At the Irvington Portal, the tunnel connections to Bay Division Pipelines (BDPL) will include control valves directly buried with instrumentation and electrical gear in a small control building. At the Alameda West Portal, the tunnel will be connected to the discharge of the new mixing manifold to be constructed as part of the Alameda Siphons # 4 Project and to the existing overflow shaft. The project includes a new isolation valve between the mixing manifold and the portal.

- The NIT Project will include construction of a new access bridge across Alameda Creek to accommodate temporary construction traffic and

on-going SFPUC Alameda West Portal operations.

- A Groundwater Management Program has been developed that includes two years of pre-construction monitoring of wells, springs, creeks, ponds, and wetlands; environmental habitat construction mitigation measures; and two years of monitoring after construction to minimize the impact to the local groundwater.

- At both the existing Irvington and Alameda West Portal facilities, other security-related site improvements will be constructed, including undergrounding of portal structures and new card access controlled gates and security fences.

CUW35902 - Alameda Siphon #4 (Completed)

This project consists of a 66-inch diameter welded steel pipeline; a 96-inch diameter "blending structure" near the Alameda West Portal that will blend SVWTP and Hetch Hetchy water; new isolation/throttling valves on Alameda Siphons Nos. 3 and 4; new isolation valves on Alameda Siphons Nos. 1 and 2; ventilation improvements at Alameda East Portal; new chemical injection facilities on Siphon No. 4; relocation and extension of the overflow pipe; and road improvements at the intersection with Calaveras Road.

CUW37001 - Pipeline Repair & Readiness Improvements (Completed)

The project consists of three phases for implementation: Phase A (completed) involves the procurement of varied lengths and sizes of welded steel pipe and fitting for stockpiling at seven locations west of the Coast Range Tunnel; Phase B (completed) includes procurement and installation of a pipe rolling facility at the Sunol Yard; Phase C (completed) involves the development of a pipeline repair prioritization plan as well as on-call emergency repair procedures, contracts, and mutual assistance agreements.

CUW37401 - Calaveras Dam Replacement

Project elements primarily include:

- Constructing a new 210-foot high earth and rock fill dam designed to accommodate a maximum credible earthquake on the Calaveras

Fault. The dam will be constructed immediately downstream of the existing dam and will have a crest length of 1,210 feet, a base thickness of 1,180 feet, and a crest thickness of 80 feet. The total volume of the dam will be approximately 2.8 million cubic yards.

- The materials for construction will primarily originate from onsite sources, while surplus excavated material will be placed at disposal sites around the rim of the Calaveras Reservoir, including two in-water disposal sites and several upland disposal sites.

- The existing spillway will be removed, and a new spillway and stilling basin will be constructed. The overflow weir of the new spillway will be 307 feet long. The spillway will vary from 60 to 80 feet wide and will be 1,100 feet long. The stilling basin below the spillway will be 80 feet wide and 155 feet long.

- A new intake tower and shaft will be constructed. The drain line and three adits from the existing facility will be connected to the new shaft. The existing outlet conduit from the tower will be extended 1,250 feet downstream (beneath the replacement dam) and will be equipped with a high capacity fixed-cone discharge valve (relocated from the existing facility) to accommodate water releases from the reservoir. Fish screens will be added to the existing adits of the intake tower.

- The existing dam will largely remain in place. The downstream face will, however, be partially removed and re-graded, and a channel will be excavated through the dam to form the approach to the new spillway.

- A new 525-foot long fish ladder and flow bifurcation systems at Alameda Creek Diversion Dam (ACDD) will be used in conjunction with new low-flow capacity valves to be added at the base of the replacement Calaveras Dam to provide flows downstream of these facilities to support native aquatic resources and future populations of steelhead trout that are being restored to the Alameda Creek Watershed.

- The fish ladder and a total of four new fish protection screens will be added on the right abutment (looking downstream) of the ACDD. In addition, conveyance pipes will be installed to allow water from Alameda Creek to be delivered

to the Calaveras Reservoir via the Alameda Creek Diversion Tunnel (ACDT).

- Landslide A removal beneath the northern half of the left abutment slope located on the left side of the valley (when looking downstream) as well as other associated changes as previously noted in the March 2013 Notice of Change.

- Landslide B removal within the lower left abutment slope as well as other associated change.

- Additional slope reinforcement in Borrow Area B and import of offsite rockfill to supplement rockfill mined from Borrow Area B to mitigate schedule impacts.

- Repairs to a portion of Calaveras Road where a landslide occurred due to unusually wet weather in February 2017.

- Repairs to the West Haul Road which was inundated by the reservoir elevation rise due to unusually wet weather in February 2017.

- For the ACDD fish ladder, to address potential landslide hazard and further protect the fish passage structure, an extension to the contract landslide stabilization wall and an additional reinforced concrete panel wall with tie-backs to reinforce a section of the soil nail wall.

CUW37402 - Calaveras Reservoir Upgrades (Completed)

The project consists of a new hypolimnetic oxygenation system and cryogenic equipment installed near the dam to help maintain reservoir water quality.

CUW37403 - San Antonio Backup Pipeline (Completed)

The SABPL consists of 6,600 feet of 66-inch-diameter steel pipe and extends from the Alameda Siphons at the SAPS to Sunol quarry, SMP-24, near the intersection of Calaveras Road and San Antonio Creek. There are three tie-in facilities with air gap provisions from the SABPL: one connecting to Alameda Siphon No. 3, a second to the SAPL near SAPS, and a third to the SAPL on the west side of Calaveras Road before the SAPL alignment turns and heads west to quarry SMP-24. The alignment of the SABPL parallels that of the existing SAPL, terminating with a control valve and concrete energy

dissipation structure in quarry SMP-24. The project includes new chemical storage, feed, and water-quality-monitoring facilities for de-chlorination and pH adjustment of any discharges through the SABPL, the existing SAPL, and the Alameda East Portal overflow pipe. Water discharged into the SMP-24 quarry pond will be recovered with two submersible pumps and a short section of 24-inch diameter steel pipe which will connect to the existing SAPL to convey water to San Antonio Reservoir. Power to the water recovery pumps will be supplied from the nearby Calaveras Substation, which is owned and operated by Hetch Hetchy Water & Power. Construction of a slurry wall around the quarry pond to minimize groundwater intrusion and to ensure slope stability is also included.

CUW38101 - SVWTP Expansion & Treated Water Reservoir (Completed)

The project consists of a plant expansion which will increase the sustainable capacity to 160 mgd by adding a new flocculation/sedimentation basin, by retrofitting some of the existing filters, by adding a new 17.5-million gallon (MG) circular treated water reservoir (TWR) with a new 3.5-MG rectangular chlorine contact tank on the northern portion of the existing plant site, by adding new chemical storage and feed facilities for disinfection, and by construction of approximately 2,700 feet of 78-in pipe to connect the new TWR to the existing plant.

CUW38102 - SVWTP Calaveras Road

The project consists of safety related improvements to Calaveras Road near the SVWTP access road. The project was deleted because it does not contribute to the WSIP Level of Service goals. This project deletion was approved by the Commission in February of 2008.

CUW38201 - SVWTP Treated Water Reservoir

The project consists of providing improvements to the SVWTP disinfection facilities, including new chemical feed equipment and a 5 MG chlorine contact tank. Additionally, two 8.75 MG balancing reservoirs are planned. These improvements were determined in response to a DOHS requirement.

NOTE THAT THIS PROJECT WAS TERMINATED AND THE REMAINING SCOPE & BUDGET WAS COMBINED WITH PROJECT "CUW38101 - SVWTP EXPANSION & TREATED WATER RESERVOIR."

CUW38601 - San Antonio Pump Station Upgrade (Completed)

The project consisted of:

- Replacement of three 1,000-horsepower electrical pumps.
- Addition of two 1.5-megawatt emergency generators. The generators are sized to power the three electric pumps.
- Seismic retrofit of the pump station, including reinforcement of the walls, foundation improvements, and connection of the roof to the walls.

CUWSVI0101- WSIP Closeout - Sunol Valley

• **AS4 Carrier Water System Modifications** - The CUW35902 Alameda Siphon No. 4 Project was completed in 2013. Since that time, new facilities being brought on-line as well as other changes occurring in water operations have resulted in an apparent drop in water pressure and volume at the Sunol Valley Chloramination Facility. This has reduced the available water needed for the current system to pump the necessary water treatment chemicals into the system. This new sub-project is designed to resolve the deficiency and allow the facility to meet its water delivery reliability LOS goal. This sub-project will be constructed by a job order contract including:

- o Modifications of the current chemical injection system to overcome lack of water system pressure and volume,
- o New supplemental water facilities, including possible new storage tanks, and monitoring and regulating equipment as needed, and
- o Plumbing and control connections between the new facilities and the current system.

• **Erosion Repair at Pond F3 East** - The recently completed CUW37403 San Antonio Backup Pipeline Project included drainage improvements on the east side bank of Quarry Pond F3 East. After completion of construction, it was noted that the rock riprap below a 12-inch drainage pipe had eroded away and undermined the

downstream section of the pipe. This sub-project will repair the erosion with new rockfill and restore the drainage pipe including;

- o Grading to remove loose bank debris and prepare the subgrade slope to receive the riprap,
- o Extension of the existing drain pipe downslope to the water line of the pond,
- o Installation of new rockfill on the east bank of the quarry pond from the current drain pipe to the toe of the bank, and
- o Temporary access improvements at the side bank of the pond for a crane and other equipment to deliver and place rock riprap and other materials into the repair area.

• **Sunol Valley Water Treatment Plant Polymer Feed Facility.** The Sunol Valley Water Treatment Plant Expansion and Treated Water Reservoir Project was completed in 2014 and included addition of a new fifth flocculation sedimentation basin (Basin 5) to the existing four (4) basins at the plant. During operations after completion, it was noted that Basin 5 was not able to achieve the optimal water production goal of 40 million gallons per day consistently. This sub-project was originally scoped to change the flocculation aid composition for Basin 5. The March 2018 scope refinement is to build a polymer feed facility that will serve not only Basin 5, but also the four (4) older basins (Basins 1 to 4), to optimize plant water production, and allow this facility to better meet its water quality and delivery reliability LOS goals. The portion of the facility cost attributed to Basin 5 will be funded under the WSIP; the portion of the facility cost attributed to Basins 1 to 4 will be funded under the Water 10-Year Capital Improvement Program. This sub-project will be constructed by a bid contract including:

- o Addition of new flocculant aid polymer to optimize water production from the four older basins and the new Basin 5
- o Water testing to develop a range of polymer doses for the range of different water quality expected at the plant
- o Construction of new structures and facilities to store, monitor and control the application of the new polymer

• **Miscellaneous Work at AWP, IVP and SABPL.** The CUW35901 New Irvington Tunnel (NIT) was completed in 2017, and the CUW37403 San

Antonio Backup Pipeline (SABPL) was completed in 2016. This subproject will include the following work:

- o Installation of new security doors at Alameda West Portal (AWP) and Irvington Portal (IVP)
- o Installation of new couplings between the valve stem and actuator for the cathodic protection at AWP and IVP
- o Refurbishment of uninterruptible power supply (UPS) and installation of new enclosures for the UPS at AWP and IVP
- o Installation of discharge pipe lateral supports, safety railings, ladder stiffening supports, and sunshades for electrical equipment on SABPL

• **NIT Water Quality Equipment Relocation.** The CUW35901 New Irvington Tunnel (NIT) project installed new water quality monitoring equipment in an underground vault to monitor water quality on Irvington Portal 2 (IP2). After the equipment was installed, problems were noted that related to safe access and water drainage. This sub-project is to relocate the water quality monitoring equipment to Building B10 for Irvington Portal 1 (IP1), and install a new pump to pump water from Irvington Tunnel 2 (IT2) to Irvington Tunnel 1 (IT1) to provide IT2 water for the water quality monitoring.

• **San Antonio Backup Pipeline Carrier Water System Modifications.** The CUW37403 San Antonio Back Pipeline was completed in 2016. Since that time, changes in operations have resulted in an apparent drop in water pressure in the carrier water system for two (2) chemicals including Calcium Thiosulfate for dechlorination and Hydrofluorosilicic acid for pH adjustment. The purpose of this sub-project is to modify the carrier water and chemical injection system to ensure the chemicals will be injected properly.

BAY DIVISION REGION

CUW35301 - BDPL Nos. 3 & 4 Crossover/ Isolation Valves (Completed)

This project is 100 percent complete and has been closed out. The project consists of:

- Two large vaults that are primarily below-ground installations with only the top 30 inches of the structure exposed. Above-ground facilities include security fencing and satellite

communication dishes. The vaults are approximately 2,400 feet apart along the BDPL Nos. 3 and 4.

- Each vault includes four mainline isolation valves and a crossover valve. The isolation valves are hydraulically operated, while the crossover valves are electrically operated.
- The existing BDPL No. 3 is a 78-inch-diameter reinforced concrete pipe, and BDPL No. 4 is a 96-inch-diameter PCCP. At each vault, approximately 170 feet of each pipeline will be replaced with welded steel pipe.
- Each facility will be equipped with connections for portable electric generators, and a battery system will provide immediate emergency power to operate the hydraulic system.
- Valve actuators will have remote monitoring and operating capability through the SFPUC SCADA system.

CUW35302 - Seismic Upgrade of BDPL Nos. 3 & 4 (Completed)

The project primarily consists of:

BDPL No. 3:

- A new 300-foot-long concrete vault will be constructed under Mission Boulevard near the I-680 Interchange where Fault Trace B is located. A new 300-foot segment of 72-inch welded steel BDPL No. 3 will be installed inside the vault. Within the vault and on either end of the fault trace zone, 72-inch-diameter ball joints and slip joints will be installed that will accommodate pipeline displacement during a seismic event.
- For the crossing under I-680 at Trace A, about 400 feet of 78-inch-diameter welded steel pipe will be installed in an existing, unused corrugated metal pipe.
- About 1,450 feet of additional new 78-inch diameter welded steel pipe will connect the existing and new segments between the two vaults, and will be buried.

BDPL No. 4:

- About 400 feet of new 80-inch steel liner will be installed inside BDPL No. 4 at Hayward Fault Trace C.
- BDPL No. 4 will be encased with concrete outside the existing slip joint vault at Hayward Fault Trace B.
- Modifications to the existing slip joint vault will

be made including enlarging BDPL No. 4 pipe penetrations in the vault, new drainage systems, new roof panels, and adjustments to the existing slip joint.

- Modifications to the existing BDPL No. 3 (to be abandoned in place) to collect and divert water from the area and prevent the undermining of the new BDPL No. 3.
- About 400 feet of new 90-inch diameter welded steel pipe will be installed at Trace A of the Hayward Fault.
- Relocation of the following utilities: two Alameda County Water District water pipelines, one Union Sanitary District sewer pipeline, one conduit of AT&T phone lines, and one six-inch diameter PG&E gas pipeline.

CUW36301 - SCADA System - Phase II (Completed)

The project primarily consists of:

- Establish a common software platform and migrate all elements to this platform.
- Connect existing flow meters and new pressure transmitters, and provide communication to SCADA master station at five major Bay Area Water Supply and Conservation Agency (BAWSCA) customer sites.
- Install pressure transmitters, perform piping modifications, and provide communication to SCADA master station at seven existing regulating valves in the City of San Francisco distribution system.
- Install new flow and pressure monitoring devices at 23 key locations in the City distribution system.

CUW36801 - BDPL Reliability Upgrade - Tunnel (Completed)

- The tunnel extends 5 miles under San Francisco Bay and is adjacent to the marshlands between the vicinity of the Ravenswood Valve Lot and the Newark Valve Lot. The tunnel will be constructed with a Tunnel Boring Machine (TBM). The final tunnel lining will consist of a 9-foot diameter welded steel pipeline. The tunnel will terminate on each end with vertical shafts and a connection to the BDPL Nos. 1, 2, and 5 piping manifolds. The two piping manifolds are provided under the BDPL Reliability Upgrade - Pipeline Project. The

tunnel spoils are anticipated to be used as part of the conversion of adjacent salt ponds to marshland. The portion of the existing BDPL Nos. 1 and 2 that are replaced by the tunnel will be capped on each end and will be abandoned in place.

- Two facilities are proposed to be added to the original scope of work and are necessary to ensure the project will meet LOS goals:

1) SCADA Communications system at Newark Valve Lot

This added scope provides for the installation of a SCADA communications system and integrating such system into the existing water quality monitoring equipment located in the Newark Valve Lot Control Building. The work consists of installing communications equipment, telephone line, wires, conduits, and electrical cabinets.

2) 42-inch diameter Bay Division Pipeline No. 2 (BDPL2) Bypass

The supply from the Newark Valve Lot to the City of Hayward is currently being fed from both Bay Division Pipelines (BDPL) No. 1 and No. 2. Upon the completion of the Bay Tunnel Project, Hayward supply will be fed only by BDPL2. BDPL2, built in the mid-1930s, is a mixture of reinforced concrete cylinder pipe and wrought steel pipe. Thus, with the current scope of the Bay Tunnel project, the reliability of the Hayward service line could be reduced when the project is completed.

The scope of work for this change will provide for the installation of 640 linear feet of new 42-inch diameter welded steel pipe, replacing a portion of BDPL2, thereby increasing the reliability of the Hayward service.

CUW36802 - BDPL Reliability Upgrade - Pipeline (Completed)

The project primarily consists of:

- In the East Bay, 7 miles of 72-inch-diameter pipe will be constructed between the Irvington Portal and the Newark Portal of the new Bay Tunnel. On the Peninsula, 9 miles of 60-inch diameter pipe will be constructed between the Ravenswood Portal of the new Bay Tunnel and the portal of the Pulgas Tunnel.

- A seismically resistant crossing of the Hayward Fault will be constructed. The crossing will

include a new crossover valve vault on each side of the fault. The valves will be hydraulically actuated and will include emergency batteries. The pipe between the vaults will be higher strength and will be installed on a special foundation or trench section.

- Isolation valves and an interconnecting pipe manifold will be constructed at each portal of the new Bay Tunnel. The facilities will include new or rehabilitated control buildings with new emergency generators.

- New crossover valves between BDPL Nos. 2 and 5 will be installed at a location in Redwood City. The crossover facility will include a new or rehabilitated control building and connections for a portable emergency generator.

- A new throttling valve will also be added on BDPL No. 5 at the Pulgas Valve Lot. The throttling valve will include a new or rehabilitated control building.

- The project originally included underground concrete vaults for crossover facilities at Newark, Ravenswood, and Redwood City Valve Lots. The current project eliminates the concrete vaults and directly buries the valves with full access to valve actuators at these facilities.

CUW36803 - BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2 (Completed)

This project is 100 percent complete and has been closed out. The project includes relocation of approximately 600 feet of each pipeline (BDPL Nos. 1 and 2) at the BART/railroad crossings. The pipe segments to be relocated will be installed inside new casings that will be placed by the construction contractor doing the other development work in the area. The encased pipes are being installed in accordance with a utility agreement between the City of Fremont and the SFPUC.

CUW38001 - BDPL Nos. 3 & 4 Crossovers (Completed)

The three proposed crossover facilities are located near the Guadalupe River in Santa Clara, near Barron Creek in Palo Alto, and near Bear Gulch in Atherton. The facilities include vaults that are largely below-ground, with only the top 30 inches exposed. They are very similar to one another,

consisting of four mainline valves and a crossover valve. Emergency engine generators will be included as an optional bid item.

CUW38901 - SFPUC/EBMUD Intertie (Completed)

The project primarily consists of:

- Providing new 36-inch-diameter piping and valving at the Newark Turnout to provide an additional connection between BDPL Nos. 1 and 2 to the existing City of Hayward system.
- Using the existing City of Hayward system for conveyance and providing six new valves for isolation.
- Providing 1.3 miles of new 36-inch-diameter pipe to connect the City of Hayward system to the EBMUD system and providing a new pump station along this alignment.

CUW39301 - BDPL No. 4 Condition Assessment PCCP Sections (Completed)

- This project is 100 percent complete and has been closed out. This project includes a detailed condition assessment of the two PCCP segments along BDPL No. 4. The first reach of concern (Reach 1) is 8.6 miles long and 96-inches in diameter. The second reach of concern (Reach 4) is 8.0 miles long and 84-inches in diameter. The condition assessment consists of an electromagnetic survey, seismic risk analysis, corrosion survey, visual inspection, and field investigations.
- The assessment identified six reaches of pipe (144 feet total out of 16 miles) that are potentially distressed. During initial investigations, the condition of one distressed pipe segment (Pipe 1558) was determined visually to be particularly deteriorated, and immediate emergency repair was recommended. The project funded and completed emergency repair using post-tension exterior tendon repair for this segment. For the other five potentially distressed pipe segments that were identified using electromagnetic survey, and determined to be of lower priority, recommendations were made for future excavation to confirm pipe condition in these areas, and repair if needed. A number of future follow-up investigations were recommended, including monitoring of groundwater acidity for a

period of one year in the area of Edgewood Road and additional excavations of lower priority pipe pieces. Any additional required repairs will be scheduled based on urgency and funded through the Water Enterprise's Repair and Replacement (R&R) Program.

CUWBDP0101- WSIP Closeout - Bay Division

- **Site Drainage and Pipe Coating Repairs** - This sub-project will focus on providing a drainage system solely within SFPUC's Right-of-Way to address an erosion issue that developed after the construction of the CUW35302 Seismic Upgrades of BDPL Nos. 3 & 4. In addition, this sub-project will include repairs to coatings on the pipe and pipe supports of the Bay Division Pipeline (BDPL) No. 3 to address issues that developed inside the articulated vault after construction was completed. The sub-project includes design, construction, and management of the drainage system work.

- **Bay Tunnel Warranty Inspection and BDPL 1 & 2 EIR Mitigation** - This sub-project advances the planning for a decommissioning study of the existing BDPL Nos. 1 and 2 until such time that the funding for a new Water 10-Year Capital Improvement Project (CIP) to further study mitigation alternatives and pursue removal of the BDPL Nos. 1 and 2 within the Don Edwards San Francisco Bay National Wildlife Refuge becomes available in FY2020-21.

- **Hydro-seeding at Bay Tunnel Project** - The scope of this sub-project provides for monitoring of hydro-seeded areas, removal of noxious weeds, and potentially re-seeding some of the areas at the tunnel portals in Menlo Park and Newark if the storm water performance objectives are not met.

- **Newark Valve Lot Additional Gravel Placement** - The Bay Tunnel Project design plans call for a portion of the Newark Valve Lot to be landscaped and hydro-seeded. However, Operations staff requested that gravel be placed in this area since it will be a high traffic area during shutdowns and other maintenance work. Accordingly, this sub-project provides for the purchase and placement of the gravel.

- **Corrosion Protection for Valve E50U** - The E50U Valve was installed in 2011 as part of the CUW36802 BDPL Reliability Upgrade - Pipeline

Project. Immediately prior to the Bay Tunnel Project in-service/commissioning date in early Fall 2015, the Bay Tunnel Contractor completed the flanged connection of the manifold to the existing E50U Valve. However, during the installation and testing of the new flanged connection, the Bay Tunnel Contractor discovered an inconsistency in the corrosion protection isolation system of the existing valve E50U (high corrosion potential). It was decided to not authorize a Change Order to fix the corrosion problem of the E50U Valve at that time due to the risk of high cost delays to the Bay Tunnel Project, if leaks were to occur after the solution was implemented. Accordingly, this sub-project includes excavating and shoring the area around the valve, and removal of one bolt at a time for testing, and replacement if necessary. A gasket will be purchased and may be installed if there are leaks that develop after the bolts are removed, cleaned, and replaced.

• **Ventilation and Sump Pump Systems Installation.** This sub-project provides improvements for inspection, monitoring and maintenance associated with the construction of the CUW35302 Seismic Upgrades of BDPL Nos. 3 and 4. The BDPL No. 3 pipe, slip joint, ball joints and pipe supports and seismic monitoring equipment inside the articulated vault require on-going inspection, monitoring and maintenance. The type and frequency of inspection and maintenance were not well defined during the design phase; it is now clear that a fixed ventilation system is required for the BDPL No. 3 vault. Furthermore, the BDPL No. 4 expansion joint vault also requires access for inspection and monitoring; installation of a sump pump is required to remove water from the vault prior to inspections. Accordingly, the scope of this sub-project is to install a fixed ventilation system and a sump pump system to eliminate the need for removing access hatches and installing temporary fans and sump pump prior to accessing the vaults for frequent inspection and maintenance needs.

PENINSULA REGION

CUW35401 - Lower Crystal Springs Dam

Improvements (Completed)

The project consists of:

- Spillway modifications that include widening the spillway, constructing two bridge piers within the spillway to accommodate rebuilding of a San Mateo County Bridge, removing the existing timber stop-log system, constructing a new weir system within the spillway, installing access cat-walks for operation and maintenance, and eliminating water ponding on top of the dam.
- Parapet wall modifications that include increasing the height of the wall that is located on top of the upstream face of the dam and increasing the height of the approach walls to the spillway.
- Stilling basin modifications at the base of the spillway that include removing the existing basin, constructing a new larger basin, and adding downstream riprap protection at the toe of the basin.

CUW35601 - New Crystal Springs Bypass Tunnel (Completed)

The project consists of:

- A 4,200-foot long tunnel with 8-foot diameter welded steel liner.
- Vertical shafts on each end of the tunnel to accommodate a tunnel boring machine and future maintenance. The southern shaft will include a connection to the existing Crystal Springs Bypass Pipeline; the northern shaft will tie into the southern ends of both Crystal Springs Pipeline No. 2 and Sunset Supply Line.
- New isolation valves and valve vaults.
- Standby power near valve vault G40.

CUW35701 - Adit Leak Repair - Crystal Springs/Calaveras (Completed)

The project consists of :

- Crystal Springs Outlet Tower No. 1: repairing leaks inside the tower, blasting and recoating piping and valves, replacing roof, structurally retrofitting the access footbridge, and installing a marine hatch at the tower drain.
- Crystal Springs Outlet Tower No. 2: installing a marine hatch at the tower drain.
- Calaveras Outlet Tower: installing a dewatering pump, replacing a deteriorated valve actuator, and providing ladder fall protection.

- San Antonio Outlet Tower: installing a dewatering pump and repairing leaks inside the tower.

CUW36101 - Pulgas Balancing - Inlet/Outlet Work (Completed)

The project consists of new inlet and outlet piping designed to direct the path of the water in such a manner as to promote better mixing. The shutdowns associated with construction of these improvements provided an opportunity to perform a condition assessment of the reservoir interior that has been used to help identify work associated with CUW36103 - Pulgas Balancing Reservoir - Structural Rehabilitation and Roof Replacement project. This project was successfully completed in May 2006.

CUW36102 - Pulgas Balancing - Discharge Channel Modifications (Completed)

The project consists of raising the channel walls, repairing concrete cracks and exposed reinforcing steel, strengthening and interconnecting the channel floor sections, and strengthening the wall near the Pulgas Tunnel as needed. The project will restore the Discharge Channel capacity for accommodating flow up to 250 mgd.

CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement (Completed)

The project consists of the seismic retrofit of the walls, installation of a new steel frame roof, and repair of concrete cracks and exposed reinforcing steel. The project scope also includes installing a new ventilation system and sampling ports, replacing utility piping, and upgrading the electrical system.

CUW36104 - Pulgas Balancing - Laguna Creek Sedimentation (Completed)

This project consists of the execution of the Laguna Creek Habitat Management and Revegetation Plan. This is a mitigation measure for the Non-WSIP Pulgas Dechlorination Facility Project, which involves the restoration of the Laguna Creek Sedimentation Basin, a 6-8 acre catchment basin that provides habitat for the San Francisco Garter Snake and the California Red Legged Frog. In coordination with regulatory

agencies, a strategy was developed to accomplish this habitat restoration, and to have it measured under the Habitat Reserve Program (HRP). This project was closed in December 2007 and combined with Project CUW38802-Habitat Reserve Program (HRP).

CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility (Completed)

The project consists of various improvements to the dechloramination and pH control facilities that are necessary to address immediate compliance issues. Anticipated improvements include modifications to the flow measurement and control systems, and to the various process control and chemical feed systems.

CUW36501 - Cross Connection Controls (Completed)

The project consists of providing improvements at 304 different sites to address potential cross connections. The work varies from site to site due to specific site conditions. The major work elements typically include: Install air gaps at blow-off locations and at air valves; install backflow prevention devices; reconstruct or raise existing vaults; install new vault covers; replace existing air valves; and/or modify, relocate, or remove existing blow-off facilities.

CUW36601 - HTWTP Short-Term Improvements (Demo Filters) (Completed)

The project consists of retrofitting two filters and performing full-scale performance demonstration testing of the retrofitted filters. The project was successfully completed in November 2006.

CUW36602 - HTWTP Short-Term Improvements - Remaining Filters (Completed)

This project consists of filtration modification to eight of the ten existing filters, replacement of effluent control valves and backwash supply valves, provision for a filter to waste system, installation of new underdrains and media, and seismic retrofit of basin walls. Combined with CUW36603 - HTWTP Short-term Improvements - Coagulation & Flocculation project.

CUW36603 - HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters (Completed)

The project consists of improvements to both the coagulation and flocculation systems. The coagulation improvements include restoring and improving operation of the pumped-jet flash-mix system, increasing capacity of the flash-mix pumps, providing the pumps with variable speed controls to improve efficiency, providing an automated dilution water system, and reconfiguring the chemical injectors to improve performance. Flocculation improvements include reconfiguring the baffling system, adding new mechanical mixers with variable speed controls, and seismically retrofitting the walkways and basin walls.

CUW36701 - HTWTP Long-Term Improvements (Completed)

The project consists of seismic and hydraulic improvements in various treatment units and expansion of the filtration process capacity by the addition of five new filters. In addition, a new 11 million gallon Treated Water Reservoir will be built to replace the two existing treated water reservoirs. The project also includes improvements to the sludge handling and washwater systems and provides a new additional washwater tank to enhance the plant's performance. Additional improvements are also planned for the electrical system, including a new substation, switchgear, and motor control center. The project also includes improvement to key valves and pipelines conveying the raw water supply to the Plant and treated water to the distribution system.

CUW36702 - Peninsula Pipelines Seismic Upgrade (Completed)

The scope of this project includes geotechnical investigations to characterize the Serra Fault in the vicinity of the pipelines and to confirm assumptions about sub-surface conditions along the length of the pipelines (SAPL2 and SAPL3 from HTWTP to San Pedro Valve Lot, SSBPL from HTWTP to Capuchino Valve Lot, and Sunset Supply Pipeline (SSPL) from Capuchino Valve Lot to San Pedro Valve Lot). In addition,

hydraulic modeling has been performed to review system/facility requirements to meet system goals. The objectives of the investigations were: 1) to determine the potential fault offset at the Serra Fault crossings and the potential response from the three pipelines to these offsets, and 2) to determine potential for pipeline rupture due to displacement from liquefaction, landslides, and other seismically-triggered hazards along the pipeline alignments. The extensive geotechnical and modeling analyses performed to date have been carefully reviewed to identify specific project recommendations.

The refined project scope (Phase 1) currently includes the following components at five locations on the San Francisco Peninsula:

- Colma Site - Replacement of an approximately 700-ft segment of SAPL2
- South San Francisco Site - Replacement of an approximately 720-ft segment of SAPL2
- San Bruno North Site - Stabilization of SAPL2 where it extends through a tunnel
- San Bruno South Site - Replacement of an approximately 1,170-ft segment of SAPL2 and an approximately 1,050-ft segment of SAPL3; and
- Millbrae Site - Replacement of an approximately 900-ft segment of SSBPL

A common staging area is planned to be located at SFPUC Baden Valve Lot in South San Francisco on El Camino Real.

Phase 2 of the project will include installation of two new isolation valves near the Baden Valve Lot on SAPL No. 2 and No. 3 in the City of South San Francisco. The WSIP construction contract will include both Phases 1 and 2.

Phase 3 has been identified as a non-WSIP project, and includes condition assessment and improvements to SAPL2, installation of new isolation valves, and the potential addition of flexible connections along the alignment within the City of San Francisco.

CUW36901 - Capuchino Valve Lot Improvements (Completed)

The project consists of replacing two existing isolation valves, providing new electric actuators for valve operation, performing concrete crack repair to prevent water leakage into the vault, providing new instrumentation and control

systems for valve operation and pressure monitoring, and relocating the existing electrical and instrumentation systems outside the vault.

CUW37101 - Crystal Springs/San Andreas Transmission Upgrade (Completed)

The project consists of improvements to facilities necessary to transport water from Upper Crystal Springs Reservoir, through the lower Crystal Springs Reservoir to San Andreas Reservoir, and ultimately, to the Harry Tracy Water Treatment Plant (HTWTP) Raw Water Pump Station. Specifically, improvements will be made to the Upper Crystal Springs Dam discharge culverts, the Lower Crystal Springs outlet structures, the Crystal Springs Pump Station (CSPS), the Crystal Springs/San Andreas Pipeline, and the San Andreas outlet structures.

CUW37801 - Crystal Springs Pipeline No. 2 Replacement (Completed)

The project consists of:

- Seismic reliability improvements, which include replacing or relocating a total of 1.7 miles of pipe at 12 locations, sliplining 3.5 miles of pipe, retrofitting pipe bridge pier supports at two creek crossings, providing a new connection at the Crystal Springs Pump Station, and providing a connecting segment with a blind flange for later connection to the New Crystal Springs Bypass Tunnel.
- Facility improvements, which include installing fences and enclosures for exposed facilities, and concealing exposed portions of pipe.
- Upgrading the cathodic protection system along the length of the pipeline.

CUW37901 - San Andreas Pipeline No. 3 Installation (Completed)

The project consists of installation of 4.4 miles of 36-inch-diameter pipe from San Pedro Valve Lot in Daly City to Merced Manor Reservoir in San Francisco. There will be three jack and bore crossings along 19th Avenue and John Daly Boulevard. Work will also include installation of five customer service connections, a new cathodic protection system along the length of the new pipeline, three interconnections to the San Andreas Pipeline No.2, various valves, and a flow

meter.

CUW39101 - Baden and San Pedro Valve Lots Improvements (Completed)

This project consists of upgrades to valve vaults, valves, and piping in the Baden Valve Lot and the San Pedro Valve Lot. It also includes the installation of a pressure reducing valve and associated system valving to allow transfer of a portion of the flow from the HTWTP high-pressure zone to the low-pressure zone during emergencies.

CUWPWI0101- WSIP Closeout - Peninsula

• LCSD Stilling Basin Modifications & Dissipation Structure Riprap

- This sub-project is provided in response to concerns that fish may be "trapped" in the Lower Crystal Springs Dam (LCSD) stilling basin during low flow summer periods, and that high flow discharges from the new LCSD dissipation structure and potential high water levels in Pool 2 may cause erosion of the bank adjacent to the dissipation structure. The dissipation structure includes 60-inch diameter pipes with a maximum flow of 600 cubic feet per second (cfs) each and two 8-inch diameter pipes with maximum flow of 7 cfs each. During flow testing of the dissipation structure, released water could be observed flowing over the dissipation structure, potentially eroding the bank adjacent to the structure. It was also observed that during summer periods, of low flow in the channel downstream of the stilling basin, fish trapped in the basin were dying due to warm water temperatures. The purposes of this sub-project are to hydraulically connect the stilling basin with Pool 2 in order to allow fish to escape the basin in summer, and to add rip-rap behind the dissipation structure to prevent erosion. Specifically, this sub-project consists of:

- o A new deeper channel between the dissipation structure and the Pool 2, which would prevent fish from being trapped in the stilling basin,
- o Installation of a new SCADA controls to the existing 8-in discharge pipeline and re-routing one line to the stilling basin,
- o Installation of additional rip-rap around the dissipation structure,
- o Installation of a new 24-inch HDPE pipeline

through an existing abandoned 60-inch pipe directed to the stilling basin

- o Coordination and facilitation of access for a piezometer drilling contractor during periods of concurrent work in the stilling basin

- o Deletion of landscaping around the new Crystal Springs Pump Station

- o Addition of tree, shrub and grass plantings along the creek bank in accordance with the approved re-vegetation plan

- **LCSD Valve H53/ Pipeline Investigation & Fisheries Release Valve** - As stipulated by the US Army Corps of Engineers 404 permit and the associated biological opinion by NOAA's National Marine Fisheries Service (NMFS) covering the SFPUC activities at the Crystal Springs Pump Station (CSPS), the SFPUC is to take measures to protect the threatened Central California Coast (CCC) steelhead present in San Mateo Creek at CSPS site. One measure requires the release of fresh water at a rate of 3 to 17 cubic feet per second (cfs) depending on the season in recorded dry and wet years. This sub-project will utilize modification of an existing pipeline to release the required flows to the LCSD stilling basin feeding San Mateo Creek. Specifically, this sub-project consists of:

- o Condition assessment of the existing 60-in diameter pipeline from Valve H-53 to the stilling basin. In addition, valve H-53 will be exposed and visually inspected to determine its condition, requiring excavation and shoring of a pit approximately 20 feet long by 20 feet wide by 20 feet deep.

- o Depending on the verified condition, viable alternatives, including abandonment of the option to use H-53 pipeline, will be evaluated.

- o The approved option will include a SCADA controlled 12-inch valve installed at the discharge end of the pipeline. Depending on the condition of the pipeline, the approved option may also include repairs to the pipeline lining. Options may also include slip-lining the existing line with a smaller diameter pipeline such as 12 to 24-in diameter flexible polypropylene pipe.

- o Use of a temporary pipeline "line stop" and associated shoring upstream of Valve H-53 to allow for potential installation of a permanent blind flange.

- o Replacement of leaking plug valves that discharge from an existing concrete vault to the stilling basin with new knife gate valves.

- o Installation of new flow control valves, isolation valves and appurtenances for Pool 2.

- o Connections to the existing 72-inch pipeline using hot taps.

- o Construction of a new concrete walkway from the access road to the existing stairs at the flow dissipation structure adjacent to the stilling basin.

- **New Crystal Springs Bypass Tunnel Electrical Modifications** - The New Crystal Springs Bypass Tunnel (CUW35601) was commissioned in July 2011, and the project administratively closed in August 2012. Various inspections of the above ground facilities discovered excessive groundwater intrusion and resultant corrosion of equipment and electrical components. This sub-project will develop a thorough documentation of the above ground facilities at the north and south shafts, and design and implement repairs as warranted. Possible repairs may include replacement of damaged equipment and electrical components, water proofing of the affected vaults, and rechanneling of surface runoff as necessary. Preliminary inspections identified the following in the South Shaft: groundwater seepage into the venturi meter and valve G32 vaults through pipe/conduit wall penetrations, resulting in coating failure and localized corrosion. In the North Shaft, preliminary investigations identified surface runoff is entering electrical boxes. In addition, groundwater is seeping through wall penetrations into G36 and G38 vaults. Due to the high moisture, some electrical switches and two actuators failed and required replacement. This sub-project developed a thorough documentation of the above ground facilities at the north and south shafts and designed and implemented repairs as warranted. Repairs included replacement of damaged equipment and electrical components, water proofing of the affected vaults, and rechanneling of surface runoff as necessary. This subproject is 100% complete and has been closed out.

- **Closeout of DSOD Permit Applications for LCSDI and CSSA Projects** - California Department of Water Resources, Division of

Safety of Dams (DSOD) issued Alteration Permits allowing the start of construction of CUW35401, Lower Crystal Springs Dam Improvements (LCSDI) Project (Application No. 10-6) and the construction of CUW37101, Crystal Springs / San Andreas Transmission Upgrade (CSSA) Project (Application No.10-10). In June 2015, DSOD issued an approval of the completed work and requested the SFPUC to submit the final documentation of each project. Under this sub-project, the following information and documents will be extracted from the project files and submitted in a format acceptable to DSOD: affidavit of actual costs of construction and design; full size as-built drawings stamped and signed by a California registered Civil Engineer; and final concrete testing summary reports.

- **Coordination with San Mateo County Bridge Construction over LCSI** - The implementation of the CUW35401 Lower Crystal Springs Dam Improvement (LCSDI) Project required the demolition of an existing San Mateo County (SMC) Bridge that spanned over the LCSD crest. With the completion of the LCSDI Project, SMC awarded the construction contract for the new bridge and gave notice-to-proceed to the construction contractor in January 2016. To support this, SMC and the SFPUC executed a Memorandum of Understanding outlining the roles and responsibilities and expectations of both organizations. Accordingly, this sub-project will support the coordination between the SFPUC and SMC Bridge Project team. Typical activities may include response to relevant Requests for Information (RFI) such as existing site conditions, existing dam design, coordination with SFPUC Operations and Watershed groups; field inspection of placement of the bridge piers over the dam and the construction of the SFPUC funded catwalk; attendance at construction meetings; and activities concerning the water quality in Lower Crystal Springs Reservoir, security measures, and other aspects of SFPUC assets.

- **Harry Tracy Water Treatment Plant (HTWTP) Improvements.** The Harry Tracy Long-Term Improvements Project (CUW36701) was completed in 2014. Since 2014, the following needs were identified to address construction

issues and improve operations at the plant to fully meet the LOS goals and objectives:

- o Automate the 12-inch gate valve at the High Rate Clarifiers' filter to waste manhole to eliminate the need for Operations to manually operate the valve on a frequent basis
- o Modify Sludge Tank No. 1 piping to eliminate cavitation in the washwater pumps
- o Upgrade the filters of three (3) emergency generators from passive filters to active filters to increase the effectiveness of the exhaust filtration and to reduce the need for Operations to constantly clean the filters
- o Repair leaks in the filter gallery channels where stainless steel angle plates were added to support several concrete walls
- o Automate flushing of the sludge transfer pumps and piping to eliminate the need for Operations to manually flush on a frequent basis
- o Replace and relocate failed variable frequency drives (VFDs) for the wash water and sludge transfer pumps to address an over-heating issue
- o Install double containment for the diesel fuel supply lines for the exterior generator to protect against leaks into the environment
- o Provide training and programming modifications to the Raw Water Pump Station switchgear equipment to enable remote SCADA control
- o Install vibration control monitoring system on the electrical panels at the Raw Water Pump Station to replace the existing obsolete system
- o Evaluate/Assess condition of failed mixers in the equalization basin

- **Crystal Springs/San Andreas Pipeline (CSSA) Erosion Repairs.** The heavy winter storms of 2017 exacerbated erosion at two (2) watershed culvert locations, OW-13 and OW-18, along the CSSA Pipeline. Erosion has caused the CSSA Pipeline to be exposed and potentially undermined. The scope of this sub-project is to repair the erosion with systems consistent with the requirements of permitting agencies such as the State Water Resources Control Board.

SAN FRANCISCO REGIONAL REGION

CUW30103 - Regional Groundwater Storage and Recovery

The goal of the project is to provide up to 7.2 million gallons per day (mgd) of dry year water supply over 7.5 years. The original project design included the construction of up to 16 groundwater wells and well stations in the South Westside Basin to be connected to three wholesale customers on the Upper Peninsula and the SFPUC transmission system to achieve the water supply goal. Phase 1 included the installation of 13 well stations to produce approximately 6.2 mgd, and the original scope of Phase 2 included construction of 2 to 3 additional well stations, based upon well yield. Due to difficulties with siting well stations in the central portion of the groundwater basin, Phase 2 has been modified to install up to 3 test wells (Ludeman North, Ludeman South and Centennial Trail), complete the South San Francisco Main well and pipeline, and complete other Phase 1 scope items, including chemical system monitoring, sampling and storage at various sites. The Phase 2 test wells will not be converted to production wells at this time, but will allow for determination as to whether the identified sites could be viable future production wells, and will provide valuable information related to water quality and potential pumping capacities that can be used for future planning and decision making.

CUW35801 - Sunset Reservoir - North Basin (Completed)

This project consists of:

- Seismic rehabilitation, which includes stabilization of the soil dam embankment; a retrofit of the walls and roof using seismic joints, shear walls, diagonal bracing, and struts; and foundation improvements.
- General rehabilitation, which includes repairing deteriorated concrete, replacing part of the reservoir lining material, replacing inlet piping, installing security fencing, upgrading the landscaping, and other miscellaneous site improvements.

CUW37201 - University Mound Reservoir - North Basin (Completed)

This project consists of:

- Seismic rehabilitation of the reservoir walls and roof using seismic joints, shear walls, diagonal

bracing, and struts and foundation improvements. A geotechnical investigation was conducted that verified that the reservoir embankments are not subject to seismically induced failure.

- General rehabilitation, which includes repairing deteriorated concrete; replacing the reservoir lining material; replacing inlet/outlet, drain, and overflow piping; replacing outlet and drain valves; and performing landscaping and other miscellaneous site improvements.

SUPPORT PROJECTS

CUW36302 - System Security Upgrades

The purpose of this project is to develop and integrate security components at critical water system facilities including those identified in previous vulnerability assessments and to ensure that security functions such as deterrence, detection, assessment, delay, and response will be effective. As part of this project, SFPUC Security has evaluated all WSIP projects. The project includes the identification of all necessary security components including security fencing, intrusion detection, and vehicle barriers for applicable WSIP projects. The project provides for the necessary planning and design of these facilities, while the individual WSIP projects will fund the installation and construction of civil security work such as conduit lay out, fencing, and gate installation. This project will fund the furnishing and installation of Access Control and Alarm Monitoring System (ACAMS) and Digital Video Surveillance System (DVSS) equipment, and necessary security systems.

CUW38801 - Programmatic EIR (Completed)

A Program Environmental Impact Report (PEIR) has been prepared for the WSIP under the California Environmental Quality Act (CEQA). The WSIP includes a number of projects that will improve the Regional Water System with respect to water quality, seismic reliability, delivery reliability, and water supply. The PEIR will (1) identify and analyze, at a programmatic level, the potential environmental impacts of proposed system improvements, (2) describe and evaluate feasible alternatives to the proposed program,

and (3) propose mitigation measures.

CUW38802 - Bioregional Habitat Restoration

The Bioregional Habitat Restoration project was created to provide a coordinated and consolidated approach to compensate for habitat impacts that may result from implementation of the WSIP projects in the San Joaquin, Sunol Valley, Bay Division, and Peninsula Regions of the SFPUC Regional Water System. The previously approved scope of the Bioregional Habitat Restoration project included projects to preserve, enhance, restore, or create approximately 2,350 acres of tidal marsh, vernal pools, white alder riparian forest, sycamore alluvial woodland, arroyo willow riparian habitat, oak woodland and savannah, sage scrub habitat, serpentine grasslands, coastal live oak woodland, annual grasslands, and oak riparian forest.

The project includes design, environmental permitting, construction, construction management, maintenance and performance monitoring during a 3-year plant establishment period.

The wide variety of the types of impacts from WSIP projects resulted in the need for development of 18 compensation sites on SFPUC property and for contracting with 7 property owners to secure compensation on property outside the Alameda and Peninsula watersheds. There are 7 compensation sites on SFPUC property in the Alameda watershed with an average size of 250 acres, demonstrating a significant commitment to the continued protection of species habitat. Although the average size of the 11 Peninsula compensation sites is 15 acres, the projects have been strategically placed to best benefit the San Francisco garter snake and the fountain thistle. The increase in habitat compensation addresses mitigation for the fountain thistle and for changes in the Calaveras Dam Replacement Project.

Under the March 2014 Revised WSIP, some scope for the Bioregional Habitat Restoration project associated with Lower Crystal Springs Dam and long term monitoring and maintenance of the compensation sites was reduced. The remaining wetland development at Upper San Mateo Creek and Boat Ramp and most of the oak woodland

compensation for the Lower Crystal Springs Dam Improvement Project has been deferred until the operating elevation of the reservoir has increased, estimated to be around 2020. This work will be completed in the future by SFPUC Water Enterprise.

CUW38803 - Vegetation Restoration of WSIP Construction Sites (Completed)

The Vegetation Restoration of WSIP Construction Sites is a WSIP project that received Commission approval on October 9, 2012. This project is required to comply with the CEQA and resource agency permit requirements to restore and re-vegetate habitat areas temporarily impacted by construction at the various WSIP sites to preconstruction condition.

CUW38804 - Long Term Mitigation Endowment

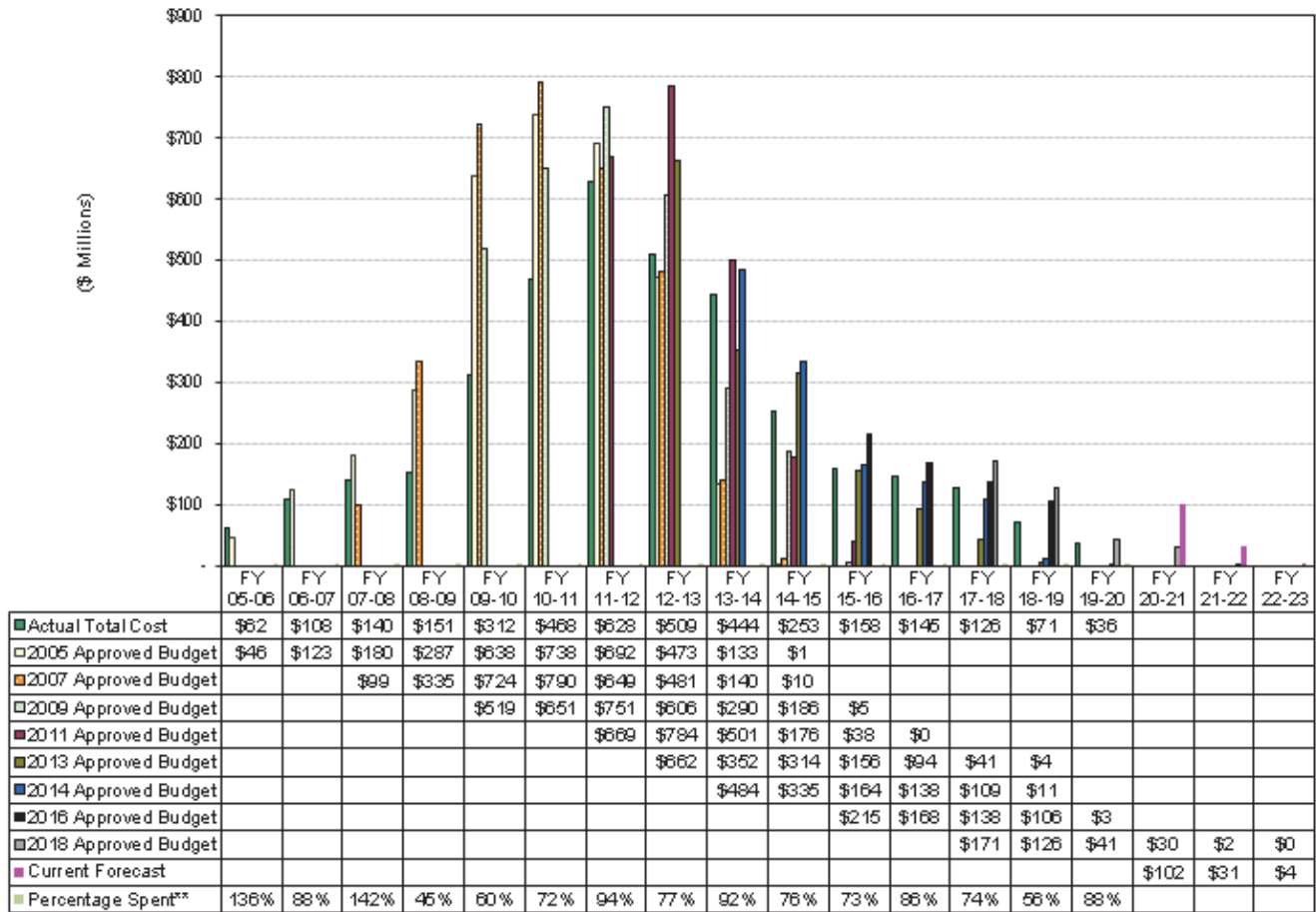
The scope of work and budget for this Long Term Mitigation Endowment was previously included and reported within the WSIP Regional project CUW38802 Bioregional Habitat Restoration; however, the office of the City Controller has established a separate project, specific for this endowment fund, in project CUW38804 Long Term Mitigation Endowment. This perpetual endowment fund, was required by the United States Army Corps of Engineers and California Department of Fish and Wildlife permits issued for WSIP projects. It provides a secure source of funds for the perpetual monitoring and maintenance of the Bioregional Habitat Restoration sites constructed in the SFPUC watershed.

CUW39401 - Watershed and Environmental Improvement Program

The Watershed and Environmental Improvement Program (WEIP) includes the comprehensive identification and protection of critical watershed lands and ecosystem restoration needs within the hydrologic boundaries of the Alameda Creek, Peninsula (San Mateo and Pilarcitos Creeks) and Tuolumne River watersheds, and prioritizes the protection and/or restoration of these lands. Projects under this program will protect source water quality, native species, and their habitat as well as identifying critical watershed lands for

protection through purchase of fee title or perpetual conservation easement. The program also supports projects that enhance public awareness and provide education opportunities related to water quality, water supply, conservation, and environmental stewardship. Consistent with the SFPUC Water Enterprise Environmental Stewardship Policy, a portion of the funding under the WEIP will be allocated to support projects that enhance public awareness and provide education opportunities related to water quality, water supply, conservation, and environmental stewardship issues. Accordingly, construction of the Southern Skyline Boulevard Ridge Trail Extension will be funded using a portion of the WEIP funds.

APPENDIX B. BUDGET AND EXPENDITURE HISTOGRAM*



All costs are shown in \$ Millions.

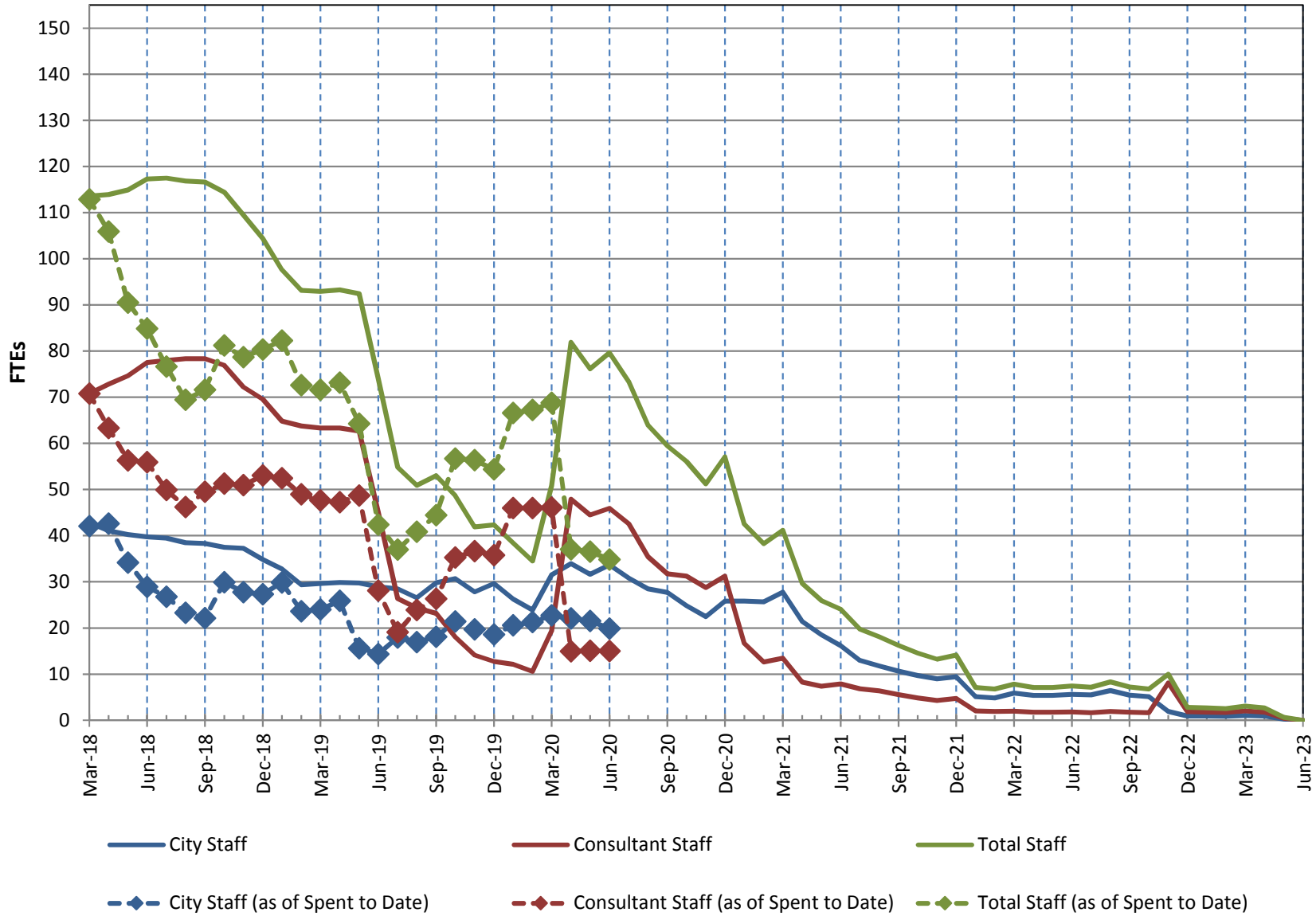
* The histogram does not reflect budget and expenditures prior to FY 2005-2006.

** Percentage Spent calculated as Actual Expenditures over the most current Approved Budget for each individual Fiscal Year.

Figure B: Annual Budgeted Spending Plans vs. Actual Expenditures

Figure B compares the spending plans associated with the various WSIP Approved Budgets to Actual Expenditures. It shows total annual expenditures from FY05-06 through Q4/FY19-20 and cost projections (Current Forecast) from FY20-21 through program completion currently forecast for May 2023. Actual annual expenditures have ranged from 45% to 142% of planned expenditures

Appendix C. WSIP Regional Program Staffing Plan









APPENDIX E. PROJECTS WITHIN BUDGET AND SCHEDULE

CUWSJI0101 - WSIP Closeout - San Joaquin

Project Description: This project includes miscellaneous improvements to ensure the WSIP Level of Service (LOS) goals and objectives are fully achieved in the San Joaquin Region. The work will be completed by means of two sub-projects: (1) re-evaluation of existing photo-voltaic systems and potential addition of new solar panels to supplement existing solar panels for existing onsite equipment operations at San Joaquin No.4 Junction, at the Throttling Station at Knight’s Ferry, and at Oakdale Portal, eliminating the need for propane generators at these sites; and (2) the installation of an interior concrete slab and drainage improvements at Tesla Portal as the original slab was deleted during the portal construction to allow access for repairs of existing corroded pipelines beneath the slab.

Region: San Joaquin	Project Status: Construction	Environmental Status: Not Applicable
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Project Cost:		Project Schedule:	
Approved 	\$4.38 M	Approved Jun-16 	Mar-21
Forecast* 	\$3.88 M	Forecast* Jun-16 	Mar-21
Actual 	\$0.79 M	Project Percent Complete: 42.9%	
			

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	N/A	N/A	Various	Various

Progress and Status:

The Contractor has placed orders for the batteries for the three sites, and they will all arrive in mid-August. Contractor will mobilize in the next reporting period to start the installation work.

Issues and Challenges:

None at this time.









Oakdale Valve House No. 4 Solar Facilities

CUW37401 - Calaveras Dam Replacement

Project Description: The main construction project at Calaveras Reservoir provides for construction of a new 210-foot-high earth and rock fill dam, spillway, stilling basin, and intake tower and shaft to replace the existing facilities. A fish ladder will be added on the right abutment (looking downstream) of the Alameda Creek Diversion Dam (ACDD), a dam which acts to divert water through the Alameda Creek Diversion Tunnel (ACDT) to Calaveras Reservoir.

Region: Sunol Valley	Project Status: Construction	Environmental Status: Completed (EIR)
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Project Cost:		Project Schedule:	
Approved	 \$823.09 M	Approved Sep-02	 Mar-21
Forecast*	 \$812.62 M	Forecast* Sep-02	 Mar-21
Actual	 \$780.41 M	Project Percent Complete: 99.9%	
			

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction+ NTP	Construction+ Final Completion
Current Forecast	01/27/11✓	(A) 01/31/11✓ (B) 01/04/16✓	(A) 08/15/11✓ (B) 04/19/16✓	(A) 07/12/19✓ (B) 12/31/20

+ Project includes multiple construction contracts.

(A) Calaveras Dam Replacement (WD-2551); (B) Alameda Creek Diversion Dam (WD-2729)

Progress and Status:

WD-2551 CDRP: R&S contractor (JOC 77-04) started to address a few minor outstanding items. The project team continues to perform dam monitoring inspections. Given that there was no heavy rainfall during this reporting period, the reservoir didn't reach the appropriate level to perform Initial Fill Plan inspections.

WD-2729 ACDD: The project team continued to plan for repair of the debris rake and rack, that will occur in the next reporting period, and for the remaining wet testing, that will only occur when there is sufficient flow in the creek. R&S, the contractor on JOC 77-02 continued to work on a few minor outstanding items that could not be completed as part of the WD-2729 contract.

Issues and Challenges:







None at this time.



CDRP Aerial View

CUWSVI0101 - WSIP Closeout - Sunol Valley

Project Description: The project includes miscellaneous improvements to ensure WSIP Level of Service (LOS) goals and objectives are fully achieved in the Sunol Valley Region. The work will be completed by means of six sub-projects: (1) JOC-60-14 - AS4 Carrier Water System Modifications will modify the chemical injection system of the Alameda Siphons No.4 Pipeline to overcome lack of water system volume and pressure needed to inject water treatment chemicals; (2) JOC-59-20 - Erosion Repairs at Pond F3 East will repair the existing outfall pipe erosion at Quarry Pond F3 East with new rockfill and restore the drain pipe. The outfall drainage system was originally installed as part of the San Antonio Backup Pipeline; (3) Sunol Valley Water Treatment Plant (SVWTP) Polymer Feed Facility will build a polymer feed facility that will serve all five sedimentation basins to optimize plant water production (only the portion of the facility cost attributable to basin No. 5 will be funded under the WSIP); (4) JOC-54-02 - Miscellaneous Work at Alameda West Portal (AWP), Irvington Portal (IVP), and San Antonio Backup Pipeline (SABPL) will install security doors at AWP, provide cathodic protection at IVP, refurbish uninterruptable power supply (UPS) at AWP and IVP, and install discharge pipe lateral supports, safety railings, ladder stiffening supports, and sunshades for electrical equipment at SABPL; (5) JOC-60-20 - NIT Water Quality Equipment Relocation will relocate water quality monitoring equipment from an underground vault to a dedicated building together with a pump to the building to provide the water for water quality monitoring; (6) JOC-60-23 - San Antonio Backup Pipeline Carrier Water System Modifications will modify the carrier water and chemical injection systems to ensure proper chemical injection.

Region: Sunol Valley	Project Status: Construction	Environmental Status: Active (Various)		
Project Cost:		Project Schedule:		
Approved 	\$5.99 M	Approved Jul-16 	Jun-21	
Forecast* 	\$5.99 M	Forecast* Jul-16 	Jun-21	
Actual 	\$3.40 M	Project Percent Complete: 78.3%		
				
Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	Various	Various	Various	Various

Progress and Status:

Subprojects (1) JOC-60-14 and (4) JOC-54-02 were completed in previous quarters.

Subproject (2) JOC-59-20 Pond F3 East Erosion Repair, is a subproject to WD-2855, Turner Dam Spillway Erosion Repair project (a non-WSIP project). Sukut Construction achieved final construction completion of WD-2855 on January 24. Subproject Completion was achieved at the end of the quarter, on June 30.

Subproject (3) SVWTP Polymer Feed Facility - Contractor (CalState) completed all the Mobile Pilot Plant (MPP) work under JOC 60-27 during the reporting period. The MPP was turned over to Water Supply & Treatment (WSTD) and Water Quality Division (WQD) to plan for the pilot testing work. The start date for the pilot testing will be confirmed in the next reporting quarter. The design for the Polymer Feed Facility continued. Subproject Completion 6/30/21.

Subproject (5) JOC-60-20 - All the closeout documents were completed last quarter.

Subproject (6) JOC-60-23 - There is a delay in the issuance of the Supplemental Task Order (STO) due to the new fiscal year blackout period. A Supplemental Task Order will be issued in the next quarter, and the contractor (CalState) will return to complete the remaining miscellaneous items. FC is anticipated on 12/31/20. Subproject Completion is anticipated on 6/30/21.







Issues and Challenges:

None at this time.

CUWBDP0101 - WSIP Closeout - Bay Division

Project Description: This project includes miscellaneous improvements to ensure the WSIP Level of Service (LOS) goals and objectives are fully achieved in the Bay Division Region. The work will be completed by means of six sub-projects, including: (1) providing a drainage system to address erosion issues that developed after Seismic Upgrades to Bay Division Pipeline Nos. 1 and 2 was constructed; (2) planning for a decommissioning study of the existing BDPL Nos. 1 and 2 pending funding for removal of the portion within the Don Edwards San Francisco Bay Wildlife Refuge and other mitigation measures; (3) monitoring of hydro-seeded areas at the Bay Tunnel Project; (4) placement of gravel at the Newark Valve Lot; (5) uncovering of previously installed valve E50U to provide for removal, cleaning, and re-installation of bolts for corrosion protection purposes; and (6) installation of a ventilation and sump pump system to improve conditions for inspection and monitoring of the pipe, slip, ball joints, and pipe supports inside the articulated vaults of Bay Division Pipeline Nos. 3 and 4.

Region: Bay Division	Project Status: Construction	Environmental Status: Not Applicable
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Project Cost:		Project Schedule:	
Approved	 \$4.40 M	Approved Jul-16	 Dec-20
Forecast*	 \$3.80 M	Forecast* Jul-16	 Dec-20
Actual	 \$2.58 M	Project Percent Complete: 100.0%	
			

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	N/A	N/A	Various	Various

Progress and Status:

Subprojects: (3) completed on 4/24/17, (4) completed on 7/29/16, (5) completed on 10/20/2017, and (6) completed on 9/30/2019;

(1) BDPL 3&4 Site Drainage and Pipe Coating Repairs - Critical equipment items such as hillman rollers arrived during this reporting period. JOC contractor Power Engineering completed the installation of the hillman rollers and the coating of the pipe. V-ditch work will be started in the next quarter.

(2) BDPL 1&2 EIR Mitigation - During this reporting period, the Project team completed the Conceptual Engineering Report (CER) and presented the report to the Technical Steering Committee. This concludes the planning phase of the project and the entire scope required to be completed under the WSIP. The start of the design phase will be re-evaluated in the WECIP FY23-32. Subproject Completion was reached on June 30, 2020.

Issues and Challenges:







None at this time.



Ventilation and Sump Pump Project

CUWPWI0101 - WSIP Closeout - Peninsula

Project Description: This project consists of miscellaneous improvements to ensure the WSIP Level of Service (LOS) goals and objectives are fully achieved in the Peninsula Region. The work will be completed by means of seven sub-projects: (1) the Lower Crystal Springs Dam (LCSD) stilling basin modifications and dissipation structure riprap; (2) valve modifications to accommodate stipulated releases of fresh water into San Mateo Creek for fish passage at the same site; (3) New Crystal Springs Bypass Tunnel electrical modifications due to groundwater intrusion into vaults housing it; (4) closeout of California Division of Safety of Dams permit applications; (5) coordination with San Mateo County for bridge construction over LCSD; (6) Harry Tracy Water Treatment Plant Improvements in automating operations to aid reliability in meeting LOS goals; and (7) Crystal Springs/San Andreas pipeline erosion repairs.

Region: Peninsula	Project Status: Construction	Environmental Status: Not Applicable
Project Cost:		Project Schedule:
Approved  \$13.58 M	Approved Jul-16  Aug-21	
Forecast*  \$13.58 M	Forecast* Jul-16  Aug-21	
Actual  \$10.86 M	Project Percent Complete: 98.4%	
		

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	N/A	Various	Various	Various

Progress and Status:

Lower Crystal Springs Dam (LCSD): (1) WD-2822R2 - LCSD Stilling Basin Connecting Channel - The Notice to Proceed for Anvil Builders was issued on April 8, 2019, and Final Completion (FC) is anticipated on November 4, 2020. Subproject completion is 8/5/21. Construction is 90% complete. Flowmeters have been delivered to the site. Design for the pre-fabricated vault for the flowmeters has been completed. Installation of the flowmeters and the pre-fabricated vault will be performed under JOC-76R by the same JOC Contractor. This approach will prevent delay to this subproject.







(2) LCSD Bridge Replacement - joint project with San Mateo County. A few warranty issues are being addressed. (2.1) JOC 76R-01 Completed gap repair of the North Parapet Wall Extension between the LCSD north parapet wall and the new bridge abutment. Subproject Completion was 3/13/20. (2.2) To close out the Memorandum of Agreement (MOA) with San Mateo County, the Final LCSD Security Assessment report was completed on May 26, 2020. Subproject completion is June 30, 2020 (2.3) The repair of the drainage channel atop the south side of LCSD was completed last quarter. Subproject Completion was 3/13/20.

Issues and Challenges:

None at this time.

CUW39401 - Watershed and Environmental Improvement Program

Project Description: The Watershed and Environmental Improvement Program (WEIP) includes the comprehensive identification of critical watershed lands and ecosystem restoration needs within the hydrologic boundaries of the Alameda Creek, Peninsula (San Mateo and Pilarcitos Creeks), and Tuolumne River watersheds, and prioritizes the protection and/or restoration of these lands. This program will manage watershed activities and resources to protect source water quality, native species, and their habitat and to identify critical watershed lands, key ecosystem restoration needs, and restoration priorities. The program also supports projects that enhance public awareness and provide educational opportunities related to water quality, water supply, conservation, and environmental stewardship issues. Consistent with the SFPUC Water Enterprise Stewardship Policy, a portion of the WEIP funding will be used to fund construction of the Southern Skyline Boulevard Ridge Trail Extension.

Region: Support Projects	Project Status: Not Applicable	Environmental Status: Completed (CatEx)
Project Cost:		Project Schedule:
Approved  \$20.00 M	Approved Jan-07  Jan-21	
Forecast*  \$20.00 M	Forecast* Jan-07  Jan-21	
Actual  \$16.74 M	Project Percent Complete: 83.6%	
		

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	03/31/20✓	N/A	N/A	N/A

Progress and Status:

The Commission approved the purchase of a 164.5-acre parcel in the Alameda Creek watershed known as Driscoll Ranch on April 28, 2020. With the purchase of Driscoll Ranch, the SFPUC now owns a total of 38,168 acres of Alameda Creek watershed lands.

SFPUC staff continue to work with several partners (all being local governmental agencies and non-profit organizations) on the purchase of a 50,000+ acre property located in Alameda, Santa Clara, San Joaquin and Stanislaus counties. Approximately 9,800 acres of the property are within the Alameda Creek watershed and drain into Calaveras and San Antonio reservoirs. The appraisal of the property has been completed, and negotiations with the property owners are on-going.

Issues and Challenges:

Staff is working to determine how the remaining WEIP funds will be spent. The funds will either be used to help fund the Southern Skyline Boulevard Trail Extension project or to acquire property in the Alameda Creek watershed.



Alameda Creek Watershed

APPENDIX F. LIST OF ACRONYMS

AAR	Alternative Analysis Report	HHWP	Hetch Hetchy Water and Power
AC	Asphalt Concrete	HTWTP	Harry Tracy Water Treatment Plant
ACAMS	Access Control and Alarm Monitoring System	IVP	Irvington Portal
ACDD	Alameda Creek Diversion Dam	JOC	Job Order Contract
ACDT	Alameda Creek Diversion Tunnel	LCSD	Lower Crystal Springs Dam
AGM	Assistant General Manager	LCSDI	Lower Crystal Springs Dam Improvements
ARM	Active Risk Manager	LOS	Levels of Service
AWP	Alameda West Portal	MG	Million Gallons
BART	Bay Area Rapid Transit	MGD	Million Gallons per Day
BAWSCA	Bay Area Water Supply and Conservation Agency	MND	Mitigated Negative Declaration
BDPL	Bay Division Pipeline	MOA	Memorandum of Agreement
BHR	Bioregional Habitat Restoration	MOU	Memorandum of Understanding
CATEX	Categorical Exemption	MPP	Mobile Pilot Plant
CCSF	City and County of San Francisco	N/A	Not Applicable
CDD	City Distribution Division	NDA	Nondisclosure Agreement
CDRP	Calaveras Dam Replacement Project	NEG DEC	Negative Declaration (also shown as ND)
CEQA	California Environmental Quality Act	NEPA	National Environmental Policy Act
CER	Conceptual Engineering Report	NIT	New Irvington Tunnel
CIP	Capital Improvement Program	NMFS	National Marine Fisheries Service (under NOAA)
CM	Construction Management	NOAA	National Oceanic and Atmospheric Agency
CMB	Construction Management Bureau	NTP	Notice to Proceed
CMIS	Construction Management Information System	O&M	Operation and Maintenance
CO	Change Order	PCCP	Pre-stressed Concrete Cylinder Pipe
COVID-19	Coronavirus Disease 2019	PEIR	Program Environmental Impact Report
CPI	Cost Performance Index	PG&E	Pacific Gas and Electric Company
CSPS	Crystal Springs Pump Station	PLC	Programmable Logic Control
CSSA	Crystal Springs/San Andreas	PV	Photovoltaic
DB	Design, Build	RFI	Request For Information
DDW	Division of Drinking Water	ROW	Right-of-Way
DSOD	Division of Safety of Dams (State of California)	SABPL	San Antonio Backup Pipeline
DVSS	Digital Video Surveillance System	SAPL	San Antonio Pipeline
EBMUD	East Bay Municipal Utility District	SAPS	San Antonio Pump Station
EIR	Environmental Impact Report	SCADA	Supervisory Control and Data Acquisition
EIS	Environmental Impact Statement	SFPUC	San Francisco Public Utilities Commission
EV	Earned Value	SJPL	San Joaquin Pipeline
EVM	Earned Value Management	SMC	San Mateo County
FC	Final Completion	SMP	Surface Mining Permit
FEIR	Final Environmental Impact Report	SPI	Schedule Performance Index
FTE	Full-Time Equivalent		
FY	Fiscal Year		
HH	Hetch Hetchy		

WSIP Quarterly Report

SQS	Supplier Quality Surveillance
SSBPL	Sunset Supply Branch Pipeline
SSPL	Sunset Supply Pipeline
SVWTP	Sunol Valley Water Treatment Plant
TBD	To be determined
TBM	Tunnel Boring Machine
TM	Technical Memorandum
TWR	Treated Water Reservoir
UM	University Mound
UPS	Uninterruptable Power Supply
UV	Ultra Violet
VFD	Variable Frequency Drive
WECIP	Watershed Environmental Improvement Program
WEIP	Water Enterprise Capital Improvement Program
WQD	Water Quality Division
WSIP	Water System Improvement Program
WSTD	Water Supply and Treatment Division