

Water System Improvement Program
Regional Projects Quarterly Reports
Fiscal Year 2021-2022


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DATE: December 6, 2021

TO: Commissioner Anson Moran, President
 Commissioner Newsha Ajami, Vice President
 Commissioner Sophie Maxwell
 Commissioner Tim Paulson
 Commissioner Ed Harrington

FROM: Dennis J. Herrera, General Manager 

RE: WSIP Regional Projects Quarterly Report
 1st Quarter / Fiscal Year 2021-2022

Enclosed please find the Water System Improvement Program (WSIP) Regional Projects Quarterly Report for the 1st Quarter (Q1) of Fiscal Year (FY) 2021-2022. 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, 2021 through September 30, 2021.

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”.

- London N. Breed**
Mayor
- Anson Moran**
President
- Newsha Ajami**
Vice President
- Sophie Maxwell**
Commissioner
- Tim Paulson**
Commissioner
- Ed Harrington**
Commissioner
- Dennis J. Herrera**
General Manager

STATUS AND PERFORMANCE SUMMARY

OUR MISSION: To provide our customers with high-quality, efficient and reliable water, power and sewer services in a manner that values environmental and community interests and sustains the resources entrusted to our care.



Overall, WSIP regional projects are 98.9% complete as of September 30, 2021.

As of the end of the reporting period, planning, environmental, design, and construction activities are 100%, 100%, 100%, and 99% 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 September 30, 2021)

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	0	0%	\$0	0%
Bid & Award	0	0%	\$0	0%
Construction	5	10%	\$1,047	28%
Close-Out	1	2%	\$96	3%
Completed	44	85%	\$2,628	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, five (5) regional projects with a total value of \$1,047M are in construction and forty-five (45) projects with a total value of \$2,724M 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.

As of the end of the reporting period, the forecasted total program cost (regional and local projects) is \$4,787.8M, the same as the current Commission Approved Budget. As of the end of the reporting period, all approved change orders (COs) in contracts total \$442.23M, and the current remaining construction contingency is \$11.98M. Also, as of the end of the reporting period, all pending and potential COs, and trends total \$6.4M. Therefore, if all pending and proposed COs and trends become approved COs, the current forecasted remaining construction contingency is \$5.55M.

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

WSIP Closeout Projects

Steady progress was made on remaining WSIP Closeout Projects, those for the Sunol Valley and Peninsula Regions.

In the Sunol Valley Region, the WSIP-funded portion of the Polymer Feed Facility, currently in design phase, was completed and closed out during the reporting quarter; design and construction for this improvement project will continue under the Water Enterprise Capital Improvement Program. During this quarter, all the original scope for the Sunol Closeout Project was completed. However, this project will stay open and accept new remaining scope to be transferred from the Calaveras Dam Replacement Project (CDRP) to allow the CDRP to be closed out. The transferred scope includes remaining work to complete construction of the power and communications systems at Alameda Creek Diversion Dam. This work will extend the completion date of this WSIP closeout project to June 2022.

In the Peninsula Region, the closeout for the Lower Crystal Springs Dam (LCSD) Stilling Basin Connecting Channel contract is progressing. The As-Built drawings are being finalized. The construction of the LCSD Security Fence is in progress. Change order work for this contract, which consists of installation of gate, ladder, and fence grounding, remains to be implemented as of the end of the quarter. The design for the change order work has been finalized except for the fence grounding design. The Technical Memorandum for the digital video surveillance system additions has been issued, and is currently being reviewed.

UPDATE ON PROJECTS IN CONSTRUCTION

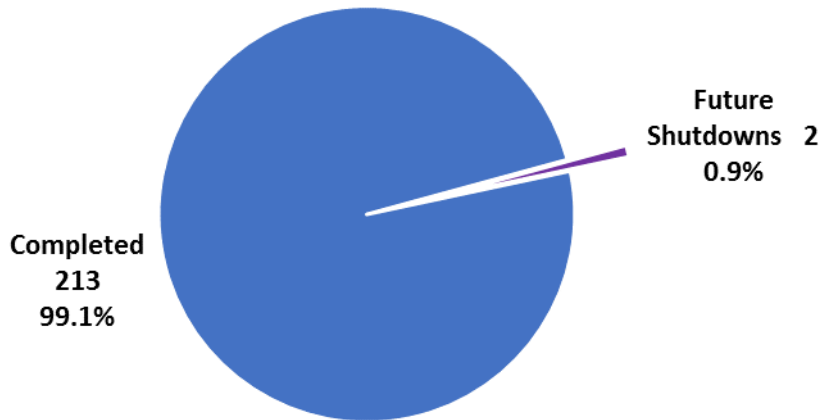
Steady progress was reported on the remaining ongoing WSIP construction activities. As of the end of September 2021, WSIP regional construction contracts (including active, completed, and future contracts) are 99.1% complete overall, a continuation of the same percentage complete as last quarter.

A review of the construction work hours recorded over the last nine (9) years shows continued ramping down of construction activities, with monthly work hours peaking at 206,400 in August 2012, compared to a total of 1,212.5 work hours recorded in September 2021. The monthly average work hours in the reporting quarter was 1,532 hours, a decrease compared to the 1,631 monthly average work hours for the same period in 2020.

As of the end of September 2021, monitored exposure hours on WSIP regional projects totaled 9.9 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 (2020) of 1.3.

To date, 213 out of 215 (99.1%) of the planned shutdowns and hot taps have been completed. Currently, there are two (2) 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.

Regional Groundwater Storage and Recovery

Overall progress on the Regional Groundwater Storage and Recovery Phase 1 construction contract (Contract B) is reported at 98% complete as of the end of this quarter. The contract percentage complete is the same as last quarter. Activities completed during this quarter included completion of the 7-week testing for the Millbrae Yard Well and the F Street (Colma BART) Trio Well and Treatment Facilities. The F Street Trio facilities consist of F Street Well, B Street Well, Colma Blvd. Well, and Colma BART treatment facilities. A temporary access permit from BART to enter onto the site of the Mission Road Well and Treatment Facility was acquired, and well rehabilitation has been completed. Installation of a partition wall to separate two different chemical systems at Poncetta Drive Treatment Facility has started. The work under the Regional Groundwater Storage and Recovery Phase 2 subproject has been separated into two contracts. Phase 2A (Contract C) consists of installation of cathodic protection, variable frequency drives, flowmeters for water accounting, and valve modifications. Phase 2B (Contract D) consists of work at SSF Main Well and pipeline installation to connect the well to Cal Water's treatment facility. The design phase for Phase 2A was completed on September 26. WD-2878A contract for Phase 2A was advertised on September 27. 100% design for Phase 2B continues to progress. Parcel maps for the utilities and structures for pipe support 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 final negotiation of change orders is taking place, and the

schedule is forecasted to be extended through the end of Q2 to allow time for the contract to close out. The replacement of solar panels and batteries for the VSAT will continue under this project until closeout, and then remaining work will be moved to the WSIP Close-Out - Sunol Valley project in Q3. Wet testing of the facilities that has been delayed due to drought conditions will be transferred to SFPUC Operations.

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 (exact 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, 2021.

The trends for the WSIP active Regional construction contracts totaled \$1.3M as of the end of the reporting period, an increase of \$0.1M during the period. This is due to three new reported trends for Alameda Creek Recapture Project (ACRP). The following table lists the trend totals for the two active projects:

WSIP Active Regional Projects Trend Totals (as of September 30, 2021)

Project	Trends (\$ Million)	Percent Completion ¹
Regional Groundwater Storage & Recovery (Contract B)	\$1.2	98%
Alameda Creek Recapture	\$0.1	2.9%

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. On that basis and as of September 30, 2021, the Alameda Creek Recapture Project had nine of the top ten program risks. The current top risk of the program belongs to the Alameda Creek Recapture Project and relates to uncertainties in

obtaining permits from the California Department of Water Resources (DWR) for protection of the South Bay Aqueduct (SBA) during construction. The one remaining risk of the top ten belongs to Regional Groundwater Storage and Recovery project.

Regional Groundwater Storage and Recovery

This project is currently reporting on thirteen (13) active trends that total \$1.2M. There are no changes in the trends from what was reported last quarter.

The largest current trend concerns the need for installation of diaphragm chemical metering pumps. The second largest trend relates to miscellaneous costs for startup testing. The third largest trend concerns miscellaneous plumbing changes. Other high value trends include potential costs for: installation of PG&E power for the Lake Merced Golf Club Well, revisions to programming for the Programmable Logic Control (PLC), and time extensions.

The 80% risk confidence level for this contract at of the end of the reporting period is estimated at \$252,000, a decrease of \$247,000 since last quarter. This contract has a total of six (6) risks. The decrease in estimated risk amount at the 80% confidence level is due to the decrease in the costs and probabilities of these risks since last quarter.

The current largest risk for this contract is associated with design errors and omissions. The second highest risk is associated with unexpected challenges during testing. The third largest risk relates to turnover of key personnel. Additional risks include delays in correcting the parcel map and acquiring record of survey, and the risk of a delay for change orders to completing design and issuing in a timely manner.

Alameda Creek Recapture Project

This project is currently reporting on three (3) active trends that total \$79,000. The three trends are all new this quarter. The largest current trend relates to obtaining a DWR permit. The second largest trend is associated with aquatic decontamination protocols. The third largest trend concerns access vehicle entrance paving.

The 80% risk confidence level on this contract at of the end of the reporting period is estimated at \$1.8M, an increase of \$0.1M since the last quarter. This contract has a total of twenty-seven (27) risks. The current largest risk for this project is related to unknown DWR SBA requirements. The second highest risk is associated with encountering differing site conditions and utility coordination impacts that delay the schedule. The third highest risk is associated with the potential for the barge system to not function as planned. Additional risks relate to the contractor's ability to work out an agreement with a listed Barge vendor, delay in barge/pump fabrication and installation, and the risk of failure of the existing Sunol Pump Pipeline during startup and 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
CUW35201 Alameda Creek Recapture Project (WD-2825R)	1/18/23	\$2.0M	\$0.1M	\$1.8M	2.9%
CUW37401 Alameda Creek Diversion Dam Fish Passage Facility (WD-2729)	12/31/21	\$15.8M	\$14.5M	\$1.3M	99%
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	3/6/22	\$22.8M	\$21.5M	\$1.3M	98%

The Alameda Creek Recapture Project is estimated to have a remaining construction contingency of \$1.8M as of the end of the reporting period. The 80% confidence level of the project risks are estimated at \$1.8M. No additional construction contingency is currently needed for this construction contract.

The Fish Passage Facilities at Alameda Creek Diversion Dam is currently estimated to have remaining construction contingency of \$1.3M as of the end of the reporting period. No risk remains in this contract.

The Regional Groundwater Storage and Recovery (Contract B) is currently estimated to have remaining construction contingency of \$1.3M as of the end of the reporting period. The remaining risk, estimated at \$252,000 (at the 80% risk confidence level), means that no additional contingency will be needed for this construction contract. Additionally, the Director's Reserve currently has \$16.1 million remaining that may be used for other WSIP projects.

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 project budgets 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 46 of the attached WSIP Quarterly Report. As can be seen in the chart on that page, the overall staffing levels in September 2019 were approximately 47 full-time equivalents (FTEs), which has increased to approximately 49 FTEs in September 2021. The increase is attributed to the ramping up of construction work by both the City and the consultant staff on and after start of the final construction contract of the WSIP in June 2021. 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 2021 | 2022
July 2021 — September 2021

Rebuilding Today for a Better Tomorrow

Published: December 6, 2021

Quarterly Report - Q1 FY2021/2022

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 first (1st) Quarterly Report for Fiscal Year (FY) 2021-2022 presents the progress made on the WSIP Regional Program between July 1, 2021 and September 30, 2021. The program’s schedule and budget were last approved by the San Francisco Public Utilities Commission (SFPUC or Commission) on April 14, 2020. The WSIP Local Program was completed on June 3, 2020.

Figure 2.1 shows the total Current Approved Budget for the regional projects remaining in each phase of the program as of September 30, 2021. The number of projects currently active in each phase is shown in parentheses.

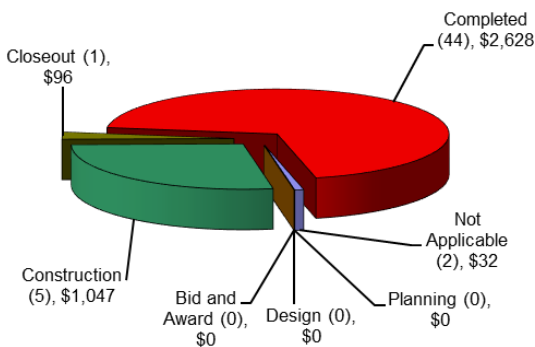


Figure 2.1 Total Current Approved Budget for Projects Active in Each Phase (\$Million)

Figure 2.2 shows the number of regional projects in the following stages of the program as of September 30, 2021: Pre-construction,

Construction, and Post-construction.

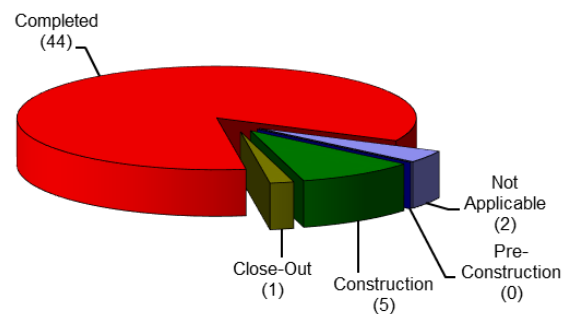


Figure 2.2 Number of Projects in Pre-construction, Construction, and Post-construction

Figure 2.3 summarizes the environmental review and permitting status of the WSIP’s 52 regional projects as of September 30, 2021.

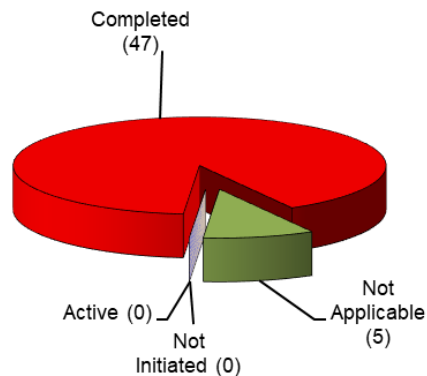


Figure 2.3 Program Environmental and Permitting Status

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		3%
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 2A) ⁽²⁾ (D) Regional Groundwater Storage and Recovery (Phase 2B) ⁽²⁾	(A) 07/23/12 (B) 12/31/17 (C) 02/28/21 (D) 02/28/21				P	(A) 07/23/12	(A) 100% (B) 98% (C) 0% (D) 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.
- 2 Current Forecasted Substantial Completion date is on 12/31/22.

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 Q1/FY21-22 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

\$4,787.8 million. The Current Approved WSIP Budget and Forecasted Cost at completion for only the Regional Program (including construction contingency) are \$3,803.1 million and \$3,802.6 million, respectively (the Current Forecast Cost is \$0.5 million under the Current Approved Budget). The final expenditures for the Local Improvement Projects were \$331.9 million, which were \$0.5 million over the Current Approved Budget of \$331.4 million upon completion. 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)	Q1/FY21-22 Forecasted Costs (\$ Million) (E)	Cost Variance (\$ Million) (F = D - E)
Regional Improvement Projects	\$3,016	\$3,181	\$3,081.4	\$3,075.9	\$3,089.1	(\$13.1)
Construction Costs ⁽¹⁾	\$2,022	\$2,322	\$2,065.9	\$2,064.5	\$2,060.1	\$4.4
Program Delivery Costs ⁽²⁾	\$964	\$758	\$984.8	\$979.5	\$984.2	(\$4.7)
Other Costs ⁽³⁾	\$29	\$101	\$30.7	\$31.9	\$44.7	(\$12.9)
Support Projects ⁽⁴⁾	\$235	\$33	\$244.9	\$244.9	\$259.3	(\$14.4)
Construction Contingency for Regional & Support Projects ⁽⁵⁾	\$441	\$193	\$476.8	\$482.3	\$454.2	\$28.0
REGIONAL PROGRAM WITH CONTINGENCY	\$3,691	\$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⁾	\$136	-	\$281.3	\$281.3	\$281.3	-
Finance	\$372(11)	\$552(9)	\$372(10)	\$372.0	\$372.0	-
PROGRAM TOTAL	\$4,531	\$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 Q1/FY21-22 Forecasted Construction Contingency; and the Remaining

Contingency as of the end of the reporting quarter. As of September 30, 2021, the Forecasted Construction Contingency is \$454.2 million, and the Current Remaining Contingency is \$12.0 million.

The total costs of Change Orders approved in Q1/FY21-22 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/FY20-21 Forecasted Construction Contingency ⁽¹⁾ (\$ Million) (A)	Total Approved Change Orders as of Q4/FY20-21 ^(2,3) (\$ Million) (B)	Change Orders Approved in Q1/FY21-22 ⁽²⁾ (\$ Million) (C)	Total Approved Change Orders as of Q1/FY21-22 (\$ Million) (D = B+C)	Project Savings or Director's Reserves (+) Moved to Contingency/Funds (-) Moved out of Contingency during Q1/FY21-22 ⁽⁴⁾ (\$ Million) (E)	Q1/FY21-22 Forecasted Construction Contingency (\$ Million) (F = A + E)	Q1/FY21-22 Remaining Contingency (\$ Million) (G = F - D)
San Joaquin Region	-	-	-	-	-	-	-
Sunol Valley Region	\$365.60	\$358.31	-	\$358.31	-	\$365.60	\$7.29
Bay Division Region	\$8.12	\$8.06	-	\$8.06	-	\$8.12	\$0.06
Peninsula Region	\$56.84	\$56.79	-	\$56.79	-	\$56.84	\$0.05
San Francisco Regional Region	\$23.51	\$18.80	\$0.39	\$19.19	-	\$23.51	\$4.32
Support Projects	\$0.14	(\$0.12)	-	(\$0.12)	-	\$0.14	\$0.26
Regional Total	\$454.21	\$441.84	\$0.39	\$442.23	-	\$454.21	\$11.98

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)
San Francisco Regional	\$0.39	-	\$0.39	-	-	-
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	\$0.39	-	\$0.39	-	-	-
Regional Total	\$0.39	-	\$0.39	-	-	-

Table 3.4 Forecasted Remaining Construction Contingency

Region	Q1/FY21-22 Remaining Construction Contingency ⁽¹⁾ (\$ Million) (A)	Pending Change Orders as of Q1/FY21-22 ⁽²⁾ (\$ Million) (B)	Potential Change Orders as of Q1/FY21-22 ⁽³⁾ (\$ Million) (C)	Trends as of Q1/FY21-22 ⁽⁴⁾ (\$ Million) D	Q1/FY21-22 Forecasted Remaining Construction Contingency (\$ Million) (E = A-B-C-D)
San Joaquin Region	-	-	-	-	-
Sunol Valley Region	\$7.29	\$4.03	\$0.03	\$0.08	\$3.16
Bay Division Region	\$0.06	-	-	-	\$0.06
Peninsula Region	\$0.05	-	-	-	\$0.05
San Francisco Regional Region	\$4.32	\$0.64	\$0.46	\$1.20	\$2.02
Support Projects	\$0.26	-	-	-	\$0.26
Regional Total	\$11.98	\$4.67	\$0.48	\$1.27	\$5.55

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/FY21-22, it shows the Remaining Construction Contingency, Pending Change Orders, Potential Change Orders, Trends, and Forecasted Remaining Construction Contingency. As of September 30, 2021, the Total Forecasted Remaining Construction Contingency for the Regional WSIP is \$5.6 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.

The spending pattern for the project is very similar from month to month as the project primarily funds program-level positions occupied by SFPUC staff and consultants. The Forecasted Total Program Management Cost is \$113.5 million, which is \$0.7 million over the Current Approved Budget of \$112.7 million due to the transfer of savings from other projects into the Director's Reserve.

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)	Q1/FY21-22 Forecasted Cost* (\$ Million) (D)	Cost Variance (\$ Million) (E = C-D)
Management Support	\$37.7	\$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	\$20.5	\$19.8	\$19.8	\$20.9	(\$1.1)
Program Construction Management	\$27.8	\$28.0	\$28.0	\$27.8	\$0.2
Program Management Total	\$107.7	\$112.7	\$112.7	\$113.5	(\$0.7)

* Increase to Program Management Forecast Cost Variance is due to transfer of savings from other projects into Director's Reserve.

4. PROGRAM SCHEDULE SUMMARY

Figure 4.1 and Table 4.1 compare the 2005 Baseline, 2020 Approved, Current Approved, and Q1/FY21-22 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 Regional WSIP (Local WSIP was completed in June 2020) are both May 2023. Refer to Appendix C for a graphical presentation of the WSIP Approved Project-Level Schedule.

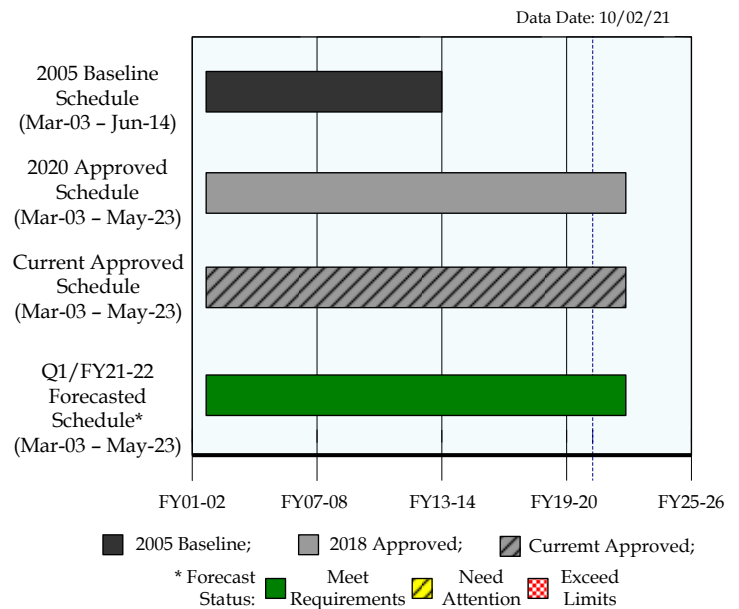


Figure 4.1 Program Schedule Summary

Table 4.1 2020 Approved vs. Q1/FY21-22 Forecasted Schedule Dates

Category	2005 Baseline Start	2020 Approved Start	Current* Approved Start	Actual Start	2005 Baseline Finish	2020 Approved Finish	Current* Approved Finish	Q1/FY21-22 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✓	Completed (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

5. PROJECT PERFORMANCE SUMMARY*

All costs are shown in \$1,000s as of 10/02/21

Project Name	Active Phase (**)	2005 Baseline Budget (a)	2020 Approved Budget (b)	Current Approved Budget (c)	Q1/FY21-22 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)	Q1/FY21-22 Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
Sunol Valley Region															
CUW35201 - Alameda Creek Recapture Project	CN	\$ 18,809	\$ 34,000	\$ 34,000	\$ 41,967	\$ 16,458	(\$7,967)	●	05/25/12	05/05/23	05/05/23	05/05/23	-	★	See Section 6
CUW37401 - Calaveras Dam Replacement	CN	\$ 256,511	\$ 823,092	\$ 823,092	\$ 808,293	\$ 787,032	\$ 14,799	★	05/25/12	03/31/21	03/31/21	03/31/22	12.0 mo. Late	●	See Section 6
CUWSVI0101 - WSIP Closeout - Sunol Valley	CN		\$ 5,990	\$ 5,990	\$ 5,990	\$ 4,738	-	★		06/30/21	06/30/21	06/30/22	12.0 mo. Late	●	See Section 6
Peninsula Region															
CUWPWI0101 - WSIP Closeout - Peninsula	CN		\$ 13,580	\$ 13,580	\$ 13,580	\$ 12,745	-	★		08/05/21	08/05/21	12/30/21	4.8 mo. Late	⚠	See Section 6
San Francisco Regional Region															
CUW30103 - Regional Groundwater Storage and Recovery	CN	\$ 39,233	\$ 138,793	\$ 138,793	\$ 148,350	\$ 116,931	(\$9,557)	⚠	02/27/14	12/30/21	12/30/21	05/05/23	16.1 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	06/30/22	9.0 mo. Late	★	NA
CUW39401 - Watershed and Environmental Improvement Program	NA	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 18,172	-	★	06/28/13	01/08/21	01/08/21	03/30/22	14.7 mo. Late	●	See Section 6

* 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 from 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: Construction	Environmental Status: Completed (EIR)
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Project Cost:		Project Schedule:	
Approved 	\$34.00 M	Approved Sep-03 	May-23
Forecast* 	\$41.97 M	Forecast* Sep-03 	May-23
Actual 	\$16.46 M	Project Percent Complete: 43.2%	

 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✓	12/18/20✓	06/21/21✓	12/19/22

Progress and Status:

The contractor started work on the construction trailer installation, site surveying, utility potholing and wildlife exclusion fencing and gates. The project team and contractor coordinated with Department of Water Resource (DWR) for an encroachment permit across DWR’s right-of-way for its large diameter pipeline alignment. The project site cannot be easily accessed without this encroachment permit from DWR. Alternative access routes to avoid the DWR right-of-way are, however, being evaluated to mitigate against delays from the prolonged permitting process. The team located an abandoned PG&E gas pipeline within the project site and has started coordinating with PG&E on its removal. Hanson submitted a preliminary design for the erosion repairs for review.

Issues and Challenges:

Any delays in securing the DWR encroachment permit may delay the start of site excavation and pond access road work and the project schedule. The forecast for securing the DWR permit is mid-December 2021. The project team is working on alternative routes to access the site to avoid the DWR right-of-way and to help minimize potential delays.









Installation of Wildlife Exclusion Fence

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*	 \$808.29 M	Forecast* Sep-02	 Mar-22
Actual	 \$787.03 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) 03/31/22

+ Project includes multiple construction contracts.

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

Progress and Status:

WD-2551 CDRP: Similar to Q4 of FY20-21, the project team continued to perform dam monitoring inspections. Given that there was no heavy rainfall during this reporting period, the reservoir again failed to reach the appropriate level to perform Initial Fill Plan inspections. Once this project is closed out, SFPUC Operations will take over the task to complete the Initial Fill Plan inspections.

WD-2729 ACDD: The final negotiation of change orders is taking place, and the schedule is forecasted to be extended to the end of the year to allow time for the contract to close out. The replacement of solar panels and batteries for the VSAT continued under a JOC; this work will continue under this project and then any remaining work will be moved to the WSIP Close-Out - Sunol Valley project in Q3. Wet testing of the facilities that has been delayed due to drought conditions will be transferred to SFPUC Operations, similar to Initial Fill Plan inspections for CDRP, after this project is closed out.

Issues and Challenges:

The reason the remaining construction work was not transferred to the WSIP Closeout - Sunol Valley project and this project closed out as advised last quarter was due to additional time that the contractor needed to prepare Time Impact Analysis backup documents for the final change order. Due to the additional time needed by the contractor to accomplish this









VSAT System Upgrade Site

documentation, the project completion date has been delayed from September 2021 to March 2022. Any remaining work being performed under JOCs after March 2022 will be transferred to the WSIP Close-Out - Sunol Valley project.

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-22
Actual 	\$4.74 M	Project Percent Complete: 99.8%
		

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, (2) JOC-59-20, (4) JOC-54-02, (5) JOC 60-20, and (6) JOC-60-23 were completed in previous quarters. Subproject (3) SVWTP Polymer Feed Facility was completed in the last quarter, but had additional minor work this quarter. This subproject will be completed as a Water Enterprise CIP project.

Issues and Challenges:

All the sub-projects included in the current scope of the Sunol Closeout project have been completed. This project will stay open with no activity in Q2 to allow the transfer of any remaining scope from the Calaveras Dam Replacement Project in Q3. This will facilitate close out of the Alameda Creek Diversion Dam Fish Passage Facilities construction contract, WD-2729, in March 2022, in turn allowing administrative close out of the entire Calaveras Dam Replacement Project.









Proposed Polymer Feed System for SVWTP Basins 1-4

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 Modifications to electrical equipment due to ground water intrusion into vaults.; (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
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Project Cost:		Project Schedule:	
Approved 	\$13.58 M	Approved Jul-16 	Aug-21
Forecast* 	\$13.58 M	Forecast* Jul-16 	Dec-21
Actual 	\$12.75 M	Project Percent Complete: 99.9%	
			

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

Progress and Status:

WD-2822R2 - LCSD Stilling Basin Connecting Channel -The closeout for this work is progressing. The CAD as-built drawings are being finalized. JOC No. 76R-01.03 - LCSD Security Fence - The construction for the security fence work is in progress. Change work will be implemented as part of the security fence work, which consists of installation of gate, ladder, additional fence, and fence grounding. The design for the change order work has been finalized except for the fence grounding. LCSD Video Surveillance - The Technical Memorandum for the Digital Video Surveillance System Additions has been issued.

Issues and Challenges:











Increase to the forecasted schedule is due to the additional time needed to complete the as-builts for the WD-2822R2. All remaining work of the Peninsula WSIP Closeout, including remaining work on the security fence and video surveillance system, will be transferred to the Water Enterprise Security Systems project before the end of December 2021, and this project will be closed.



Fence and gate towards the entrance into the Lower Crystal Springs Dam at the northside

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: Completed (Various)
Project Cost:		Project Schedule:
Approved  \$138.79 M	Approved Jun-03  Dec-21	
Forecast*  \$148.35 M	Forecast* Jun-03  May-23	
Actual  \$116.93 M	Project Percent Complete: 86.9%	
 Approved;  Actual Cost; * Forecast Status:  Meet Requirements  Need Attention  Exceed Limits		

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction+ NTP	Construction+ Final Completion
Current Forecast	(A) 09/07/09✓ (B) 08/07/14✓ (C) 11/10/20✓ (D) TBD	(A) 09/07/11✓ (B) 09/22/14✓ (C) 09/27/21✓ (D) TBD	(A) 01/30/12✓ (B) 04/06/15✓ (C) 01/02/22 (D) TBD	(A) 09/05/12✓ (B) 03/06/22 (C) 03/31/23 (D) TBD

+ Project includes multiple construction contracts: (A) Test well drilling; (B) Well station construction; (C) WD-2878A RGSR Phase 2A; (D) RGSR Phase 2B

Progress and Status:

For Phase 1 (Contract B), the following were completed: 7-week testing for the Millbrae Yard Well and the F Street (Colma BART) Trio Well and Treatment Facilities. The F Street Trio facilities consist of F Street Well, B Street Well, Colma Blvd. Well, and Colma BART treatment facilities. A temporary access permit from BART to enter onto the site of the Mission Road Well and Treatment Facility was acquired, and well rehabilitation has been completed. Installation of a partition wall to separate two different chemical systems at Poncetta Drive Treatment Facility has started.

For Phase 2A (Contract C), including installation of cathodic protection, variable frequency drives, flowmeters for water accounting, and valve modifications, the design phase was completed during the quarter, on September 26. WD-2878A, the contract for Phase 2A, was advertised on September 27. The 100% design for Phase 2B continued to progress







during the quarter. Parcel maps for the utilities and structures for pipe support are being finalized.

Issues and Challenges:

Although a temporary access permit has been acquired from BART for the Mission Road well, final approval for the design of the gate along Mission Road has not been achieved. Increases in the forecasted cost and schedule for Phase 1 are due to flowmeter inaccuracies, repairs to corrosion in several of the well systems, modifications to the chemical feed systems, and the delays to obtaining access from BART. Increases to the forecasted cost and schedule for Phase 2 are due to the addition of cathodic protection for multiple wells, splitting the work into two contracts, and anticipating through lessons learned the longer time needed to obtain easements and right of way permits. The project team continues evaluating potential cost and schedule impacts for both Phase 2A and Phase 2B; and will provide updates in future quarterly reports.

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		Mar-22
Actual		\$18.17 M	Project Percent Complete: 84.5%		
					
Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion	
Current Forecast	N/A	N/A	N/A	N/A	

Progress and Status:

Funding supported three subprojects during the quarter: 1) SFPUC staff continued 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 drain into Calaveras and San Antonio reservoirs. During this quarter, however, the property owners sold the 50,000+ acre property to a private buyer, and this sub-project is accordingly at an end. 2) It is anticipated that construction of the Southern Skyline Bay Area Ridge Trail Extensions project will begin in January 2022. 3) Staff has been in negotiations with the owners of a 640 acre parcel in the Alameda Creek watershed. The appraisal has been completed and a Phase 1 Environmental Assessment is being scheduled. It is anticipated that the Purchase and Sale Agreement will go to the Commission for approval on December 14, 2021. Due diligence is expected to take an additional few months to finalize; and it is expected that escrow will close by March 2022.



Alameda Creek Watershed

Issues and Challenges:

The two remaining subprojects are requiring additional time for negotiations, due diligence, and/or permitting; it is anticipated that funds used for land acquisition will be exhausted by March 2022 with close of escrow on the 640 acre parcel in the Alameda Creek watershed.

7. On-Going Construction

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion*	Q1/FY21-22 Forecasted Construction Final Completion**	Approved Contract Cost +	Q1/FY21-22 Forecasted Cost++	Schedule (Cal. Days)	Cost	
Sunol Valley Region								
CUW35201 - Alameda Creek Recapture Project	06/21/21	12/19/22	01/18/23	\$ 19,511,500	\$ 19,560,675	(30)	(\$49,175)	2.9%
CUW37401 - Alameda Creek Diversion Dam (Contract B)	04/19/16	12/16/18	12/31/21	\$ 39,414,211	\$ 43,422,940	(1,111)	(\$4,008,729)	99.0%
San Francisco Regional Region								
CUW30103 - Regional GW Storage and Recovery (Contract B)	04/06/15	12/26/21	03/06/22	\$ 62,168,777	\$ 63,267,988	(70)	(\$1,099,211)	97.9%

Program Total for On-Going Construction	Approved Contract Cost	Q1/FY21-22 Forecasted Cost*	Variance	
			Cost	Percent
	\$ 121,094,488	\$ 126,251,602	(\$5,157,114)	(4.3%)

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	06/30/22		\$ 52,299,498	\$ 51,636,156	\$ 50,654,758
TOTAL										\$ 52,299,498	\$ 51,636,156	\$ 50,654,758

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
CUWSJI0101 - WSIP Closeout - San Joaquin	-	03/31/21	03/31/21	03/31/21	-	\$ 4,376,164	\$ 4,376,164	\$ 2,009,741
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	\$ 27,037,926
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	\$ 70,530,532
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
CUWBDO101 - WSIP Closeout - Bay Division	-	12/31/20	12/31/20	03/31/21	-	\$ 4,398,775	\$ 4,398,775	\$ 3,322,156
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

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								
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
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	\$ 3,948,943	\$ 3,948,943
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	\$ 2,540,420,870	\$ 2,540,420,870	\$ 2,531,127,967

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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 E5OU** - The E5OU 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

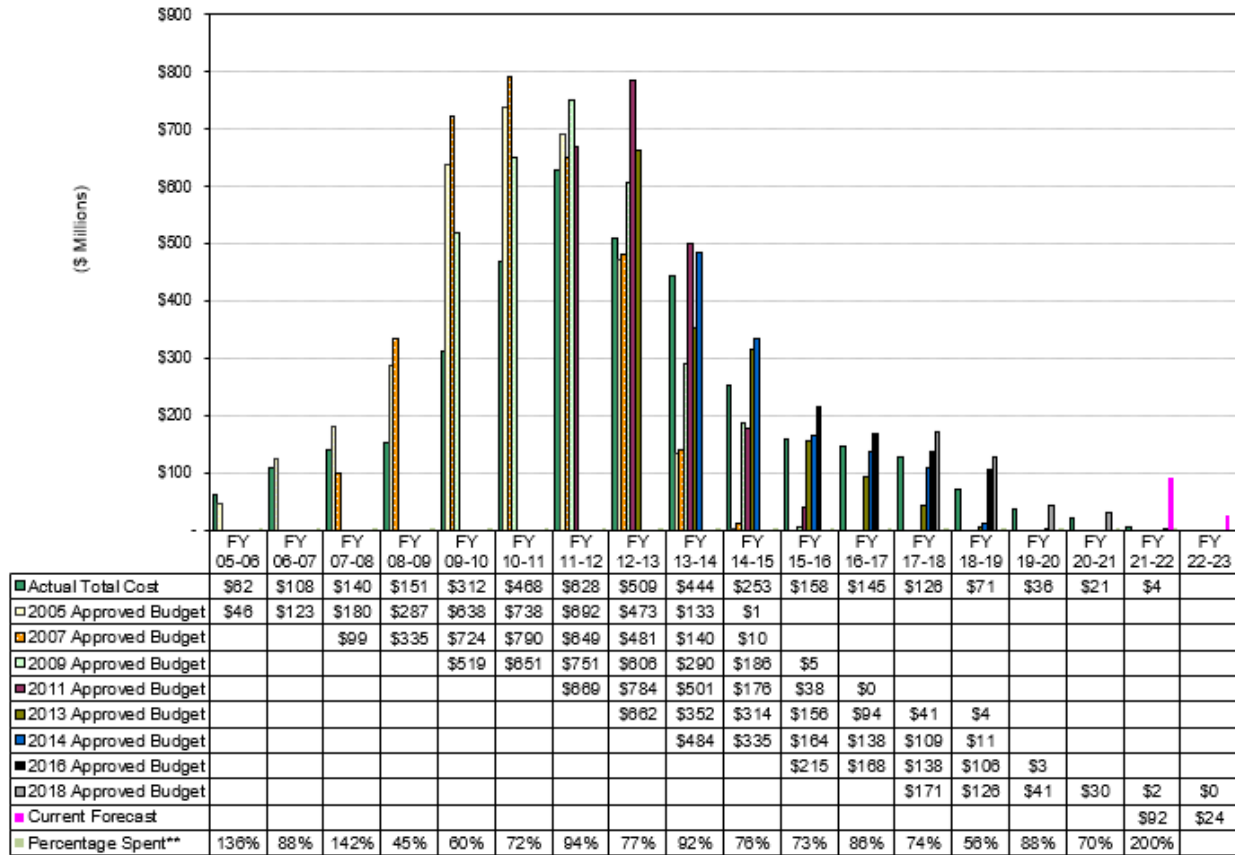
The scope of work and budget for this Long Term Mitigation Endowment was previously included and reported within the WSIP Regional project CUW38802 Bioregional Habitat Restoration; however, the office of the City Controller has established a separate project, specific for this endowment fund, in project 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.

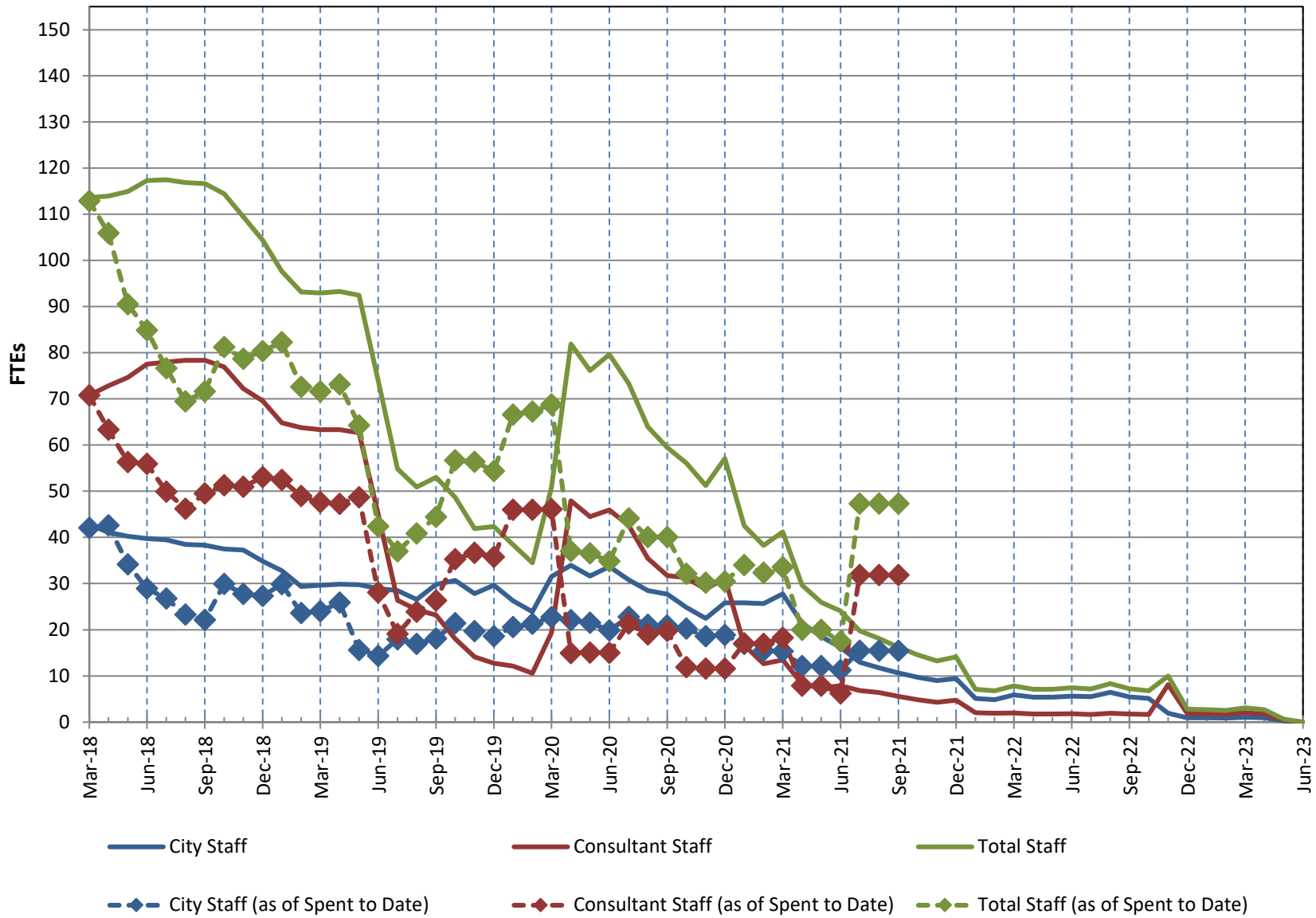
* The histogram does not reflect budget and expenditures prior to FY 2005-2006.

** 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/FY21-22 and cost projections (Current Forecast) from FY21-22 through program completion currently forecast for May 2023. Actual annual expenditures have ranged from 45% to 200% of planned expenditures.

Appendix C. WSIP Regional Program Staffing Plan



APPENDIX E. PROJECTS WITHIN BUDGET AND SCHEDULE

No active projects are currently within Budget and Schedule.

APPENDIX F. LIST OF ACRONYMS

AAR	Alternative Analysis Report	FY	Fiscal Year
AC	Asphalt Concrete	HH	Hetch Hetchy
ACAMS	Access Control and Alarm Monitoring System	HHWP	Hetch Hetchy Water and Power
ACDD	Alameda Creek Diversion Dam	HTWTP	Harry Tracy Water Treatment Plant
ACDT	Alameda Creek Diversion Tunnel	IVP	Irvington Portal
AGM	Assistant General Manager	JOC	Job Order Contract
ARM	Active Risk Manager	LCSD	Lower Crystal Springs Dam
AWP	Alameda West Portal	LCSDI	Lower Crystal Springs Dam Improvements
BART	Bay Area Rapid Transit	LOS	Levels of Service
BAWSCA	Bay Area Water Supply and Conservation Agency	MG	Million Gallons
BDPL	Bay Division Pipeline	MGD	Million Gallons per Day
BHR	Bioregional Habitat Restoration	MND	Mitigated Negative Declaration
CalTrans	California Department of Transportation	MOA	Memorandum of Agreement
CATEX	Categorical Exemption	MOU	Memorandum of Understanding
CCSF	City and County of San Francisco	MPP	Mobile Pilot Plant
CDD	City Distribution Division	N/A	Not Applicable
CDRP	Calaveras Dam Replacement Project	NDA	Nondisclosure Agreement
CEQA	California Environmental Quality Act	NEG DEC	Negative Declaration (also shown as ND)
CER	Conceptual Engineering Report	NEPA	National Environmental Policy Act
CIP	Capital Improvement Program	NIT	New Irvington Tunnel
CM	Construction Management	NMFS	National Marine Fisheries Service (under NOAA)
CMB	Construction Management Bureau	NOAA	National Oceanic and Atmospheric Agency
CMIS	Construction Management Information System	NTP	Notice to Proceed
CO	Change Order	O&M	Operation and Maintenance
COVID-19	Coronavirus Disease of 2019	PCCP	Pre-stressed Concrete Cylinder Pipe
CPI	Cost Performance Index	PEIR	Program Environmental Impact Report
CSPS	Crystal Springs Pump Station	PG&E	Pacific Gas and Electric Company
CSSA	Crystal Springs/San Andreas	PLC	Programmable Logic Control
DB	Design, Build	PV	Photovoltaic
DDW	Division of Drinking Water	RFI	Request For Information
DSOD	Division of Safety of Dams (State of California)	ROW	Right-of-Way
DVSS	Digital Video Surveillance System	SABPL	San Antonio Backup Pipeline
EBMUD	East Bay Municipal Utility District	SAPL	San Antonio Pipeline
EIR	Environmental Impact Report	SAPS	San Antonio Pump Station
EIS	Environmental Impact Statement	SCADA	Supervisory Control and Data Acquisition
EV	Earned Value	SFPUC	San Francisco Public Utilities Commission
EVM	Earned Value Management	SJPL	San Joaquin Pipeline
FC	Final Completion	SMC	San Mateo County
FEIR	Final Environmental Impact Report		
FTE	Full-Time Equivalent		

SMP	Surface Mining Permit
SPI	Schedule Performance Index
SQS	Supplier Quality Surveillance
SSBPL	Sunset Supply Branch Pipeline
SSPL	Sunset Supply Pipeline
STO	Supplemental Task Order
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
USD	Union Sanitary District
UV	Ultra Violet
VFD	Variable Frequency Drive
VSAT	Very Small Aperture Terminal
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

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DATE: February 28, 2022

TO: Commissioner Anson Moran, President
 Commissioner Newsha Ajami, Vice President
 Commissioner Sophie Maxwell
 Commissioner Tim Paulson

FROM: Dennis J. Herrera, General Manager *DJH*

RE: WSIP Regional Projects Quarterly Report
 2nd Quarter / Fiscal Year 2021-2022

Enclosed please find the Water System Improvement Program (WSIP) Regional Projects Quarterly Report for the 2nd Quarter (Q2) of Fiscal Year (FY) 2021-2022. 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, 2021 through December 31, 2021.

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 98.9% complete as of December 31, 2021.

London N. Breed
 Mayor

Anson Moran
 President

Newsha Ajami
 Vice President

Sophie Maxwell
 Commissioner

Tim Paulson
 Commissioner

Dennis J. Herrera
 General Manager



As of the end of the reporting period, planning, environmental, design, and construction activities are 100%, 100%, 100%, and 99% 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 December 31, 2021)

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	0	0%	\$0	0%
Bid & Award	0	0%	\$0	0%
Construction	3	6%	\$184	5%
Close-Out	2	4%	\$945	25%
Completed	45	87%	\$2,642	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, three (3) regional projects with a total value of \$184M are in construction and forty-seven (47) projects with a total value of \$3,587M 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.

As of the end of the reporting period, the forecasted total program cost (regional and local projects) is \$4,787.8M, the same as the current Commission Approved Budget. As of the end of the reporting period, all approved change orders (COs) in contracts total \$446.51M, and the current remaining construction contingency is \$7.47M. Also, as of the end of the reporting period, all pending and potential COs, and trends total \$1.59M. Therefore, if all pending and proposed COs and trends become approved COs, the current forecasted remaining construction contingency is \$5.88M.

The current forecasted date to complete the overall WSIP is February 2027, and the current approved completion date is May 2023. Due to the changes in project forecasts this quarter that extend the forecasted project completion dates beyond the approved program completion date, the SFPUC intends to notify the public and request approval from the Commission this Spring for

changes to the WSIP project budgets and completion dates and also the program's completion date.

UPDATE ON PROJECTS IN PRE-CONSTRUCTION

WSIP Closeout Projects

Steady progress was made on remaining WSIP Closeout Projects, those for the Sunol Valley and Peninsula Regions.

In the Sunol Valley Region, the WSIP-funded portion of the Polymer Feed Facility, currently in design phase, was completed and closed out during the last reporting quarter; continued design and construction for this improvement project will proceed under the Water Enterprise Capital Improvement Program. The original scope for the Sunol Closeout Project was completed. However, the Sunol Closeout Project will stay open and accept new scope to be transferred as remaining scope from the Calaveras Dam Replacement Project (CDRP) to allow the CDRP to be closed out. The transferred scope includes remaining work to complete construction of the power and communications systems at Alameda Creek Diversion Dam. This work will extend the completion date of this WSIP closeout project to June 2022. The initial fill inspections for Calaveras Dam and the wet testing for the new fish passage facilities will both continue under the direction of SFPUC Operations. Calaveras Reservoir reached the previous initial fill point of 733.6 feet on December 29, 2021 and Initial Fill Inspections resumed.

In the Peninsula Region, the closeout for the Lower Crystal Springs Dam (LCSD) Stilling Basin Connecting Channel contract is progressing. The CAD as-built drawings have been finalized. Design of the LCSD Security digital video surveillance system and fence grounding, and construction of the security fence work, are in progress. This work will continue under Water Enterprise funding since the WSIP portion of work has been completed. The Peninsula Closeout Project was closed out and completed during this quarter.

UPDATE ON PROJECTS IN CONSTRUCTION

Steady progress was reported on the remaining ongoing WSIP construction activities. As of the end of December 2021, WSIP regional construction contracts (including active, completed, and future contracts) are 99.1% complete overall, a continuation of the same percentage as last quarter.

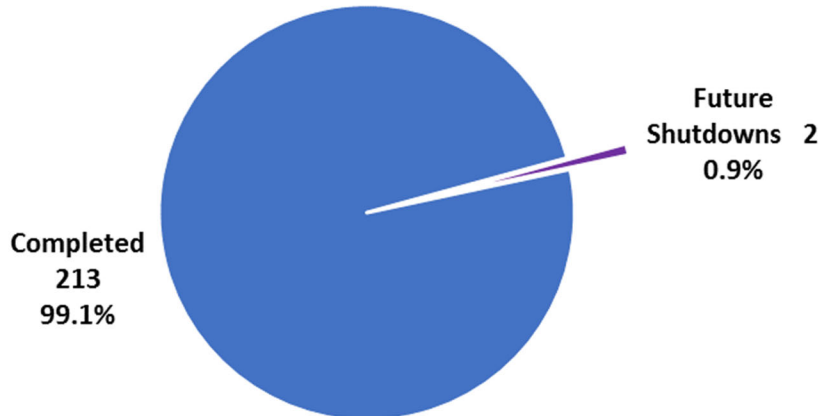
A review of the construction work hours recorded over the last nine (9) years shows continued ramping down of construction activities, with monthly work hours peaking at 206,400 in August 2012, compared to a total of 911.5 work hours recorded in December 2021. The monthly average work hours in the reporting quarter was 1,139 hours, a decrease compared to the 1,227 monthly average work hours for the same period in 2020.

As of the end of December 2021, monitored exposure hours on WSIP regional projects totaled 9.9 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 (2020) of 1.6.

To date, 213 out of 215 (99.1%) of the planned shutdowns and hot taps have been completed. Currently, there are two (2) 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.

Regional Groundwater Storage and Recovery

Overall progress on the Regional Groundwater Storage and Recovery Phase 1 construction contract (Contract B) is reported at 98% complete as of the end of this quarter. The contract percentage complete is the same as last quarter. Activities completed during this quarter included upsizing of water heaters at all well treatment facilities; construction of partition wall at Poncetta Drive Treatment Facility; installation of cathodic protection and well pump, programming, and testing at Mission Road Well & Treatment Facility; and installation of backflow preventer at South Park Plaza Well Station. The work under the Regional Groundwater Storage and Recovery Phase 2 subproject has been separated into two contracts. For Phase 2A (Contract C), review of the two (2) bids received on 11/18/2021 for Contract No. WD-2878A is in progress. For Phase 2B (Contract D), the 100% design continued to progress. Parcel maps for the utilities and structures for pipe support have been completed. Permits and easements for the South San Francisco Main well and pipelines construction continue to be negotiated.

Alameda Creek Recapture Project

Construction of the Alameda Creek Recapture Facility is 3.9% complete as of the end of this quarter. The contractor continued work on construction trailer installation, removal of the abandoned PG&E gas line, and submittals. The Department of Water Resource (DWR) issued the encroachment permit to cross the DWR right-of-way. The contractor started scheduling the

temporary bridge crossing work over the DWR right-of-way. The contractor received notices from subcontractors of material shortages, longer lead-time estimates, and cost increases related to COVID-19. Coordination with Hanson, the quarry lease-holder and operator, on access road repairs and erosion control continued. The recent rains have flooded some of the access roads around the ponds, and the contractor has started making road repairs to allow continued access.

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 (exact 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, 2021.

The trends for the WSIP active Regional construction contracts totaled \$0.4M as of the end of the reporting period, a decrease of \$0.9M compared to the last quarter. The decrease is mainly due to the closing of many RGWSR trends. The following table lists the trend totals for the two active projects:

WSIP Active Regional Projects Trend Totals (as of December 31, 2021)

Project	Trends (\$ Million)	Percent Completion ¹
Regional Groundwater Storage & Recovery (Contract B)	\$0.2	98%
Alameda Creek Recapture	\$0.2	3.9%

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. On that basis and as of December 31, 2021, all of the top ten WSIP program risks belong to Alameda Creek Recapture Project. The current top risk of the program relates to uncertainties in obtaining permits from the California Department of Water Resources (DWR) for protection of the South Bay Aqueduct (SBA) during construction.

Regional Groundwater Storage and Recovery

This project is currently reporting on four (4) active trends that total \$0.2M, representing a decrease of \$1M from active trends reported last quarter. This decrease is due to the resolution and closing of many large trends including a trend for installation of diaphragm chemical metering pumps, closed due to the decision for Operations to install the pumps in-house, and a trend for miscellaneous plumbing changes, closed due to the decision to not perform the changes.

The largest current trend relates to costs for startup testing. The second largest trend concerns costs for time extension. Other trends include costs of retesting the security system and costs for revisions to programming for the Programmable Logic Control (PLC).

The 80% risk confidence level for this contract at the end of the reporting period is estimated at \$120,000, a decrease of \$132,000 since last quarter. This contract has a total of six (6) risks. The decrease in estimated risk amount at the 80% confidence level is due to the decrease in the costs and probabilities of these risks since last quarter.

The current largest risk for this contract is associated with design errors and omissions. The second highest risk is associated with delays in correcting the parcel map and acquiring record of survey. The third largest risk relates to unexpected challenges during testing. Additional risks include the risk of turnover of key personnel, the risk of failure to complete design in a timely manner, and the risk of failure to issue change orders in a timely manner.

Alameda Creek Recapture Project

This project is currently reporting on three (3) active trends that total \$192,000, representing an increase of \$113,000 for the quarter. This is due to an increase in the cost of two existing trends and a new large trend relating to underground utilities. The largest current trend relates to obtaining a DWR permit. The second largest trend is associated with aquatic decontamination protocols. The third largest trend concerns underground utilities.

The 80% risk confidence level on this contract at the end of the reporting period is estimated at \$3.1M, an increase of \$1.3M since the last quarter. This increase is mainly due to the increase in probability of some risks, and the inclusion of two new risks: risk of increasing costs and decreasing productivity due to a combination of inflation and limited qualified and experienced personnel and the risk of erosion impacting the project site. This contract has a total of twenty-eight (28) risks. The current largest risk for this project is related to unknown requirements for DWR's easement protection. The second highest risk is associated with the risk that the forces exerted by the barge cable may exceed the drilled pier design load, since this was designed by the contractor. The third highest risk is the potential for delay in barge/pump fabrication and installation. Additional quantified risks include inflation, limited qualified and experienced personnel, differing site conditions, the barge system not functioning as planned, and failure of the existing Sunol Pump Pipeline during startup or 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
CUW35201 Alameda Creek Recapture Project (WD-2825R)	1/18/23	\$2.0M	\$0.3M	\$1.7M	3.9%
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	9/2/22	\$22.8M	\$20.8M	\$2.0M	98%

The Alameda Creek Recapture Project is estimated to have a remaining construction contingency of \$1.7M as of the end of the reporting period. The 80% confidence level of the project risks are estimated at \$3.1M. If most of the risks materialize, the remaining contingency for the project would not cover the risks; however, the 80% confidence level for the project is well under the value of the Director’s Reserve.

The Regional Groundwater Storage and Recovery (Contract B) is currently estimated to have remaining construction contingency of \$2.0M as of the end of the reporting period. The remaining risk, estimated at \$120,000 (at the 80% risk confidence level), means that no additional contingency will be needed for this construction contract. Additionally, the Director’s Reserve currently has \$16.1 million remaining that may be used for other WSIP projects.

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 project budgets 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 December 2019 were approximately 55 full-time equivalents (FTEs), which has decreased to approximately 25 FTEs in December 2021. The decrease is attributable to both City and consultant staff ramping down activities as projects complete construction and closeout. 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 2021 | 2022

October 2021 — December 2021

Rebuilding Today for a Better Tomorrow

Published: February 28, 2022

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Quarterly Report - Q2 FY2021/2022

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 second (2nd) Quarterly Report for Fiscal Year (FY) 2021-2022 presents the progress made on the WSIP Regional Program between October 1, 2021 and December 31, 2021. The program’s schedule and budget were last approved by the San Francisco Public Utilities Commission (SFPUC or Commission) on April 14, 2020. The WSIP Local Program was completed on June 3, 2020.

Figure 2.1 shows the total Current Approved Budget for the regional projects remaining in each phase of the program as of December 31, 2021. The number of projects currently active in each phase is shown in parentheses.

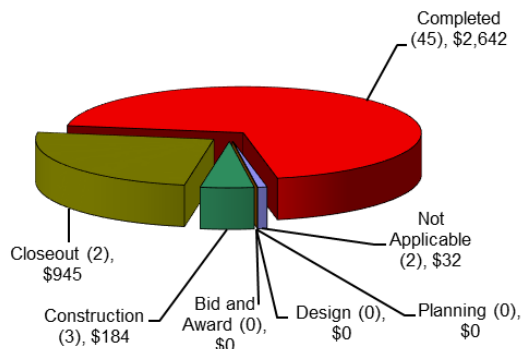


Figure 2.1 Total Current Approved Budget for Projects Active in Each Phase (\$Million)

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

December 31, 2021: Pre-construction, Construction, and Post-construction.

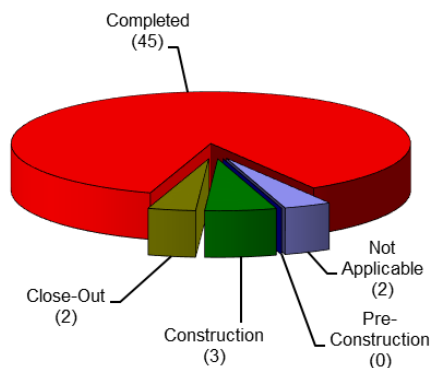


Figure 2.2 Number of Projects in Pre-construction, Construction, and Post-construction

Figure 2.3 summarizes the environmental review and permitting status of the WSIP’s 52 regional projects as of December 31, 2021.

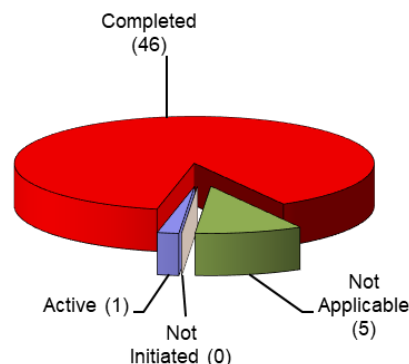


Figure 2.3 Program Environmental and Permitting Status

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 ⁽²⁾	11/30/20				P		4%
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) 100%
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 2A) ⁽³⁾ (D) Regional Groundwater Storage and Recovery (Phase 2B) ⁽⁴⁾	(A) 07/23/12 (B) 12/31/17 (C) 02/28/21 (D) 02/28/21				P	(A) 07/23/12	(A) 100% (B) 98% (C) 0% (D) 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.
- 2 Current Forecasted Substantial Completion date is on 11/19/22.
- 3 Current Forecasted Substantial Completion date is on 08/31/23.
- 4 Current Forecasted Substantial Completion date is on 10/31/25

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 Q2/FY21-22 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

\$4,787.8 million. The Current Approved WSIP Budget and Forecasted Cost at completion for only the Regional Program (including construction contingency) are \$3,803.1 million and \$3,802.6 million, respectively (the Current Forecast Cost is \$0.5 million under the Current Approved Budget). The final expenditures for the Local Improvement Projects were \$331.9 million, which were \$0.5 million over the Current Approved Budget of \$331.4 million upon completion. 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)	Q2/FY21-22 Forecasted Costs (\$ Million) (E)	Cost Variance (\$ Million) (F = D - E)
Regional Improvement Projects	\$3,019	\$3,181	\$3,081.4	\$3,075.9	\$3,089.3	(\$13.4)
Construction Costs ⁽¹⁾	\$2,023	\$2,322	\$2,065.9	\$2,064.5	\$2,060.3	\$4.2
Program Delivery Costs ⁽²⁾	\$967	\$758	\$984.8	\$979.5	\$984.2	(\$4.7)
Other Costs ⁽³⁾	\$29	\$101	\$30.7	\$31.9	\$44.7	(\$12.9)
Support Projects ⁽⁴⁾	\$235	\$33	\$244.9	\$244.9	\$259.3	(\$14.4)
Construction Contingency for Regional & Support Projects ⁽⁵⁾	\$443	\$193	\$476.8	\$482.3	\$454.0	\$28.2
REGIONAL PROGRAM WITH CONTINGENCY	\$3,697	\$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⁾	\$219	-	\$281.3	\$281.3	\$281.3	-
Finance ^(9,10,11)	\$372.0	\$552.0	\$372.0	\$372.0	\$372.0	-
PROGRAM TOTAL	\$4,620	\$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 Q2/FY21-22 Forecasted Construction Contingency; and the Remaining

Contingency as of the end of the reporting quarter. As of December 31, 2021, the Forecasted Construction Contingency is \$454.0 million, and the Current Remaining Contingency is \$7.5 million.

The total costs of Change Orders approved in Q2/FY21-22 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/FY21-22 Forecasted Construction Contingency ⁽¹⁾ (\$ Million) (A)	Total Approved Change Orders as of Q1/FY21-22 ^(2,3) (\$ Million) (B)	Change Orders Approved in Q2/FY21-22 ⁽²⁾ (\$ Million) (C)	Total Approved Change Orders as of Q2/FY21-22 (\$ Million) (D = B+C)	Project Savings or Director's Reserves (+) Moved to Contingency/ Funds (-) Moved out of Contingency during Q2/FY21-22 ⁽⁴⁾ (\$ Million) (E)	Q2/FY21-22 Forecasted Construction Contingency (\$ Million) (F = A + E)	Q2/FY21-22 Remaining Contingency (\$ Million) (G = F - D)
San Joaquin Region	-	-	-	-	-	-	-
Sunol Valley Region	\$365.60	\$358.31	\$4.13	\$362.43	(\$0.22)	\$365.38	\$2.94
Bay Division Region	\$8.12	\$8.06	-	\$8.06	-	\$8.12	\$0.06
Peninsula Region	\$56.84	\$56.79	-	\$56.79	-	\$56.84	\$0.05
San Francisco Regional Region	\$23.51	\$19.19	\$0.16	\$19.35	-	\$23.51	\$4.16
Support Projects	\$0.14	(\$0.12)	-	(\$0.12)	-	\$0.14	\$0.26
Regional Total	\$454.21	\$442.23	\$4.29	\$446.51	(\$0.22)	\$453.98	\$7.47

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	\$4.13	\$0.22	\$4.35	-	-	-
CUW35201 Alameda Creek Recapture Project	\$0.12	-	\$0.12	-	-	-
CUW37401 Calaveras Dam Replacement WD-2551	\$4.01	\$0.22	\$4.23	-	-	-
San Francisco Regional	\$0.16	-	\$0.16	-	-	-
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	\$0.16	-	\$0.16	-	-	-
Regional Total	\$4.29	\$0.22	\$4.51	-	-	-

Table 3.4 Forecasted Remaining Construction Contingency

Region	Q2/FY21-22 Remaining Construction Contingency ⁽¹⁾ (\$ Million) (A)	Pending Change Orders as of Q2/FY21-22 ⁽²⁾ (\$ Million) (B)	Potential Change Orders as of Q2/FY21-22 ⁽³⁾ (\$ Million) (C)	Trends as of Q2/FY21-22 ⁽⁴⁾ (\$ Million) D	Q2/FY21-22 Forecasted Remaining Construction Contingency (\$ Million) (E = A-B-C-D)
San Joaquin Region	-	-	-	-	-
Sunol Valley Region	\$2.94	\$0.00	(\$0.03)	\$0.19	\$2.78
Bay Division Region	\$0.06	-	-	-	\$0.06
Peninsula Region	\$0.05	-	-	-	\$0.05
San Francisco Regional Region	\$4.16	\$0.58	\$0.63	\$0.21	\$2.74
Support Projects	\$0.26	-	-	-	\$0.26
Regional Total	\$7.47	\$0.59	\$0.60	\$0.40	\$5.88

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/FY21-22, it shows the Remaining Construction Contingency, Pending Change Orders, Potential Change Orders, Trends, and Forecasted Remaining Construction Contingency. As of December 31, 2021, the Total Forecasted Remaining Construction Contingency for the Regional WSIP is \$5.9 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.

The spending pattern for the project is very similar from month to month as the project primarily funds program-level positions occupied by SFPUC staff and consultants. The Forecasted Total Program Management Cost is \$113.5 million, which is \$0.7 million over the Current Approved Budget of \$112.7 million.

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)	Q2/FY21-22 Forecasted Cost (\$ Million) (D)	Cost Variance (\$ Million) (E = C-D)
Management Support	\$37.7	\$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	\$20.6	\$19.8	\$19.8	\$20.9	(\$1.1)
Program Construction Management	\$27.8	\$28.0	\$28.0	\$27.8	\$0.2
Program Management Total	\$107.8	\$112.7	\$112.7	\$113.5	(\$0.7)

4. PROGRAM SCHEDULE SUMMARY

Figure 4.1 and Table 4.1 compare the 2005 Baseline, 2020 Approved, Current Approved, and Q2/FY21-22 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 Regional WSIP (Local WSIP was completed in June 2020) are May 2023 and February 2027. Refer to Appendix C for a graphical presentation of the WSIP Approved Project-Level Schedule.

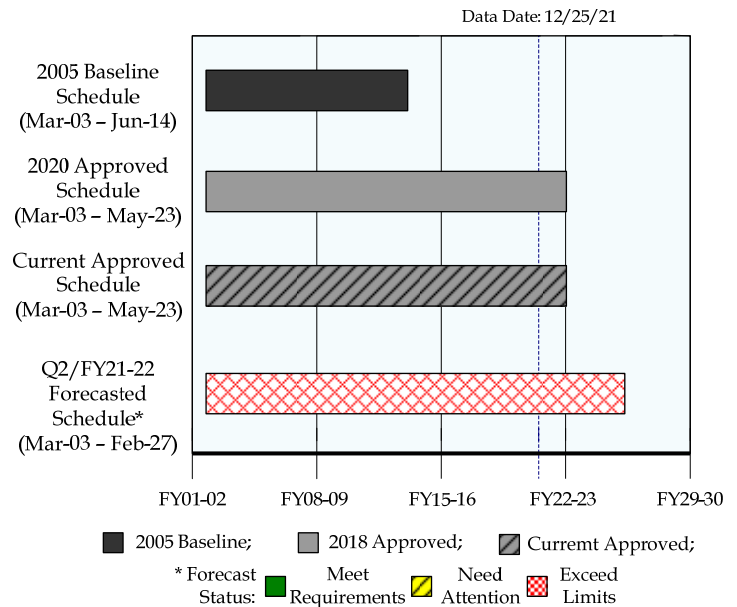


Figure 4.1 Program Schedule Summary

Table 4.1 2020 Approved vs. Q2/FY21-22 Forecasted Schedule Dates

Category	2005 Baseline Start	2020 Approved Start	Current* Approved Start	Actual Start	2005 Baseline Finish	2020 Approved Finish	Current* Approved Finish	Q2/FY21-22 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	02/01/27	45.0 (Late)
Local** Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/28/13	7/31/18	7/31/18	06/03/20✓	Completed (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	01/30/26	(32.9 Late)

* 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

5. PROJECT PERFORMANCE SUMMARY*

All costs are shown in \$1,000s as of 12/25/21

Project Name	Active Phase (**)	2005 Baseline Budget (a)	2020 Approved Budget (b)	Current Approved Budget (c)	Q2/FY21-22 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)	Q2/FY21-22 Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
Sunol Valley Region															
CUW35201 - Alameda Creek Recapture Project	CN	\$ 18,809	\$ 34,000	\$ 34,000	\$ 41,967	\$ 17,702	(\$7,967)	●	05/25/12	05/05/23	05/05/23	05/03/24	12.0 mo. Late	●	See Section 6
CUWSVI0101 - WSIP Closeout - Sunol Valley	CN		\$ 5,990	\$ 5,990	\$ 5,990	\$ 4,746	-	★		06/30/21	06/30/21	06/30/22	12.0 mo. Late	●	See Section 6
San Francisco Regional Region															
CUW30103 - Regional Groundwater Storage and Recovery	CN	\$ 39,233	\$ 138,793	\$ 138,793	\$ 148,350	\$ 118,028	(\$9,557)	⚠	02/27/14	12/30/21	12/30/21	02/01/27	61.1 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	06/30/22	9.0 mo. Late	●	NA
CUW39401 - Watershed and Environmental Improvement Program	NA	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 18,228	-	★	06/28/13	01/08/21	01/08/21	03/30/22	14.7 mo. Late	●	See Section 6

* 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 from 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: Construction	Environmental Status: Completed (EIR)
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Project Cost:		Project Schedule:	
Approved 	\$34.00 M	Approved Sep-03 	May-23
Forecast* 	\$41.97 M	Forecast* Sep-03 	Jun-24
Actual 	\$17.70 M	Project Percent Complete: 43.9%	

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

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	05/05/24	12/18/20✓	06/21/21✓	01/18/23

Progress and Status:

The contractor continued work on the construction trailer installation, removal of the abandoned PG&E gas line and submittals. The Department of Water Resources (DWR) issued the encroachment permit to cross DWR right-of-way. The contractor started scheduling the temporary bridge crossing work. The contractor received notices of material shortage, longer lead-time estimates, and cost increases related to COVID-19 from subcontractors. Coordination with the quarry operator on access road repairs continued. Rains during the quarter flooded some of the access roads around the ponds, and the contractor started road repairs to allow continued access.

Issues and Challenges:

The delay in securing the DWR encroachment permit impacted the start of site grading and excavation work. The contractor started working on a time impact analysis related to the delay. The project team will review the time impact analysis and evaluate options to make up lost time. The variance in the forecast completion date is due to additional time for close-out to complete operator training, testing and start-up of the facilities. The variance in the project cost forecast is due to the long delay and additional scope items needed to obtain CEQA approval and the higher construction bid cost over the engineer’s estimate.




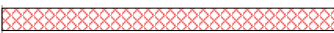




Flooding of Access Road

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)
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Project Cost:		Project Schedule:	
Approved	 \$5.99 M	Approved Jul-16	 Jun-21
Forecast*	 \$5.99 M	Forecast* Jul-16	 Jun-22
Actual	 \$4.75 M	Project Percent Complete: 99.8%	
			

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, (2) JOC-59-20, (4) JOC-54-02, (5) JOC 60-20, (6) JOC-60-23, and (7) SVWTP Polymer Feed Facility were all completed.

Issues and Challenges:











All the sub-projects included in the current scope of the Sunol Closeout project have been completed. This project will stay open with no activity in Q2 to allow the transfer of remaining scope from the Calaveras Dam Replacement Project in Q3. This will facilitate close out of the Alameda Creek Diversion Dam Fish Passage Facilities construction contract, WD-2729, in March 2022, in turn allowing administrative close out of the entire Calaveras Dam Replacement project.



Proposed Polymer Feed System for SVWTP Basins 1-4

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  Feb-27	
Actual  \$118.03 M	Project Percent Complete: 87.0%	
 Approved;  Actual Cost; * Forecast Status:  Meet Requirements  Need Attention  Exceed Limits		

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction+ NTP	Construction+ Final Completion
Current Forecast	(A) 09/07/09✓ (B) 08/07/14✓ (C) 11/10/20✓ (D) 06/30/23	(A) 09/07/11✓ (B) 09/22/14✓ (C) 09/27/21✓ (D) 08/01/23	(A) 01/30/12✓ (B) 04/06/15✓ (C) 05/02/22 (D) 02/01/24	(A) 09/05/12✓ (B) 09/02/22 (C) 12/29/23 (D) 01/31/26

+ Project includes multiple construction contracts: (A) Test well drilling; (B) Well station construction; (C) WD-2878A RGSR Phase 2A; (D) RGSR Phase 2B

Progress and Status:

For Phase 1 (Contract B), the following were completed: Upsizing of water heaters at all well treatment facilities; construction of partition wall at Poncetta Drive (Lake Merced) Treatment Facility; installation of cathodic protection and well pump, programming, and testing at Mission Road (Treasure Island) Well & Treatment Facility; and backflow preventer at South Park Plaza Well Station.

For Phase 2A (Contract C), review of the two (2) bids received on 11/18/2021 for Contract No. WD-2878A began in the quarter and is continuing. For Phase 2B (Contract D), the 100% design continued to progress during the quarter. Parcel maps for the utilities and structures for pipe support have been completed.

Issues and Challenges:







The forecasted cost and schedule for Phase 1A contract were increased during the quarter due to Town of Colma's new requirement for ADA compliant driveway, resulting in additional design and review

time by all entities. The forecasted cost and schedule for Phase 2B project were increased during the quarter due to PG&E's new requirement to include an interrupter facility housed in a vault, requiring additional design and review time by all entities and delaying issuance of encroachment permits. Past increases in the forecasted cost and schedule for Phase 1 were due to flowmeter inaccuracies, repairs to corrosion in several of the well systems, modifications to the chemical feed systems, and the delays in obtaining Permit to Enter from BART. Past increases to the forecasted cost and schedule for Phase 2 were due to the addition of cathodic protection for multiple wells, splitting the work into two contracts, and the longer time needed to obtain easements and right of way permits.

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)
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Project Cost:		Project Schedule:	
Approved	 \$20.00 M	Approved Jan-07	 Jan-21
Forecast*	 \$20.00 M	Forecast* Jan-07	 Mar-22
Actual	 \$18.23 M	Project Percent Complete: 85.9%	
			

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

Progress and Status:

Funding supported three subprojects during the period of October 2021 through December 2021. On December 14, 2021, the San Francisco Public Utilities Commission (SFPUC) approved the purchase of 653 acres in the Alameda Creek watershed. The SFPUC will have until March 2, 2022, to conduct due diligence investigations, including property inspections, environmental studies, and boundary survey in addition to other due diligence activities. It is anticipated that the purchase of the property will close in early March.

Issues and Challenges:

None at this time.



Alameda Creek Watershed

7. On-Going Construction

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion*	Q2/FY21-22 Forecasted Construction Final Completion**	Approved Contract Cost +	Q2/FY21-22 Forecasted Cost++	Schedule (Cal. Days)	Cost	
Sunol Valley Region								
CUW35201 - Alameda Creek Recapture Project	06/21/21	12/19/22	01/18/23	\$ 19,628,556	\$ 19,600,230	(30)	\$ 28,326	4.0%
San Francisco Regional Region								
CUW30103 - Regional GW Storage and Recovery (Contract B)	04/06/15	12/26/21	09/02/22	\$ 62,328,777	\$ 63,544,974	(250)	(\$1,216,197)	98.3%

Program Total for On-Going Construction	Approved Contract Cost	Q2/FY21-22 Forecasted Cost*	Variance	
			Cost	Percent
	\$ 81,957,333	\$ 83,145,204	(\$1,187,871)	(1.4%)

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	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
Sunol Valley Region												
CUW37401 - Calaveras Dam Replacement	12/12/11	02/01/21	02/01/21	09/30/21	05/25/12	03/31/21	03/31/21	03/31/22	\$ 197,929,000	\$ 646,797,210	\$ 646,797,209	\$ 617,170,992
Support Projects												
CUW38802 - Bioregional Habitat Restoration		05/31/18	05/31/18	05/31/18		09/30/21	09/30/21	06/30/22		\$ 52,299,498	\$ 51,636,156	\$ 50,654,758
TOTAL									\$ 197,929,000	\$ 699,096,708	\$ 698,433,366	\$ 667,825,750

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
CUWSJI0101 - WSIP Closeout - San Joaquin	-	03/31/21	03/31/21	03/31/21	-	\$ 4,376,164	\$ 4,376,164	\$ 2,009,857
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	\$ 27,037,926
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	\$ 70,530,532
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
CUWBDO101 - WSIP Closeout - Bay Division	-	12/31/20	12/31/20	03/31/21	-	\$ 4,398,775	\$ 4,398,775	\$ 3,322,156
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

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								
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
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	\$ 3,948,943	\$ 3,948,943
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
CUWPWI0101 - WSIP Closeout - Peninsula	-	08/05/21	08/05/21	12/30/21	-	\$ 13,579,680	\$ 13,579,680	\$ 13,447,803
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	\$ 2,554,000,551	\$ 2,554,000,550	\$ 2,544,575,886

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APPENDICES

- A. PROJECT DESCRIPTIONS**
- B. WSIP BUDGET AND EXPENDITURES HISTOGRAM**
- C. WSIP REGIONAL PROGRAM STAFFING PLAN**
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- 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 Backup 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 E5OU** - The E5OU 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

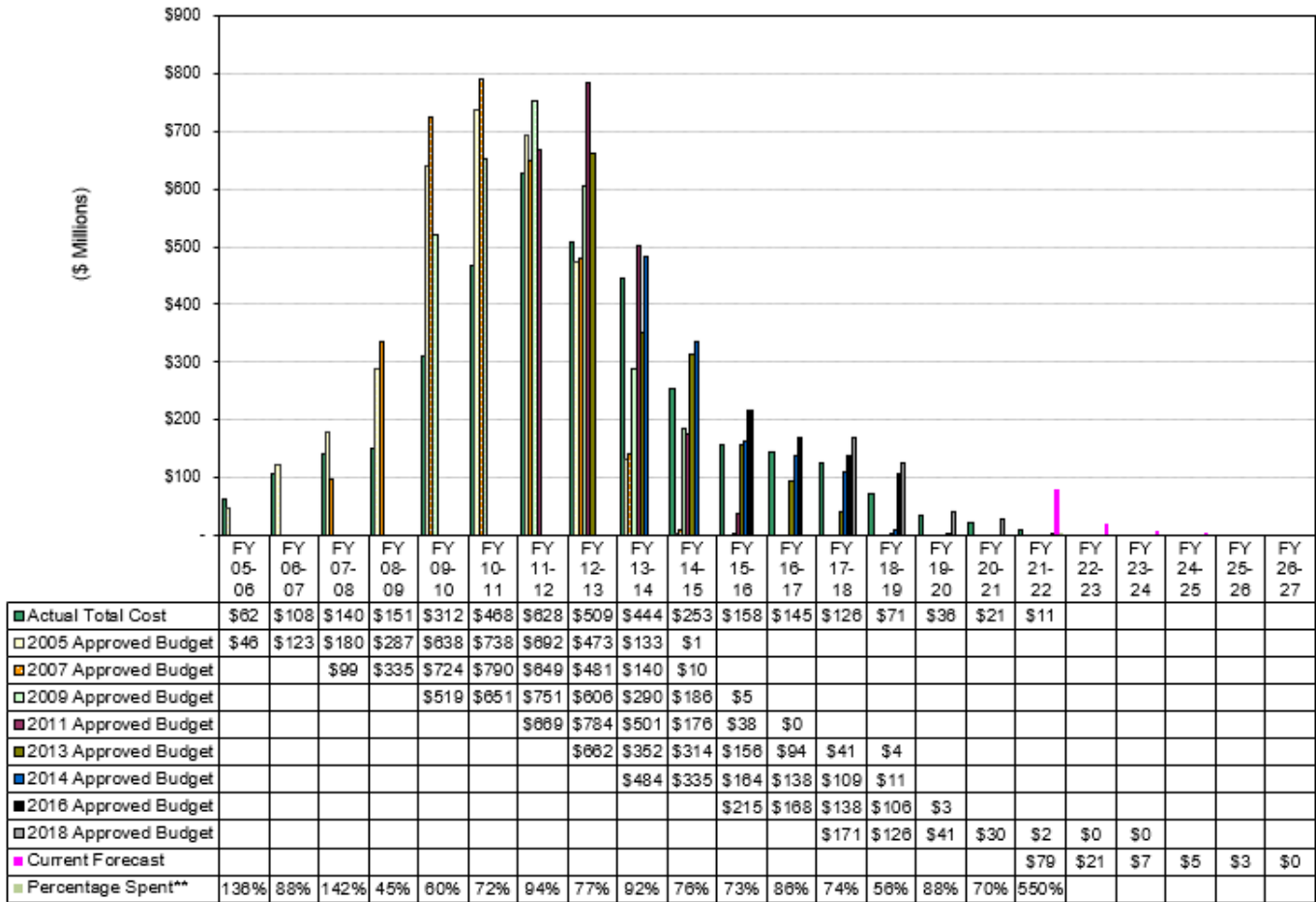
The scope of work and budget for this Long Term Mitigation Endowment was previously included and reported within the WSIP Regional project CUW38802 Bioregional Habitat Restoration; however, the office of the City Controller has established a separate project, specific for this endowment fund, in project 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.

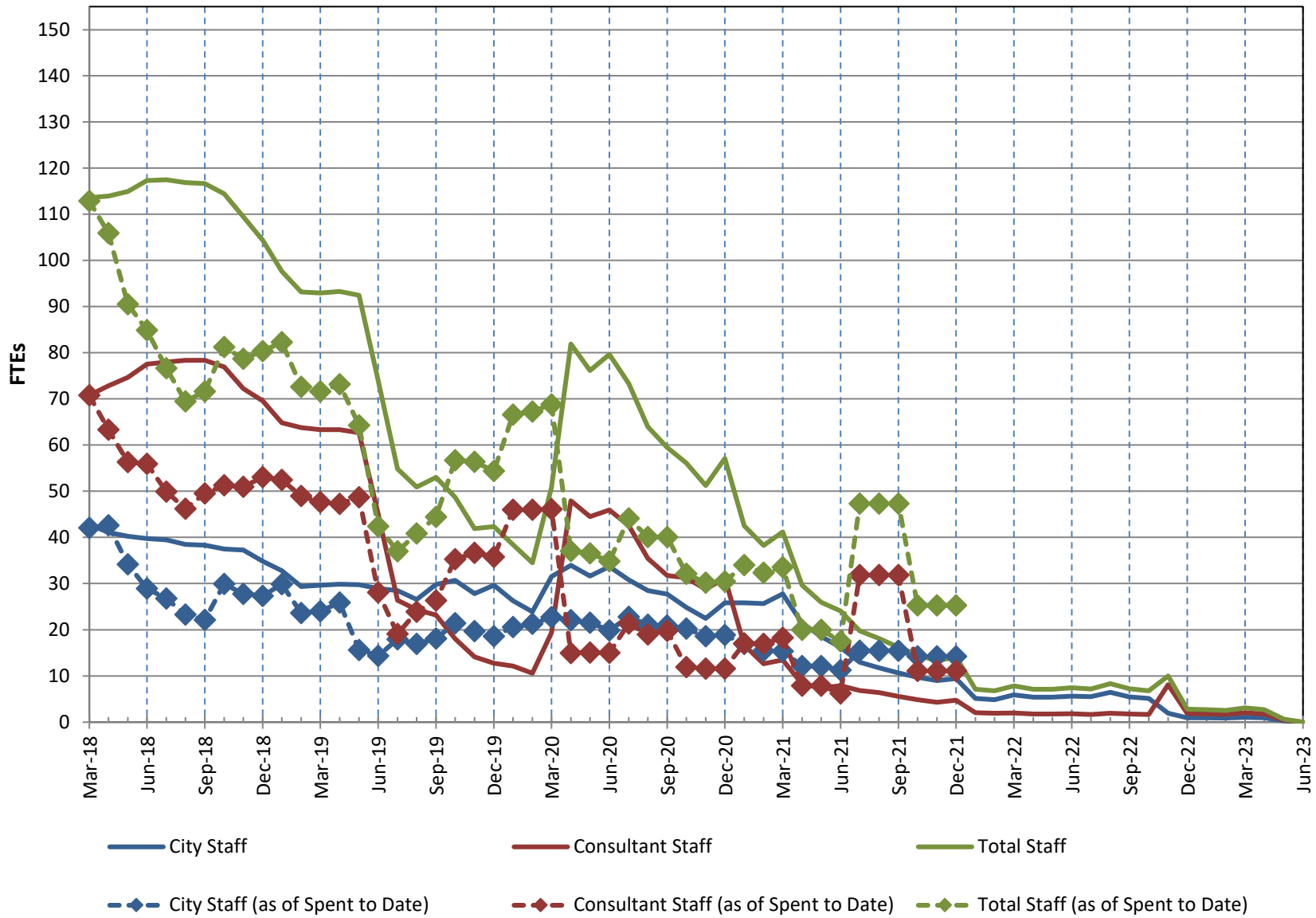
* The histogram does not reflect budget and expenditures prior to FY 2005-2006.

** 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/FY21-22 and cost projections (Current Forecast) from FY21-22 through program completion currently forecast for February 2027. Actual annual expenditures have ranged from 45% to 550% of planned expenditures.

Appendix C. WSIP Regional Program Staffing Plan



APPENDIX E. PROJECTS WITHIN BUDGET AND SCHEDULE

No active projects are currently within Budget and Schedule.

APPENDIX E. LIST OF ACRONYMS

AAR	Alternative Analysis Report	FC	Final Completion
AC	Asphalt Concrete	FEIR	Final Environmental Impact Report
ACAMS	Access Control and Alarm Monitoring System	FTE	Full-Time Equivalent
ACDD	Alameda Creek Diversion Dam	FY	Fiscal Year
ACDT	Alameda Creek Diversion Tunnel	HH	Hetch Hetchy
ADA	Americans with Disabilities Act	HHWP	Hetch Hetchy Water and Power
AGM	Assistant General Manager	HTWTP	Harry Tracy Water Treatment Plant
ARM	Active Risk Manager	IVP	Irvington Portal
AWP	Alameda West Portal	JOC	Job Order Contract
BART	Bay Area Rapid Transit	LCSD	Lower Crystal Springs Dam
BAWSCA	Bay Area Water Supply and Conservation Agency	LCSDI	Lower Crystal Springs Dam Improvements
BDPL	Bay Division Pipeline	LOS	Levels of Service
BHR	Bioregional Habitat Restoration	MG	Million Gallons
BLS	Bureau of Labor Statistics	MGD	Million Gallons per Day
CalTrans	California Department of Transportation	MND	Mitigated Negative Declaration
CATEX	Categorical Exemption	MOA	Memorandum of Agreement
CCSF	City and County of San Francisco	MOU	Memorandum of Understanding
CDD	City Distribution Division	MPP	Mobile Pilot Plant
CDRP	Calaveras Dam Replacement Project	N/A	Not Applicable
CEQA	California Environmental Quality Act	NDA	Nondisclosure Agreement
CER	Conceptual Engineering Report	NEG DEC	Negative Declaration (also shown as ND)
CIP	Capital Improvement Program	NEPA	National Environmental Policy Act
CM	Construction Management	NIT	New Irvington Tunnel
CMB	Construction Management Bureau	NMFS	National Marine Fisheries Service (under NOAA)
CMIS	Construction Management Information System	NOAA	National Oceanic and Atmospheric Agency
CO	Change Order	NTP	Notice to Proceed
COVID-19	Coronavirus Disease of 2019	O&M	Operation and Maintenance
CPI	Cost Performance Index	PCCP	Pre-stressed Concrete Cylinder Pipe
CSPS	Crystal Springs Pump Station	PEIR	Program Environmental Impact Report
CSSA	Crystal Springs/San Andreas	PG&E	Pacific Gas and Electric Company
DB	Design, Build	PLC	Programmable Logic Control
DDW	Division of Drinking Water	PV	Photovoltaic
DSOD	Division of Safety of Dams (State of California)	RFI	Request For Information
DVSS	Digital Video Surveillance System	ROW	Right-of-Way
DWR	Department of Water Resource	SABPL	San Antonio Backup Pipeline
EBMUD	East Bay Municipal Utility District	SAPL	San Antonio Pipeline
EIR	Environmental Impact Report	SAPS	San Antonio Pump Station
EIS	Environmental Impact Statement	SBA	South Bay Aqueduct
EV	Earned Value	SCADA	Supervisory Control and Data Acquisition
EVM	Earned Value Management		


SFPUC	San Francisco Public Utilities Commission
SJPL	San Joaquin Pipeline
SMC	San Mateo County
SMP	Surface Mining Permit
SPI	Schedule Performance Index
SQS	Supplier Quality Surveillance
SSBPL	Sunset Supply Branch Pipeline
SSPL	Sunset Supply Pipeline
STO	Supplemental Task Order
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
USD	Union Sanitary District
UV	Ultra Violet
VFD	Variable Frequency Drive
VSAT	Very Small Aperture Terminal
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

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DATE: May 16, 2022

TO: Commissioner Anson Moran, President
 Commissioner Newsha Ajami, Vice President
 Commissioner Sophie Maxwell
 Commissioner Tim Paulson

FROM: Dennis J. Herrera, General Manager 

RE: WSIP Regional Projects Quarterly Report
 3rd Quarter / Fiscal Year 2021-2022

Enclosed please find the Water System Improvement Program (WSIP) Regional Projects Quarterly Report for the 3rd Quarter (Q3) of Fiscal Year (FY) 2021-2022. The report provides 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, 2022 through March 31, 2022.

MARCH 2022 REVISED WSIP BASELINE

This quarterly report incorporates program and project changes in the March 2022 Proposed Revised WSIP Baseline that were approved by the Commission on April 26, 2022.

STATUS AND PERFORMANCE SUMMARY

Overall, WSIP regional projects are 98.4% complete as of March 31, 2022. As of the end of the reporting period, planning, environmental, design, and construction activities are 100%, 99.9%, 99.3%, and 98.2% 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
- Anson Moran**
President
- Newsha Ajami**
Vice President
- Sophie Maxwell**
Commissioner
- Tim Paulson**
Commissioner
- Dennis J. Herrera**
General Manager



Status of WSIP Regional Projects (as of March 31, 2022)

Project Phase	No. of Projects	Percent by No. of Projects	Total Project Value (\$M)	Percent by Project Value
Planning	0	0%	\$0	0%
Design	0	0%	\$0	0%
Bid & Award	0	0%	\$0	0%
Construction	3	6%	\$215	6%
Close-Out	1	2%	\$95	3%
Completed	46	88%	\$3,461	91%
Not Applicable ¹	2	4%	\$32	1%
Total	52	100%	\$3,803	100%

Notes: (1) "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, three (3) regional projects with a total value of \$215M are in construction and forty-seven (47) projects with a total value of \$3,556M 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.

As of the end of the reporting period, the forecasted total program cost (regional and local projects) is \$4,787.8M, the same as the current Commission Approved Budget. As of the end of the reporting period, all approved change orders (COs) in contracts total \$20.32M, and the current remaining construction contingency is \$6.86M. Also, as of the end of the reporting period, all pending and potential COs, and trends total \$2.19M. Therefore, if all pending and proposed COs and trends become approved COs, the current forecasted remaining construction contingency is \$4.67M.

The current forecasted date to complete the overall WSIP is February 2027 which is the same as the current approved date.

UPDATE ON PROJECTS IN CONSTRUCTION

Steady progress was reported on the remaining ongoing WSIP construction activities. As of the end of March 2022, WSIP regional construction contracts (including active, completed, and future contracts) are 99.2% complete overall, an increase of 0.1% over last quarter.

As of the end of March 2022, monitored exposure hours on WSIP regional projects totaled 9.9 million construction person-hours. Since the implementation of the WSIP Safety Approach in April 2009, the total lost time incidence rate is 0.51, compared to the U.S. Bureau of Labor Statistics (BLS) industry average rate (2018) of 1.5.

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.

Regional Groundwater Storage and Recovery

Overall progress on the Regional Groundwater Storage and Recovery Phase 1 construction contract (Contract B) is reported at 99% complete as of the end of this quarter. For Phase 2A (Contract C), the Commission approved the contract award. For Phase 2B (Contract D), the 100% design continued to progress during the quarter.

Alameda Creek Recapture Project

Construction of the Alameda Creek Recapture Facility is 10% complete as of the end of this quarter.

WSIP Closeout Project

Construction of the Steady progress was made on the one remaining WSIP Closeout Project in the Sunol Valley. The new subproject Alameda Creek Diversion Dam Power and Communication Facilities initiated three new job order contracts (JOCs 70-09, 70-14, and 70-15) during this quarter.

MAJOR PROGRAM TRENDS AND RISKS

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, 2022.

The trends for the WSIP active Regional construction contracts totaled \$0.8M as of the end of the reporting period, an increase of \$0.4M compared to the last quarter. The increase is mainly due to opening new trends for ACRP. The following table lists the trend totals for the two active projects:

WSIP Active Regional Projects Trend Totals (as of March 31, 2022)

Project	Trends (\$ Million)	Percent Completion¹
Alameda Creek Recapture	\$0.6	10%
Regional Groundwater Storage & Recovery (Contract B)	\$0.2	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. On that basis and as of March 31, 2022, all the top ten WSIP program risks belong to Alameda Creek Recapture Project. The current top risk of the program relates to uncertainties in obtaining permits from the California Department of Water Resources (DWR) for protection of the South Bay Aqueduct (SBA) during construction.

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
CUW35201 Alameda Creek Recapture Project (WD- 2825R)	4/28/23	\$2.0M	\$0.8M	\$1.1M	10%
CUW30103 Regional Groundwater Storage and Recovery (WD- 2668)	9/2/22	\$22.8M	\$20.9M	\$1.9M	99%

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

The current staff transition plan for the remainder of WSIP is included in Appendix C on page 41 of the attached WSIP Quarterly Report. The overall staffing levels in March 2022 are approximately 18 full-time equivalents (FTEs), which has decreased compared to the approximately 69 FTEs in March 2020.

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

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HETCH HETCHY
WATER SYSTEM IMPROVEMENT PROGRAM



QUARTERLY REPORT

Regional Projects
Q3 FY 2021 | 2022
January 2022 — March 2022

Rebuilding Today for a Better Tomorrow

Published: May 16, 2022

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Quarterly Report - Q3 FY2021/2022

Water System Improvement Program - Regional Projects

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- 8. Projects in Closeout**
- 9. Completed 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, 2020 and 2022, 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, April 14, 2020, and April 26, 2022, 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
2022 (Revised)	April 26, 2022	\$4,788	02/01/27

* Final Program Completion Date

2. PROGRAM STATUS

This third (3rd) Quarterly Report for Fiscal Year (FY) 2021-2022 presents the progress made on the WSIP Regional Program between January 1, 2022 and March 31, 2022. The program’s schedule and budget were last approved by the San Francisco Public Utilities Commission (SFPUC or Commission) on April 26, 2022. The WSIP Local Program was completed on June 3, 2020.

Figure 2.1 shows the total Current Approved Budget for the regional projects remaining in each phase of the program as of March 31, 2022. The number of projects currently active in each phase is shown in parentheses.

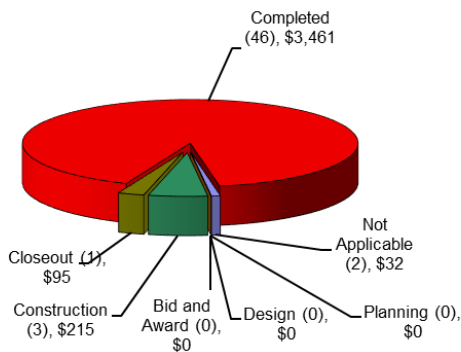


Figure 2.1 Total Current Approved Budget for Projects Active in Each Phase (\$Million)

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

March 31, 2022: Pre-construction, Construction, and Post-construction.

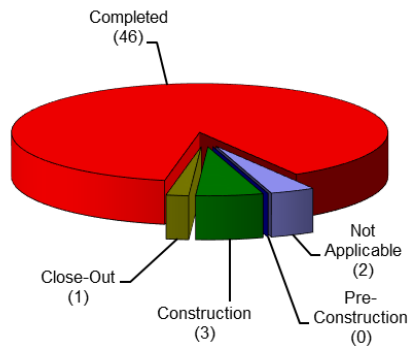


Figure 2.2 Number of Projects in Pre-construction, Construction, and Post-construction

Figure 2.3 summarizes the environmental review and permitting status of the WSIP’s 52 regional projects as of March 31, 2022.

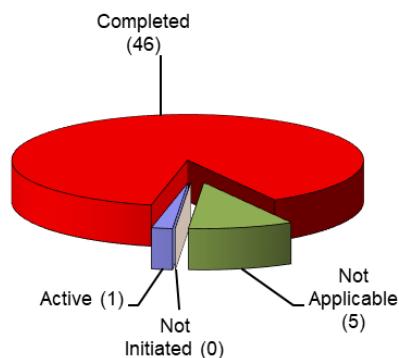


Figure 2.3 Program Environmental and Permitting Status

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	11/18/22				P		10%
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 <i>(Completed)</i> (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) 100%
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%

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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 2A) (D) Regional Groundwater Storage and Recovery (Phase 2B)	(A) 07/23/12 (B) 12/31/17 (C) 08/31/23 (D) 10/31/25				P	(A) 07/23/12	(A) 100% (B) 99% (C) 0% (D) 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, 2022 Approved, Current Approved and Q3/FY21-22 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 \$4,787.8 million. The Current Approved WSIP Budget and Forecasted Cost at completion for only the Regional Program (including construction contingency) are \$3,803.1 million. The Current Approved Budget and final expenditures for the Local Improvement Projects were \$331.9 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)	2022 Approved Budget (\$ Million) (C)	Current Approved Budget ⁽⁷⁾ (\$ Million) (D)	Q3/FY21-22 Forecasted Costs (\$ Million) (E)	Cost Variance (\$ Million) (F = D - E)
Regional Improvement Projects	\$3,449	\$3,181	\$3,513.9	\$3,513.9	\$3,513.9	-
Construction Costs ⁽¹⁾	\$2,452	\$2,322	\$2,495.1	\$2,495.1	\$2,495.1	-
Program Delivery Costs ⁽²⁾	\$968	\$758	\$984.3	\$984.3	\$984.3	-
Other Costs ⁽³⁾	\$29	\$101	\$34.5	\$34.5	\$34.5	-
Support Projects ⁽⁴⁾	\$236	\$33	\$262.0	\$262.0	\$262.0	-
Construction Contingency for Regional & Support Projects ⁽⁵⁾	\$19	\$193	\$27.2	\$27.2	\$27.2	-
REGIONAL PROGRAM WITH CONTINGENCY	\$3,704	\$3,407	\$3,803.1	\$3,803.1	\$3,803.1	-
Local Improvement Projects	\$332	\$383	\$331.9	\$331.9	\$331.9	-
Local Water Supply Projects ⁽⁶⁾⁽⁸⁾	\$220	-	\$280.9	\$280.9	\$280.9	-
Finance ^(9,10,11)	\$372.0	\$552.0	\$372.0	\$372.0	\$372.0	-
PROGRAM TOTAL	\$4,627	\$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 2022 Approved Budget for construction contingency includes all change orders and trends as identified at the time of the March 2022 Revised WSIP, or projects in pre-construction, the 2022 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 2022 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 2022 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 2022 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/FY21-22 Forecasted Construction Contingency; and the Remaining

Contingency as of the end of the reporting quarter. As of March 31, 2022, the Forecasted Construction Contingency is \$27.2 million, and the Current Remaining Contingency is \$7.6 million.

The total costs of Change Orders approved in Q3/FY21-22 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	2022 Approved Construction Contingency ⁽¹⁾ (\$ Million) (A)	Total Approved Change Orders as of Q2/FY21-22 ^(2,3) (\$ Million) (B)	Change Orders Approved in Q3/FY21-22 ⁽²⁾ (\$ Million) (C)	Total Approved Change Orders as of Q3/FY21-22 (\$ Million) (D = B+C)	Project Savings or Director's Reserves (+) Moved to Contingency/ Funds (-) Moved out of Contingency during Q3/FY21-22 ⁽⁴⁾ (\$ Million) (E)	Q3/FY21-22 Forecasted Construction Contingency (\$ Million) (F = A + E)	Q3/FY21-22 Remaining Contingency (\$ Million) (G = F - D)
San Joaquin Region	-	N/A	N/A	-	N/A	-	-
Sunol Valley Region	\$1.95	N/A	N/A	\$0.14	N/A	\$1.95	\$1.81
Bay Division Region	-	N/A	N/A	-	N/A	-	-
Peninsula Region	-	N/A	N/A	-	N/A	-	-
San Francisco Regional Region	\$25.23	N/A	N/A	\$19.42	N/A	\$25.23	\$5.81
Support Projects	-	N/A	N/A	-	N/A	-	-
Regional Total	\$27.18	N/A	N/A	\$19.56	N/A	\$27.18	\$7.62

Notes:

1. Construction Contingency approved as part of the March 2022 Revised WSIP.
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. Potential savings post-Commission's adoption of the March 2022 Revised WSIP.

Table 3.3 Forecasted Remaining Construction Contingency

Region	Q3/FY21-22 Remaining Construction Contingency ⁽¹⁾ (\$ Million) (A)	Pending Change Orders as of Q3/FY21-22 ⁽²⁾ (\$ Million) (B)	Potential Change Orders as of Q3/FY21-22 ⁽³⁾ (\$ Million) (C)	Trends as of Q3/FY21-22 ⁽⁴⁾ (\$ Million) D	Q3/FY21-22 Forecasted Remaining Construction Contingency (\$ Million) (E = A-B-C-D)
San Joaquin Region	-	-	-	-	-
Sunol Valley Region	\$1.81	\$0.06	\$0.09	\$0.56	\$1.10
Bay Division Region	-	-	-	-	-
Peninsula Region	-	-	-	-	-
San Francisco Regional Region	\$5.81	\$0.94	\$0.51	\$0.04	\$4.33
Support Projects	-	-	-	-	-
Regional Total	\$7.62	\$1.00	\$0.60	\$0.60	\$5.43

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 the construction contract management database but are still being negotiated.
4. Trends are any expected impact that the CM team believes may become a change order but are yet to be entered into the construction contract management database as a Potential Change Order.

Table 3.3 provides the forecasted remaining construction contingency. For each region as of Q3/FY21-22, it shows the Remaining Construction Contingency, Pending Change Orders, Potential Change Orders, Trends, and Forecasted Remaining Construction Contingency. As of March 31, 2022, the Total Forecasted Remaining Construction Contingency for the Regional WSIP is \$5.4 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 3.4). 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.

The spending pattern for the project is very similar from month to month as the project primarily funds program-level positions occupied by SFPUC staff and consultants. The Forecasted Total Program Management Cost is \$117.3 million, which is same as the Current Approved Budget of \$117.3 million.

Table 3.4 Status of Program Management Project Cost Breakdown

Category	Expenditures To Date (\$ Million) (A)	2022 Approved Budget (\$ Million) (B)	Current Approved Budget (\$ Million) (C)	Q3/FY21-22 Forecasted Cost (\$ Million) (D)	Cost Variance (\$ Million) (E = C-D)
Management Support	\$37.73	\$46.47	\$46.47	\$46.47	-
Project Labor Agreement	\$3.74	\$3.84	\$3.84	\$3.84	-
Planning and Project Development	\$17.97	\$18.33	\$18.33	\$18.33	-
Program Controls	\$20.66	\$20.86	\$20.86	\$20.86	-
Program Construction Management	\$27.78	\$27.80	\$27.80	\$27.80	-
Program Management Total	\$107.89	\$117.30	\$117.30	\$117.30	-

4. PROGRAM SCHEDULE SUMMARY

Figure 4.1 and Table 4.1 compare the 2005 Baseline, 2022 Approved, Current Approved, and Q3/FY21-22 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 Regional WSIP (Local WSIP was completed in June 2020) are February 2027. Refer to Appendix C for a graphical presentation of the WSIP Approved Project-Level Schedule.

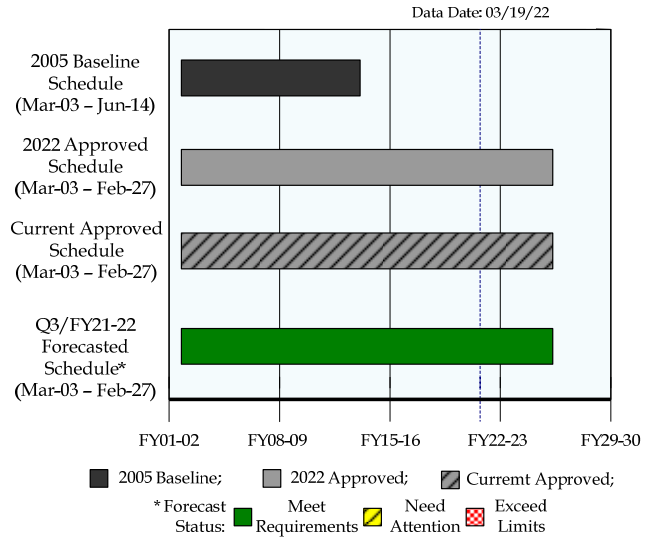


Figure 4.1 Program Schedule Summary

Table 4.1 2022 Approved vs. Q3/FY21-22 Forecasted Schedule Dates

Category	2005 Baseline Start	2022 Approved Start	Current* Approved Start	Actual Start	2005 Baseline Finish	2022 Approved Finish	Current* Approved Finish	Q3/FY21-22 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	02/01/27	02/01/27	-
Local** Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/28/13	7/31/18	06/03/20	06/03/20✓	Completed (-)
Overall WSIP	03/01/03	03/01/03	03/01/03	03/01/03✓	06/30/14	05/05/23	02/01/27	02/01/27	-

* The budget and schedule approved as part of the March 2022 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

5. PROJECT PERFORMANCE SUMMARY*

All costs are shown in \$1,000s as of 03/19/22

Project Name	Active Phase (**)	2005 Baseline Budget (a)	2022 Approved Budget (b)	Current Approved Budget (c)	Q3/FY21-22 Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f= c - d)	Cost Status (+)	2005 Baseline Completion (g)	2022 Approved Completion (h)	Current Approved Completion (i)	Q3/FY21-22 Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
Sunol Valley Region															
CUW35201 - Alameda Creek Recapture Project	CN	\$ 18,809	\$ 43,967	\$ 43,967	\$ 43,967	\$ 19,149	-	★	05/25/12	06/18/24	06/18/24	06/18/24	-	★	See Appendix E
CUWSVI0101 - WSIP Closeout - Sunol Valley	CN		\$ 5,990	\$ 5,990	\$ 5,990	\$ 4,795	-	★		06/30/22	06/30/22	06/30/22	-	★	See Appendix E
San Francisco Regional Region															
CUW30103 - Regional Groundwater Storage and Recovery	CN	\$ 39,233	\$ 158,350	\$ 158,350	\$ 158,350	\$ 119,157	-	★	02/27/14	02/01/27	02/01/27	02/01/27	-	★	See Appendix E
Support Projects															
CUW38804 - Long Term Mitigation Endowment ++	NA		\$ 12,000	\$ 12,000	\$ 12,000	\$ 0	-	★		10/01/24	10/01/24	10/01/24	-	★	NA
CUW39401 - Watershed and Environmental Improvement Program	NA	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 18,402	-	★	06/28/13	06/30/22	06/30/22	06/30/22	-	★	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

All projects are within budget and schedule

7. On-Going Construction

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion*	Q3/FY21-22 Forecasted Construction Final Completion**	Approved Contract Cost +	Q3/FY21-22 Forecasted Cost++	Schedule (Cal. Days)	Cost	
Sunol Valley Region								
CUW35201 - Alameda Creek Recapture Project	06/21/21	12/19/22	04/28/23	\$ 19,650,690	\$ 19,800,690	(130)	(\$150,000)	10.0%
San Francisco Regional Region								
CUW30103 - Regional GW Storage and Recovery (Contract B)	04/06/15	12/26/21	09/02/22	\$ 62,398,777	\$ 63,843,574	(250)	(\$1,444,797)	98.9%

Program Total for On-Going Construction	Approved Contract Cost	Q3/FY21-22 Forecasted Cost*	Variance	
			Cost	Percent
	\$ 82,049,467	\$ 83,644,264	(\$1,594,797)	(1.9%)

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 CLOSEOUT

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	2022 Approved Project Completion	Current Approved Project Completion	Forecasted Project Completion	2005 Baseline Construction Phase Budget	2022 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		10/01/24	10/01/24	10/01/24		\$ 50,723,009	\$ 50,723,009	\$ 50,686,848
TOTAL										\$ 50,723,009	\$ 50,723,009	\$ 50,686,848

9. COMPLETED PROJECTS

Project Title	2005 Baseline Project Completion	2022 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2022 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	\$ 203,178,015	\$ 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
CUWSJI0101 - WSIP Closeout - San Joaquin	-	03/31/21	03/31/21	03/31/21	-	\$ 3,376,376	\$ 3,376,376	\$ 2,009,857
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
CUW37401 - Calaveras Dam Replacement	05/25/12	03/31/22	03/31/22	03/31/22	\$ 256,511,407	\$ 794,066,323	\$ 794,066,323	\$ 792,611,572
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 - SVWTP 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	\$ 27,037,926
CUW35302 - Seismic Upgrade of BDPL Nos. 3 & 4	10/15/12	07/30/18	07/30/18	07/30/18	\$ 66,792,849	\$ 72,194,219	\$ 72,194,219	\$ 70,530,532
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	-	\$ 216,722,172	\$ 216,722,172	\$ 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
CUWBPD0101 - WSIP Closeout - Bay Division	-	03/31/21	03/31/21	03/31/21	-	\$ 3,597,500	\$ 3,597,500	\$ 3,322,156
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

WSIP Quarterly Report

Project Title	2005 Baseline Project Completion	2022 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2022 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
Peninsula Region								
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
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	\$ 3,948,943	\$ 3,948,943	\$ 3,948,943
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
CUWPWI0101 - WSIP Closeout - Peninsula	-	12/30/21	12/30/21	12/30/21	-	\$ 13,579,680	\$ 13,579,680	\$ 13,487,668
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	-	04/19/19	04/19/19	04/19/19	-	\$ 14,700,669	\$ 14,700,669	\$ 14,428,929
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					\$ 2,896,581,656	\$ 3,344,187,109	\$ 3,344,187,109	\$ 3,337,211,299

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 (2) 150-gallon-per-minute, parallel UV units and ancillary facilities. The units will be installed in the existing Thomas Shaft building.
- Two (2) pumps that will pump water from the Coast Range Tunnel to the new disinfection system.

CUW37301 - San Joaquin Pipeline System (Completed)

This 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, railroads, and irrigation canals. 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 building for sodium hypochlorite, hydrofluosilicic acid (i.e., fluoride), and carbon dioxide.
- Office, laboratory, and control facilities, emergency engine generators, and security-related site and access road improvements.

CUWSJI0101- WSIP Closeout - San Joaquin (Completed)

• **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 provide additional solar panels to cover power shortfalls and allow the facility to better meet its water delivery reliability LOS goal. This sub-project consists of three (3) job order contracts at three (3) sites: Oakdale, Knight Ferry Throttling Station, and San Joaquin Junction No. 4. The scope of work as noted in the March 2016 Notice

of Change includes:

- o□ Minor site preparation and grading work
- o□ Furnishing and installing new supplemental solar arrays mounted on concrete pads within security fence enclosures
- o□ Connections and integration of the new solar panels into the existing power system and controls
- o□ Installation of batteries for solar power storage on-site
- o□ Minor site preparation and grading work
- **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 has now 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. As noted in the March 2016 Notice of Change, 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
 - 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 (4) identical vertical turbine pumps mounted on floating barges located in existing Pond F2 (including a mooring system); four (4) 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.

CUW35501 - Standby Power Facilities - Various Locations (Completed)

Standby power requirements are provided at six (6) sites in the East Bay and on the Peninsula. Each site is either provided with an emergency generator or the electrical receptacles to accommodate a portable emergency generator.

The facilities at the six (6) sites include:

- Alameda West Portal: standby power improvements include installing a permanent 20-kilowatt (kW) emergency generator in a sound-attenuated masonry wall enclosure.
- San Antonio Reservoir and Dam: standby power improvements include providing electrical receptacles for a portable 37-kW emergency generator at two (2) locations.
- Harry Tracy Water Treatment Plant (HTWTP): standby power improvements include removing the four (4) existing, smaller emergency generators and providing two (2) permanently installed 2-megawatt (MW) emergency generators.
- Millbrae Yard: standby power improvements include replacing the existing emergency generator with a permanently installed 300-kW unit to enable this facility to function as an emergency operations center.
- San Pedro Valve Lot: standby power improvements include installing a permanent 20-kW emergency generator in a sound-attenuated masonry wall enclosure.
- Capuchino Valve Lot: standby power improvements include providing an electrical receptacle for a portable 30-kW engine generator.
- The project will also provide the trailer mounted engine generator that will be stored at the Millbrae Yard.

CUW35901 - New Irvington Tunnel (Completed)

The NIT alignment will be located just to the south of the existing tunnel. It will be 18,660 feet long and have 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, and where it intersects inactive fault zones or in locations of poor ground conditions.

The NIT project is currently in construction and approximately 99% complete. Major project elements are listed below.

- Conventional mining methods were used for excavation 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 was completed by multiple road header tunneling machines, and limited, controlled detonation in areas of hard rock. Spoils disposal was taken to fill sites just north of the San Antonio Pump Station (SAPS) near the intersection of Calaveras Road and Interstate 680. The completed spoils fills will create a visual barrier to new quarry operation located near Calaveras Road. Potentially contaminated spoils were screened, separated, and if found to contain contaminants, hauled to a permitted landfill.
- At the Irvington Portal, tunnel connections were made to Bay Division Pipeline (BDPL) Nos. 1, 2, and 5 and to BDPL Nos. 3 and 4. Control valves were directly buried with instrumentation and electrical gear in a small control building. At the Alameda West Portal, the tunnel was 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.
- A new access bridge was constructed across Alameda Creek to accommodate temporary construction traffic and on-going SFPUC Alameda West Portal operations.
- A Groundwater Management Program was

developed that includes two (2) years of pre-construction monitoring of wells, springs, creeks, ponds, and wetlands; environmental habitat construction mitigation measures; and two (2) 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 were constructed, including undergrounding of portal structures and new card access controlled gates and security fences.
- In the March 2014 Notice of Change, simplifications were made to the design of the new security structure for the existing Alameda West Portal. The design changes included a more secure structure with a smaller footprint and removal of pipe manifolds that will no longer be in service.

CUW35902 - Alameda Siphon #4 (Completed)

The Alameda Siphon #4 Project extends approximately 3,000 feet from the Alameda East Portal across both the Calaveras Fault and Alameda Creek to the Alameda West Portal.

The project primarily consists of:

- A 66-inch-diameter welded steel pipeline with 310 feet of special trench design and thicker-walled pipe in the fault rupture zone, and a tunneled crossing of Alameda Creek.
- A 96-inch-diameter “blending structure” consisting of a pipe and valve manifold near the Alameda West Portal that will blend SVWTP and Hetch Hetchy water so that the existing and new Irvington Tunnels will receive a uniform quality of water.
- New isolation/throttling valves on Alameda Siphons No. 3 and 4 and new isolation valves on Alameda Siphons No. 1 and 2. The valves will be installed upstream of the blending structure.
- Ventilation improvements at Alameda East Portal for the Coast Range Tunnel required for construction access.
- New chemical injection facilities on Alameda Siphon No. 4.
- Relocation and extension of the existing overflow pipe from the Alameda East Portal about 500 feet to an existing quarry, and site fencing at Alameda East Portal. The overflow to the existing quarry includes a grouted rock riprap

channel down the side of the quarry for erosion protection.

- Road improvements at the intersection with Calaveras Road for construction access.

CUW37001 - Pipeline Repair & Readiness Improvements (Completed)

This project is 100% complete and has been closed out. The project was separated into the three (3) following implementation phases:

- Phase A: Procurement of varied lengths and sizes of welded steel pipe and fittings for stockpiling at new storage facilities at seven (7) locations along the transmission system, west of the Coast Range Tunnel.
- Phase B: Procurement and installation of a pipe rolling machine at the Sunol Yard. The rolling machine, which has the capability to roll pipe sections up to 9 feet in diameter, will be housed in a new building with an emergency power supply.
- Phase C: Development of a pipeline repair prioritization plan, on-call emergency repair procedures and contracts, and mutual assistance agreements.

CUW37401 - Calaveras Dam Replacement (Completed)

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 (2) 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 (3) 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 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 (4) 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 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 changes as previously noted in the March 2014 Notice of Change.
- Additional slope reinforcement in Borrow Area B and import of offsite rockfill as noted in the March 2016 Notice of Change.
- Repairs to the landslide portion of Calaveras Road and restoration of the West Haul Road as noted in the scope refinements listed below for this March 2018 Notice of Change.
- For the ACDD fish ladder, to address the potential landslide hazard and further protect the

fish passage structure, as noted in the scope refinements listed below for this March 2018 Notice of Change, 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 installing a hypolimnetic oxygenation system and associated cryogenic (oxygen generation) equipment near the dam. The addition of oxygen into the reservoir will limit the negative effects of algal blooms and may promote a healthier fish habitat. The system will continue to be usable following completion of the replacement Calaveras Dam. The project primarily consists of the new cryogenic equipment, two (2) diffuser systems in the reservoir, and miscellaneous site work.

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 (3) 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 to 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 is included around the quarry pond to minimize groundwater intrusion and to ensure slope stability.

CUW38101 - SVWTP Expansion & Treated Water Reservoir (Completed)

The project primarily consists of:

- The expansion improvements, which increase the sustainable capacity to 160 mgd, include the addition of a new flocculation/sedimentation basin and the retrofit of six (6) of the twelve (12) existing filters. Design of improvements to the remaining six (6) filters was performed under the project, and was included as an optional bid item in the construction contract. As a result, upgrades to all 12 filters were able to be performed under the construction contract, providing an additional factor of safety for reliable and sustainable production of 160 mgd required to meet the LOS goals established for the system.
- A single 17.5-million-gallon (mg) circular TWR which was constructed along with a new 3.5-MG rectangular chlorine contact tank on the northern portion of the existing plant site. Roughly 400,000 cubic yards of excavated material was hauled to a disposal site immediately east of the plant for disposal.
- New chemical storage and feed facilities for disinfection are constructed including sodium hypochlorite and ammonia. New fluoride facilities were also added.
- Construction of approximately 2,700 feet of 78-inch-diameter pipe that connects the new TWR to the existing plant discharge pipeline. This included a tunneled crossing of Alameda Creek.
- Nine (9) existing chemical tanks and associated electrical and instrumentation components were replaced under the construction contract. The existing chemical tanks and the associated electrical and instrumentation had reached the end of their useful life and were in jeopardy of failure.
- Miscellaneous plant improvements include a new emergency generator and improvements to the plant electrical system, substation, electrical panels, and motor control centers; an upgrade of the instrumentation and controls; a new filter washwater recovery basin; improvements to the

flow distribution structure and associated facilities; replacement of the plant's existing boiler; improvements to the influent chemical mixing system; and repaving of the existing plant access road.

CUW38601 - San Antonio Pump Station Upgrade (Completed)

The project consists of:

- Replacement of the three (3) 1,000-horsepower electrical pumps.
- Addition of two (2) 1.5-megawatt emergency generators. The generators are sized to power the three (3) 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

- **Alameda Siphon No. 4 Carrier Water System Modifications** - The CUW35902 Alameda Siphon No. 4 Project was completed in 2013. Since that time, new facilities that have been brought on-line as well as other changes have occurred in water operations, have resulted in an apparent drop in water pressures and volumes at the Sunol Valley Chloramination Facility. This has reduced the available water needed for the current carrier water 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 better 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 of 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
 - o Plumbing and control connections between the new facilities and the current system
- **Erosion Repair at Pond F3 East** - The 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 and restore the drainage pipe through a job order contract including:

- o New rockfill on the east back of the quarry pond from the current drainpipe to the toe of the bank
- o Excavation and grading to remove loose bank debris and prepare the subgrade slope to receive new rockfill
- o Extension of the existing drainpipe downslope to the water line of the pond
- o Temporary access improvements at the side bank of the pond for a crane and other equipment to deliver to, and place new rockfill and other materials into, the repair area

• **Sunol Valley Water Treatment Plant Basin 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 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 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
- o Possible extension of the new polymer to optimize water production from the four (4) older basins

• **Miscellaneous Work at Alameda West Portal, Irvington Portal and San Antonio Back-Up**

Pipeline – The CUW 35901 New Irvington Tunnel (NIT) was completed in 2017, and the CUW 37403 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

• **New Irvington Tunnel 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. Fish Passage facilities at the Alameda Creek Diversion Dam is to modify the VSAT power supply system, replace the main photovoltaic battery bank and realign several valves and actuator drive stems.

• **Alameda Creek Diversion Dam Power and Communication Facilities** (new sub-project

addition in 2022) – The CUW37401 Alameda Creek Diversion Dam Fish Passage Facilities (WD-2729 contract) is a sub-project to the Calaveras Dam Replacement Project, which will close out on 3/31/2022. After operating the fish passage facility for over one year, a few deficiencies were discovered in the power system for the communication facilities, the main power system, and a few of the valves and gates. Job Order Contracts (small contracts less than one million dollars in value) will be used to address these issues under this new sub-project. This subproject is to modify the VSAT power supply system, replace the main photovoltaic battery bank and realign several valves and actuator drive stems.

BAY DIVISION REGION

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

The project consists of:

- Two (2) 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 (4) 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 existing pipeline fault crossing between the two (2) crossover/isolation valve vaults constructed under the BDPL Nos. 3 & 4 Crossover/Isolation Valves Project is about 2,400 feet in length, and consists of BDPL No. 3, a 78-inch-diameter reinforced concrete cylinder pipe, and BDPL No. 4, a 96-inch-diameter PCCP. These vaults are located east and west of I-680 near the intersection of Mission Boulevard. The current project scope includes replacement of about 2,300 feet of BDPL No. 3. Ongoing investigations have determined that improvements to BDPL No. 4 are also required to facilitate the failure of BDPL No. 4 in a controlled manner that does not cause the failure of BDPL No. 3. It is planned that about 400 feet of the new BDPL No. 3 will cross Trace A under I-680 in an existing oversized corrugated metal pipe; about 300 feet that crosses Trace B under Mission Blvd. will be in a newly constructed concrete vault ("box culvert"); and the remaining new pipeline will be buried. All new construction will be in the SFPUC's existing right-of-way (ROW).

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 (2) 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 (2) Alameda County Water District water pipelines, one (1) Union Sanitary District sewer pipeline, one (1) conduit of AT&T phone lines, and one (1) 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 (5) 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 (7) 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 (2) 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 (2) facilities were added to the original scope of work as part of the March 2014 Revised WSIP and are necessary to ensure the project will meet LOS goals:

- 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.

- 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 original 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 provides for the installation 640 lineal 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)

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 (3) 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 (4) 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 (6) 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% 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 (6) reaches of pipe (144 feet total out of 16 miles) that are potentially distressed. During initial investigations, the condition of one (1) 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 (5) 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 (1) 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 (Completed)

• **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** - Due to the drought conditions and timing of hydro-seeding performed for the Bay Tunnel Project outside of the typical seasonal window, it may not be possible to file the Notice of Termination (NOT) to close out the storm water permit prior to the Bay Tunnel Project closeout date, as the 70% growth take requirement, with less than 10% noxious weeds, may not be achieved by that time. Accordingly, the scope of this sub-project provides for monitoring of the 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, based on recent discussions, Operations staff are

requesting 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 potential delays to the Bay Tunnel Project, at high cost, 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 replacing of the bolts (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. The proposed work on the valve will be done during the shutdown of the Bay Tunnel for warranty inspection in Winter 2016/2017.

• **Ventilation and Sump Pump Systems Installation (new sub-project in 2018)** - 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 (2) 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 raising the wall that is located on top of the upstream face of the dam and raising 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 an 8-foot-diameter welded steel liner.
- Vertical shafts on each end of the tunnel to accommodate the TBM and future maintenance.
- The southern shaft will include a connection to the existing CSBPL near the north end of the existing Crystal Springs Bypass Tunnel; the existing pipeline has been determined to be seismically reliable in this area.
- The northern shaft of the new tunnel will tie into the southern ends of both the Crystal Springs Pipeline (CSPL) No. 2 and the Sunset Supply Pipeline (SSPL). The connecting segment and tie-in to the SSPL will be provided by this project. However, the connecting segment and a blind

flange for CSPL No. 2 will be provided by the Crystal Springs Pipeline No. 2 Replacement Project, and this project will tie into the blind flange. This contractual arrangement is used to prevent two (2) shutdowns of the CSPL No. 2.

- New isolation valves and valve vaults.
- Standby power near valve vault G40.
- The existing pipeline will remain in service to provide redundancy for inspection of the tunnel.

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 the 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 includes 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 also provided an opportunity to perform a condition assessment of the reservoir interior that has been used to help identify work associated with the Pulgas Balancing - Structural Rehabilitation & Roof Replacement Project.

CUW36102 - Pulgas Balancing - Discharge Channel Modifications (Completed)

The discharge channel modifications to be built under this project will accommodate the anticipated maximum flow of 250 mgd. Project components include raising the channel walls, repairing concrete cracks and exposed reinforcing steel, strengthening and interconnecting the channel floor sections, and strengthening the tall tapered wall near the Pulgas Tunnel.

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

The project includes structural rehabilitation of the reservoir, which consists of seismic retrofit of the walls, installation of a new steel frame roof, and repairs of concrete cracks and exposed reinforcing steel. The general rehabilitation also includes the installation of a new ventilation system and sampling ports, the replacement of utility piping, and the upgrade of the electrical system.

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

Improvements to the dechloramination and pH control facilities are necessary to address immediate compliance issues. The modifications are anticipated to primarily be made to the flow measurement and control system, and to the various process control and chemical feed systems. Emphasis will be placed on chlorine removal and pH adjustment first to comply with existing regulations, with consideration towards the interdependent secondary goal of maximizing ammonia removal for nutrient control in the reservoirs. The scope of this project will be refined further as design efforts continue to move forward.

CUW36501 - Cross Connection Controls (Completed)

The project consists of providing improvements at the 304 sites identified 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 protection devices
- Reconstruct or raise existing vaults
- Install new vault covers
- Replace existing air valves
- Modify, relocate, or remove existing blow-off facilities

CUW36601/02/03, Harry Tracy Water Treatment Plant Short-Term Improvements

The projects consist of:

- CUW36601 (HTWTP Short-Term Improvements - Demo Filters): Retrofit of two (2) filters and full-scale performance demonstration testing (project has been completed).
- CUW36602 (HTWTP Short-Term Improvements - Remaining Filters): Scope of that project combined with Project CUW36602.
- CUW36603 (HTWTP Short-Term Improvements - Coagulation & Flocculation/Remaining Filters):
 - o Coagulation improvements that 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.
 - o Flocculation improvements that include reconfiguring the baffling system to reduce headloss by widening the channels, adding new mechanical mixers with variable speed controls to improve performance and efficiency, and seismically retrofitting the walkways and basin walls.
 - o Filtration modifications to eight (8) of the ten (10) existing filters (two (2) were replaced in Project CUW36601), replacing effluent control valves and backwash supply valves, providing a filter to waste system, installing new underdrains and media, and seismically retrofitting the basin walls. 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.

CUW36701 - HTWTP Long-Term Improvements (Completed)

The project consists of:

- Hydraulic improvements in the various treatment units to reduce headloss and increase capacity.
- Improvements to the disinfection process by upgrading the ozone generation system and backup oxygen supply.
- Expansion of the filtration process capacity by

adding five (5) new filters.

- Improvements to the sludge handling system, including the addition of improved thickening and dewatering systems.
- Improvements to the washwater system, including the addition of a second washwater tank, associated equipment and piping.
- Seismic upgrade to all critical process units.
- Electrical upgrade, including a new substation, switchgear, and motor control center. New emergency generators are being provided as part of the Standby Power Facilities - Various Locations Project.
- Interim seismic response improvements, such as automated valves, to minimize seismic hazards until the long-term improvements are complete.
- New 11.0 mg TWR and subsequent abandonment of the existing 6.5 mg and 8.0 mg TWRs.
- New seismically reliable pipelines just east of the existing TWRs.
- Miscellaneous improvements to chemical feed systems, site piping, drainage, and roads.
- Addition of a third 2-megawatt generator set to satisfy emergency power needs of new facilities added as part of the project;
- Replacement of parallel switchgear and motor control center to accommodate addition of third generator set and to provide additional operational flexibility;
- Improvements to plant's recloser to increase reliability of PG&E power to the plant;
- Additional seismic anchorage of existing equipment; and
- Hydraulic modifications to coagulation and flocculation basins.

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 (3) 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 currently includes the following components: The refined project scope (Phase 1) currently includes the following components at five (5) locations on the San Francisco Peninsula to address Serra Fault Crossing locations and liquefaction hazard potential in the Colma Creek area:

- 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 (2) 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)

This project is 100% complete and has been closed out. The project primarily consists of replacing

two (2) 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)

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 CSSA Pipeline, and the San Andreas outlet structures.

The project primarily consists of:

- The Upper Crystal Springs Dam includes two (2) discharge culverts. During geotechnical investigations, it was confirmed that the lower culvert crosses the 1906 San Andreas Fault. Improvements will be made to the lower culvert to ensure its operation following a San Andreas Event. This will involve lining the culvert to provide operational and seismic protection and providing a second discharge riser on the east side of the San Andreas Fault.
- The Lower Crystal Springs Outlet Structures Nos. 1 and 2 improvements include removal of all equipment from the outlet towers and installation of new submerged adit valves; removal of the free-standing portion of the towers and bridge to address seismic concerns; installation of reliable adit selection system; and installation of fish screens. Additionally, the tunnels and pipe systems leading from the outlet structures to the CSPS will be improved.
- A new CSPS, together with site piping and valving, will be constructed with increased capacity to meet LOS goals and other functionalities, similar to those provided by the existing pump station. Additionally, a new electrical substation; emergency backup electrical generators for emergency demands, yard valves and small auxiliary pump (but not for large pumps); and security-related site improvements will be provided.
- The emergency chlorination system at the existing CSPS will be replaced with a portable

chlorination system to provide more reliable response during an emergency.

- The CSSA Pipeline improvements include improvements to the first 800 feet of pipeline (upstream end of pipeline) to provide reliable operation at a higher operating pressure; replacement of the last 1,400 feet of the pipeline (downstream end of pipeline) to address seismic hazards; replacement and refurbishment of all appurtenances and lining to provide a 50-year life and protect against surge and seismic hazards; improvements, installation, and repair to 31 drainages that cross the pipeline alignment; and road improvements to provide access for maintenance and emergency response.

- The San Andreas Reservoir Outlet Structure Nos. 2 and 3 improvements include seismic retrofit to the structures; construction of an approach channel; modifications to the adits; replacement of all equipment in the towers; and installation of emergency isolation valves, reliable adit selection systems, and fish screens.

- The pipe in the tunnel leading from the San Andreas Outlet Structure No. 2 to the raw water pump station at the HTWTP will be replaced with a tunnel liner system.

- The tunnel portal of San Andreas Outlet Structure No. 3 will be retrofitted to protect the pipeline from the Serra Fault crossing.

- The isolation valves at Upper Crystal Springs Dam were removed from the contract per direction from DSOD. The concern was that the installation of these valves would bring the Upper Crystal Springs Dam (Hwy 92) under DSOD's jurisdiction.

- Part of one segment of pipeline from the Crystal Springs Pipeline No. 2 project was added to this contract. This segment runs along the access road to the pump station and was added to avoid conflict between different Contractors.

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

The major project elements consist of:

- Seismic reliability improvements, which include replacing or relocating a total of 1.7 miles of pipe at 12 different locations, sliplining 3.5 miles of pipe, retrofitting pipe bridge pier supports at two (2) creek crossings, providing a new connection at

the CSPS, and providing a connecting segment with a blind flange for later connection to the NCSBT. The tie-in to the NCSBT will be performed under the NCSBT Project, eliminating the need for a second shutdown of the CSPL No. 2.

- Installing a new isolation valve near the CSPS area.

- Performing site improvements, including the installing fences and enclosures for exposed facilities, concealing exposed portions of pipe, and painting exposed portions of pipe.

- Upgrading the cathodic protection system along the length of the pipeline.

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

This project is 100% complete and has been closed out. The major project elements include:

- Installation of 4.4 miles of 36-inch-diameter pipe with three (3) bore-and-jack street crossings along 19th Avenue and John Daly Boulevard.

- Installation of five (5) service connections.

- Installation of one (1) altitude valve at Merced Manor Reservoir, six (6) isolation valves, and a flow meter.

- Installation of a new cathodic protection system.

- Installation of three (3) connections to the San Andreas Pipeline No. 2 (SAPL2).

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

The project includes a general mechanical and seismic upgrade of existing facilities and the addition of a pressure-reducing station. Miscellaneous work will also be performed at the Pulgas Pump Station and the Pulgas Tunnel Air Shaft to facilitate moving flow southward through the system at higher pressures than normal.

The major work elements at the various sites primarily include:

- The Baden Valve Lot improvements include installation of a new pressure-reducing valve to allow water to flow from the HTWTP high-pressure zone to the low-pressure supply zone, installation of five (5) new isolation valves, replacement of three (3) existing valves, seismic

retrofit of eight (8) existing vaults, replacement of onsite piping segments, replacement of the existing electrical switchgear and transformer, replacement of three (3) pumps, installation of variable frequency drives, and other miscellaneous improvements

- The San Pedro Valve Lot improvements include seismic retrofit of two (2) valve vaults, modification of the electric valve operators, installation of a new air valve, and miscellaneous site drainage improvements
- The Pulgas Pump Station improvements include replacement of one (1) isolation valve
- The Pulgas Tunnel Air Shaft improvements include site work to stabilize slopes

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 (2) 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, due to 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 (1) 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 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. 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 was seeping through wall penetrations into G36 and G38 vaults. Due to the high moisture, some electrical switches and two (2) 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 LCSID** - 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; and attendance of construction meetings and participating in other activities concerning the water quality in Lower Crystal Springs Reservoir, security measures, and other aspects affecting SFPUC assets.

• **Harry Tracy Water Treatment Plant (HTWTP) Improvements (new sub-project in 2018)** - 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 (new sub-project in 2018)** - 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 original scope of the Regional Groundwater Storage and Recovery (RGWSR) project was planned to be constructed in two (2) phases. The original scope of Phase 1 included construction of 13 new deep groundwater wells, and the original

scope of Phase 2 included construction of 2 to 3 additional wells, depending upon well yield. Based on the modelling data inputs and results, it is projected that the 13 new wells constructed in Phase 1 would produce approximately 6.2 mgd of dry year supply over 7.5 years. Operating the RGSR Project during times of drought will provide data and insights into how much water can be reasonably expected to be produced by the project and if additional well stations are needed to reach the desired drought period pumping capacity. In addition to the need for collecting operational data to determine the pumping capacity of the 13 new wells, the Daly City Recycled Water Expansion Project proposes to serve recycled water to existing irrigated properties (gold courses and cemeteries) in the Colma area for irrigation use. Replacing groundwater with recycled water for irrigation use will decrease or eliminate the cemeteries' use of the aquifer, creating more in lieu storage in the aquifer for water supply use. The SFPUC will identify potential benefits to the aquifer resulting from the Daly City Recycled Water Expansion Project during project planning and design, as well as monitor operation of the project. Given the considerations noted above, the SFPUC modified the scope of Phase 2 in 2018 to install up to three (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 test wells will allow for determination as to whether the identified sites could be viable 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. The test wells would not be converted to production wells at this time. Proceeding with these changes to Phase 2 will allow all 13 new Phase 1 RGWSR wells to be operated to gain experience and insight into the pumping capacities of each individual well in addition to how the wells work in combination with each other and existing municipal and irrigation wells. Staff will gain valuable experience regarding the relationship of RGWSR drought year pumping to

the management of the groundwater basin. Operational experience will allow refinement of the modelled dry year water supply yield of the RGWSR project. The changes to RGWSR Phase 2 also allows for the collection of test well data at up to 3 locations for use in future planning if the operational experience with the 13 wells shows the need for more pumping capacity. This option also allows for the basin effects of the Daly City Recycled Water Expansion Project to be identified and may provide greater flexibility in the future to utilize the basin for water supply.

The approved scope for the RGWSR remains the same as approved in April 2018. However, since 2018 several scope refinements and some additions have been required for successful implementation of the project. Two out of three of the proposed test wells, Ludeman North and Centennial Trail, were installed. The third well, Ludeman South, was not built due to siting and constructability issues. The initial test results from the two test wells indicated that the combined yield of the two wells might be up to 0.6MGD. Based on the relatively low yield from both locations and additional costs required to upsize the Millbrae treatment facility in order to accept and treat these additional flows, it was decided that the test wells would not be converted to production wells at this time. However, these wells will provide valuable information related to water quality and potential pumping capacities that can be used for future planning and decision making.

Below are the Phase 1 modifications and additional work that increased the contract cost for the Phase 1 construction contract:

- Several modifications resulted during the installation of the sodium hydroxide treatment systems (for pH control):

1. Potential water quality issues were anticipated in blending groundwater with distribution system water at two of the well stations that were planned to connect to Daly City's and Cal Water's systems; these two well stations were subsequently returned to the SFPUC and were connected to the SFPUC's water system. Sodium hydroxide systems needed to be added for these two wells in order to raise the pH to be consistent with SFPUC's water quality.

2. At five of the well stations, to prevent potential scaling and plugging of the groundwater pipeline after sodium hydroxide addition, modifications to the chemical injection systems were made to improve mixing by moving the injection point closer to the transmission line.

3. Miscellaneous modifications were implemented including addition of chemical piping double-containment systems; retrofits to the chemical rooms to accommodate the revised sodium hydroxide injection systems; restoration of landscape and hardscape; and installation of new fencing at several well stations.

- During construction, the decision was made to change the ammonia chemical (used to create chloramine for disinfection) from aqueous ammonia to liquid ammonium sulfate, which has been found to be much safer for worker handling. This change required revisions to engineering, operational, and maintenance requirements and documents; revisions to the application for the conditional Division of Drinking Water permit; and modifications to the chemical metering pumps, chemical piping and feed systems, and programming and controls systems.

- Seven (7) remote water quality analyzer stations were installed to replace manual water sample stations in order to collect real time data needed for water quality compliance at key monitoring point locations.

- Poor pump performance at three locations was investigated and found to be due to internal corrosion and/or presence of a foreign object. The modifications to correct performance issues included investigations and forensic testing, installation of cathodic protection systems, replacement of damaged well column pipes and shafts, and well rehabilitation.

- Modification to the existing access road through Bay Area Rapid Transit's (BART's) right of way into one of the well stations was required to accommodate the turning radius of chemical delivery trucks and Fire Department emergency vehicles. The acquisition of the access permit from BART was significantly delayed while easement negotiations were ongoing. Additionally, Town of Colma required changes to the access design for traffic control requirements.

CUW35801 - Sunset Reservoir - North Basin (Completed)

This project is 100% complete and has been closed out. The project primarily 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 repairs of deteriorated concrete, replacement of part of the reservoir lining material, replacement of the inlet piping, installation of security fencing, landscaping upgrades, and other miscellaneous site improvements.

CUW37201 - University Mound Reservoir - North Basin (Completed)

The project primarily 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 repairs of deteriorated concrete; replacement of the reservoir lining material; replacement of the inlet/outlet, drain, and overflow piping; replacement of outlet and drain valves; landscaping upgrades 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, gate installation. This project will however fund the furnishing and installing Access Control and Alarm Monitoring System (ACAMS) and Digital Video Surveillance System (DVSS) equipment, and necessary security systems.

CUW38801 - Programmatic EIR (Completed)

This project includes the preparation of a Programmatic Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA). The WSIP establishes LOS goals and system performance objectives and includes a number of projects that will improve the Regional Water System in respect to water quality, seismic reliability, delivery reliability, and water supply to meet delivery needs through the year 2030. 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.

The PEIR was certified by the San Francisco Planning Commission on October 30, 2008. On that same day the SFPUC approved the WSIP Goals and Objectives and adopted the CEQA Findings, including a statement of overriding consideration and the Mitigation Monitoring and Reporting Program (MMRP).

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 description includes development of compensation sites to preserve, enhance, restore, or create approximately 2,350 acres of tidal marsh, vernal pools, sycamore and oak riparian woodland, oak woodland and savannah, and serpentine and annual grasslands. 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 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 the addition of mitigation for the fountain thistle and changes in the Calaveras Dam Replacement Project.

CUW38803 - Vegetation Restoration of WSIP Construction Sites (Completed)

The purpose of this project is to provide maintenance, monitoring and reporting of onsite habitat restoration installed at the various WSIP construction sites after project construction work is completed.

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 requested

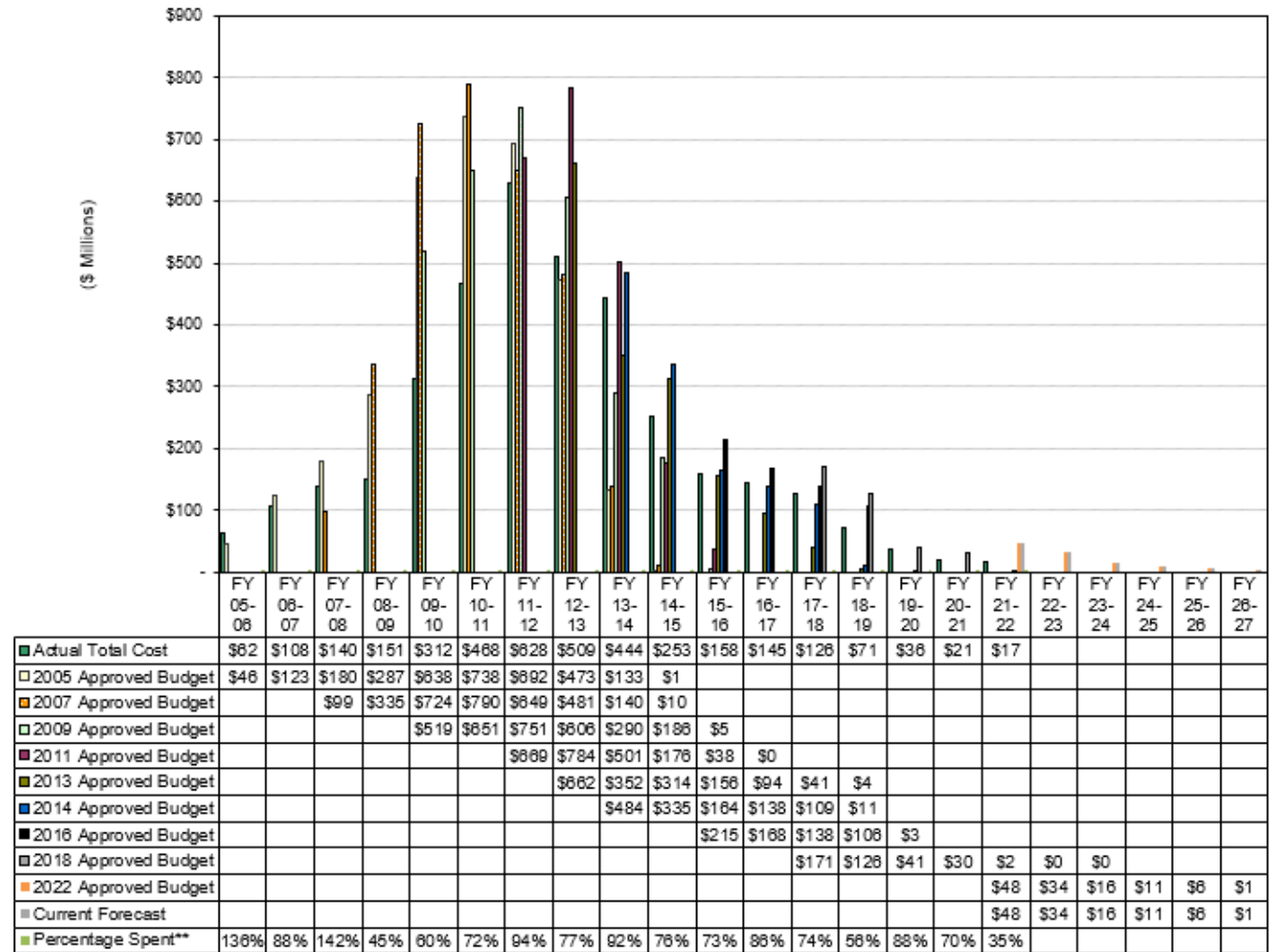
by the United States Army Corps of Engineers and California Department of Fish and Wildlife to provide a secure source of funds for the perpetual monitoring and maintenance of the Bioregional Habitat Restoration sites constructed in the SFPUC watershed.

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; and identify critical watershed lands for protection by purchasing fee title and/or perpetual conservation easements. The program also supports projects that enhance public awareness and provide education opportunities related to water quality, water supply, conservation, and environmental stewardship issues. These projects include construction of the proposed Alameda Creek Watershed Center and improved public access (e.g., trail connections) compatible with watershed management plans and policies.

Initially, specific projects were identified, including the Repair or Replacement of Niles Gage and Watershed Road Management Plan and Improvements - both in the Alameda Creek watershed. After further research and planning, the program's focus has shifted towards permanently protecting Alameda Creek watershed lands through conservation easements and/or fee title purchase of property from willing landowners and providing education opportunities that will further the goals of the Water Enterprise Environmental Stewardship Policy. Opportunities that are consistent with the WEIP description and purpose in the Peninsula and Tuolumne watersheds will be considered as well.

APPENDIX B. BUDGET AND EXPENDITURE HISTOGRAM*



All costs are shown in \$ Millions.

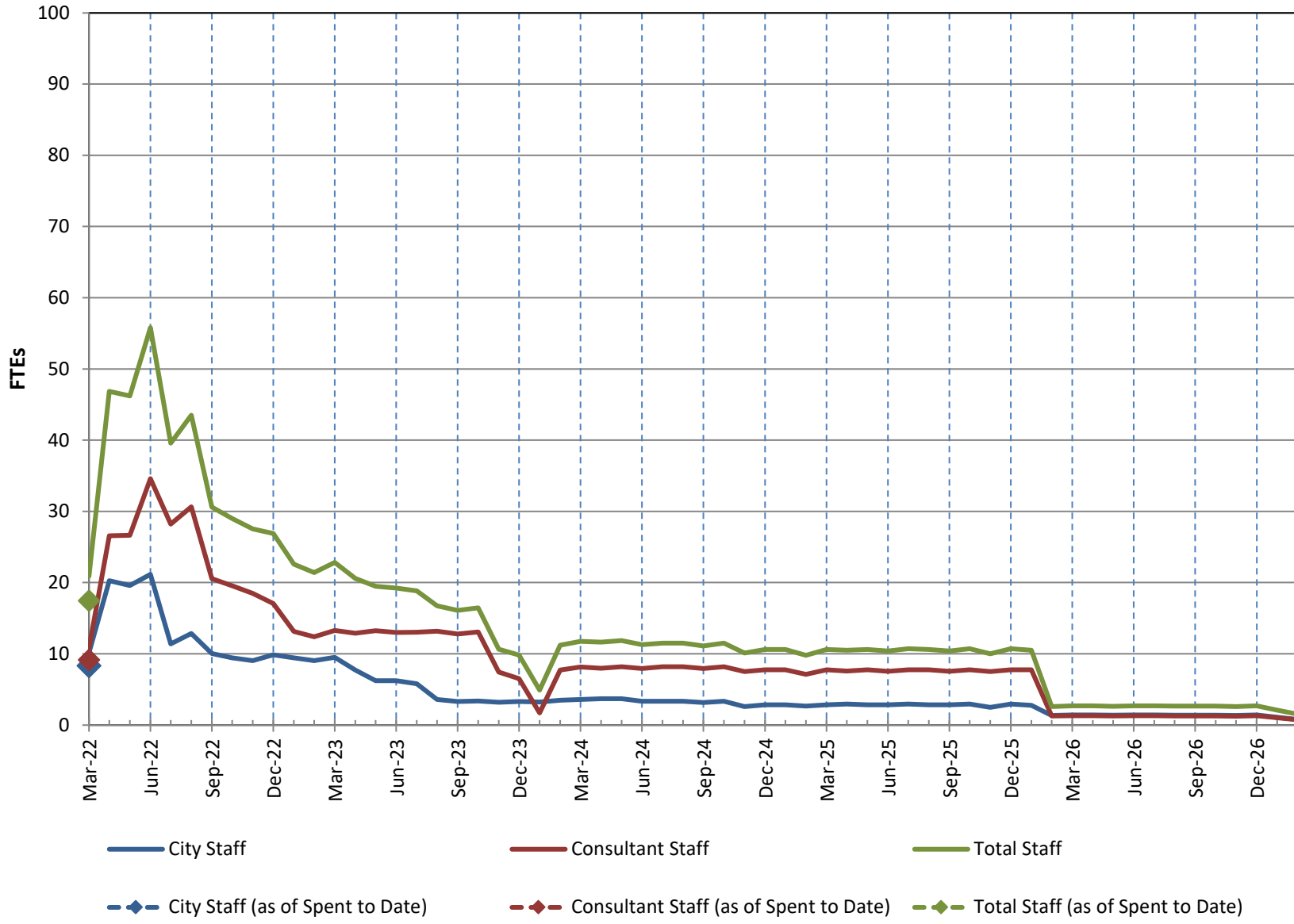
* The histogram does not reflect budget and expenditures prior to FY 2005-2006.

** 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/FY21-22 and cost projections (Current Forecast) from FY21-22 through program completion currently forecast for February 2027. Actual annual expenditures have ranged from 45% to 138% of planned expenditures.

Appendix C. WSIP Regional Program Staffing Plan








APPENDIX E. PROJECTS WITHIN BUDGET AND SCHEDULE

CUW35201 - Alameda Creek Recapture Project

Project Description: The planned facilities include the following components: four (4) identical vertical turbine pumps mounted on floating barges located in existing Pond F2; four (4) flexible discharge pipelines extending from each pump to a new pipe manifold located on shore; a 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; power lines from the existing Hetch Hetchy Water & Power Calaveras Electrical Substation installed on new power poles; and general site improvements.

Region: Sunol Valley	Project Status: Construction	Environmental Status: Completed (EIR)
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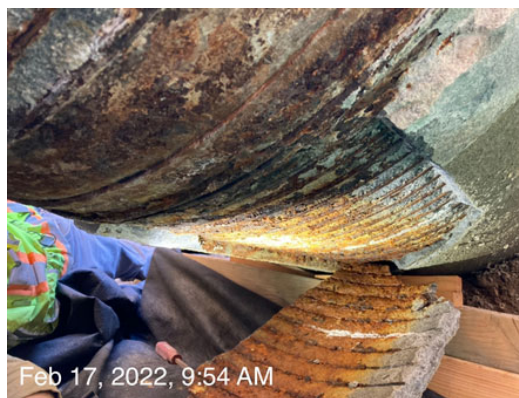
Project Cost:		Project Schedule:	
Approved 	\$43.97 M	Approved Sep-03 	Jun-24
Forecast* 	\$43.97 M	Forecast* Sep-03 	Jun-24
Actual 	\$19.15 M	Project Percent Complete: 46.7%	

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

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	06/18/24	12/18/20✓	06/21/21✓	04/28/23

Progress and Status:

During the reporting period, a partnering meeting was held, the construction management trailer and temporary bridge over Department of Water Resources right-of-way were installed, the PG&E abandoned gas line was removed, the existing unneeded 36-inch diameter and 50-inch diameter pipes were demolished, and the site grading and grubbing work was completed. The planned point of connection to the existing 36-inch diameter pipeline that will connect to the rest of the water system was in a different location than expected; additionally, the existing pipe’s material differed from expected and corrosion was found on sections of the pipe. Additional exploratory work was performed to locate a more suitable tie-in location to the 36-inch diameter pipeline. The Design Team is working on redesign of the pipelines and electrical lines due to existing erosion conditions around the Pond F2, on redesign of the barge’s mooring and anchoring system to meet increased loading requirements, and on redesign for the tie-in point to the existing 36-inch pipeline as discussed above. The contractor continues to receive notices of material shortage, longer lead-time estimates, and cost increases related to COVID-19 from subcontractors. Coordination with the quarry operator on erosion repairs continued.









Corrosion on Existing 36-inch Pipeline

Issues and Challenges:

Although there is no change in forecast at this time, the changes in existing conditions mentioned above are being evaluated and any impacts to schedule or cost will be reported in the future.

CUWSVI0101 - WSIP Closeout - Sunol Valley

Project Description: This project consists of the following sub-projects: Alameda Siphon No, 4 Carrier Water System Modifications will make modifications of the current chemical injection system. Erosion Repair at Pond F3 East will repair the erosion and restore the drainage pipe on the east bank of Pond F3 East. SVWTP Basin Polymer Feed Facility is to build a polymer feed facility that will serve all five (5) Basins to allow this facility to better meet its LOS goals. Miscellaneous Work at Alameda West Portal, Irvington Portal and San Antonio Back-Up Pipeline will install security doors at Alameda West Portal (AWP) and Irvington Portal (IVP), couplings between the valve stem and actuator, refurbishment of uninterruptible power supply (UPS) and install enclosures for the UPS at AWP and IVP, and other related appurtenances. New Irvington Tunnel Water Quality Equipment Relocation is to relocate the water quality monitoring equipment to Building B10 for Irvington Portal 1 (IP1) and install a pump from Irvington Tunnel 2 (IT2) to Irvington Tunnel 1 (IT1). San Antonio Backup Pipeline Carrier Water System Modifications is to modify the carrier water and chemical injection system to ensure the chemicals will be injected properly. Fish Passage Facilities at the Alameda Creek Diversion Dam is to modify the VSAT power supply system, replace the main photovoltaic battery bank and realign several valves and actuator drive stems.

Region: Sunol Valley	Project Status: Construction	Environmental Status: Completed (Various)		
Project Cost:		Project Schedule:		
Approved	 \$5.99 M	Approved Jul-16		Jun-22
Forecast*	 \$5.99 M	Forecast* Jul-16		Jun-22
Actual	 \$4.80 M	Project Percent Complete: 79.6%		
				
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, (2) JOC-59-20, (4) JOC-54-02, (5) JOC 60-20, (6) JOC-60-23, and (7) SVWTP Polymer Feed Facility were all completed. For the new subproject Alameda Creek Diversion Dam Power and Communication Facilities, three new job order contracts (JOCs 70-09, 70-14, and 70-15) were initiated in this quarter. These JOCs will address the identified power supply and system operations automation issues for the fish passage facilities at the Alameda Creek Diversion Dam. Some of the major items include modifying the VSAT power supply system, replacement of the main photovoltaic battery bank, and realignment of several valves and actuator drive stems.



PV System, Backup Generator and Propane Tank







Issues and Challenges:

None at this time.

CUW30103 - Regional Groundwater Storage and Recovery

Project Description: The current scope was planned to be constructed in two (2) phases. Phase 1 included construction of 13 wells to produce 6.2 mgd of dry year supply over 7.5 years. Operating the wells during drought will provide data and insights into how much water can be reasonably expected to be produced, and if additional well stations are needed to reach the desired drought period pumping capacity. Phase 2 included construction of two (2) installed test wells, completion of the South San Francisco (SSF) Main well, pipeline, and other work. The test wells which would not be converted to production wells at this time will allow for determination as to whether the identified sites could be viable production wells, and will provide information to water quality and pumping capacities that can be used for future planning. Phase 2 has been separated into two contracts due to the long lead-time required for easements and permits for work at the SSF well site. Phase 2A includes installation of cathodic protection, well rehabilitation, and other mechanical work. Phase 2B consists of work at the SSF Main Well and pipeline installation to connect the well to Cal Water’s treatment facility.

Region: San Francisco Regional	Project Status: Construction	Environmental Status: Active (Various)
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Project Cost:		Project Schedule:	
Approved	 \$158.35 M	Approved Jun-03	 Feb-27
Forecast*	 \$158.35 M	Forecast* Jun-03	 Feb-27
Actual	 \$119.16 M	Project Percent Complete: 80.2%	
			

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✓ (D) 06/30/23	(A) 09/07/11✓ (B) 09/22/14✓ (C) 09/27/21✓ (D) 08/01/23	(A) 01/30/12✓ (B) 04/06/15✓ (C) 06/01/22 (D) 02/01/24	(A) 09/05/12✓ (B) 09/02/22 (C) 12/29/23 (D) 01/31/26

+ Project includes multiple construction contracts: (A) WD-2600 Test well drilling; (B) WD-2668 Well station (13 wells) – Phase 1; (C) WD-2878A RGSR Phase 2A; (D) RGSR Phase 2B

Progress and Status:

For Phase 1 (Contract B), a fully executed permit-to-enter at Treasure Island Well Station has been received from BART during the quarter. The contractor modified the access road and installed a new gate at Treasure Island Well Station.

For Phase 2A (Contract C), the Commission approved contract award on 2/22/2022. A preliminary well rehabilitation workplan has been received.

For Phase 2B (Contract D), the 100% design continued to progress during the quarter. Design of the PG&E underground vault for housing a new interrupter and of the conduit layout for the crossing at El Camino Real and Del Paso Road both continued.

Issues and Challenges:

None at this time.








View of Poncetta Drive Well & Treatment Facility in Daly City (formerly named Lake Merced Golf Club Well Station)

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.

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

Project Cost:		Project Schedule:	
Approved	 \$20.00 M	Approved Jan-07	 Jun-22
Forecast*	 \$20.00 M	Forecast* Jan-07	 Jun-22
Actual	 \$18.40 M	Project Percent Complete: 84.0%	

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

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

Progress and Status:

Due diligence for the purchase of a 653-acre property in the Alameda Creek watershed was completed in March 2022. Purchase of the property is anticipated to be final on April 6, 2022.

Issues and Challenges:

None at this time.



Alameda Creek Watershed

APPENDIX F. LIST OF ACRONYMS

AAR	Alternative Analysis Report	FC	Final Completion
AC	Asphalt Concrete	FEIR	Final Environmental Impact Report
ACAMS	Access Control and Alarm Monitoring System	FTE	Full-Time Equivalent
ACDD	Alameda Creek Diversion Dam	FY	Fiscal Year
ACDT	Alameda Creek Diversion Tunnel	HH	Hetch Hetchy
ADA	Americans with Disabilities Act	HHWP	Hetch Hetchy Water and Power
AGM	Assistant General Manager	HTWTP	Harry Tracy Water Treatment Plant
ARM	Active Risk Manager	IVP	Irvington Portal
AWP	Alameda West Portal	JOC	Job Order Contract
BART	Bay Area Rapid Transit	LCSD	Lower Crystal Springs Dam
BAWSCA	Bay Area Water Supply and Conservation Agency	LCSDI	Lower Crystal Springs Dam Improvements
BDPL	Bay Division Pipeline	LOS	Levels of Service
BHR	Bioregional Habitat Restoration	MG	Million Gallons
BLS	Bureau of Labor Statistics	MGD	Million Gallons per Day
CalTrans	California Department of Transportation	MND	Mitigated Negative Declaration
CATEX	Categorical Exemption	MOA	Memorandum of Agreement
CCSF	City and County of San Francisco	MOU	Memorandum of Understanding
CDD	City Distribution Division	MPP	Mobile Pilot Plant
CDRP	Calaveras Dam Replacement Project	N/A	Not Applicable
CEQA	California Environmental Quality Act	NDA	Nondisclosure Agreement
CER	Conceptual Engineering Report	NEG DEC	Negative Declaration (also shown as ND)
CIP	Capital Improvement Program	NEPA	National Environmental Policy Act
CM	Construction Management	NIT	New Irvington Tunnel
CMB	Construction Management Bureau	NMFS	National Marine Fisheries Service (under NOAA)
CMIS	Construction Management Information System	NOAA	National Oceanic and Atmospheric Agency
CO	Change Order	NTP	Notice to Proceed
COVID-19	Coronavirus Disease of 2019	O&M	Operation and Maintenance
CPI	Cost Performance Index	PCCP	Pre-stressed Concrete Cylinder Pipe
CSPS	Crystal Springs Pump Station	PEIR	Program Environmental Impact Report
CSSA	Crystal Springs/San Andreas	PG&E	Pacific Gas and Electric Company
DB	Design, Build	PLC	Programmable Logic Control
DDW	Division of Drinking Water	PV	Photovoltaic
DSOD	Division of Safety of Dams (State of California)	RFI	Request For Information
DVSS	Digital Video Surveillance System	ROW	Right-of-Way
DWR	Department of Water Resource	SABPL	San Antonio Backup Pipeline
EBMUD	East Bay Municipal Utility District	SAPL	San Antonio Pipeline
EIR	Environmental Impact Report	SAPS	San Antonio Pump Station
EIS	Environmental Impact Statement	SBA	South Bay Aqueduct
EV	Earned Value	SCADA	Supervisory Control and Data Acquisition
EVM	Earned Value Management		


SFPUC	San Francisco Public Utilities Commission
SJPL	San Joaquin Pipeline
SMC	San Mateo County
SMP	Surface Mining Permit
SPI	Schedule Performance Index
SQS	Supplier Quality Surveillance
SSBPL	Sunset Supply Branch Pipeline
SSPL	Sunset Supply Pipeline
STO	Supplemental Task Order
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
USD	Union Sanitary District
UV	Ultra Violet
VFD	Variable Frequency Drive
VSAT	Very Small Aperture Terminal
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

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DATE: August 1, 2022

TO: Commissioner Anson Moran, President
 Commissioner Newsha Ajami, Vice President
 Commissioner Sophie Maxwell
 Commissioner Tim Paulson

FROM: Dennis J. Herrera, General Manager 

RE: WSIP Regional Projects Quarterly Report
 4th Quarter / Fiscal Year 2021-2022

Enclosed please find the Water System Improvement Program (WSIP) Regional Projects Quarterly Report for the 4th Quarter (Q4) of Fiscal Year (FY) 2021-2022. The report provides 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, 2022 through June 30, 2022.

STATUS AND PERFORMANCE SUMMARY

Overall, WSIP regional projects are 98.6% complete as of June 30, 2022. As of the end of the reporting period, planning, environmental, design, and construction activities are 100%, 99.9%, 99.8%, and 98.3% 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
- Anson Moran**
President
- Newsha Ajami**
Vice President
- Sophie Maxwell**
Commissioner
- Tim Paulson**
Commissioner
- Dennis J. Herrera**
General Manager



Status of WSIP Regional Projects (as of June 30, 2022)

Project Phase	No. of Projects	Percent by No. of Projects	Total Project Value (\$M)	Percent by Project Value
Planning	0	0%	\$0	0%
Design	0	0%	\$0	0%
Bid & Award	0	0%	\$0	0%
Construction	3	6%	\$215	6%
Close-Out	1	2%	\$95	3%
Completed	47	90%	\$3,481	92%
Not Applicable ¹	1	2%	\$12	1%
Total	52	100%	\$3,803	100%

Notes: (1) “Not Applicable” category is for the project that does not include construction: Long-Term Mitigation Endowment.

PROGRAM UPDATE

As of the end of the reporting period, three (3) regional projects with a total value of \$215M are in construction and forty-eight (48) projects with a total value of \$3,576M 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.

As of the end of the reporting period, the forecasted total program cost (regional and local projects) is \$4,787.8M, the same as the current Commission Approved Budget. As of the end of the reporting period, all approved change orders (COs) in contracts total \$20.46M, and the current remaining construction contingency is \$6.72M. Also, as of the end of the reporting period, all pending and potential COs, and trends total \$2.31M. Therefore, if all pending and proposed COs and trends become approved COs, the current forecasted remaining construction contingency is \$4.41M.

The current forecasted date to complete the overall WSIP is February 2027 which is the same as the current approved date.

UPDATE ON PROJECTS IN CONSTRUCTION

Steady progress was reported on the remaining ongoing WSIP construction activities. The Notice to Proceed (NTP) was issued for the Regional Groundwater Storage and Recovery Project, Phase 2A (Contract C) during the quarter. As of the end of June 2022, WSIP regional construction contracts (including active, completed, and future contracts) are 99.0% complete overall; this is a reduction of 0.2% since last quarter due to the inclusion in the percentage completion calculation of the Regional Groundwater Storage and Recovery Project Phase 2A construction contract that was issued seven days before the end of the quarter.

As of the end of June 2022, monitored exposure hours on WSIP regional projects totaled 9.9 million construction person-hours. Since the implementation of the WSIP Safety Approach in April 2009, the total lost time incidence rate is 0.51, compared to the U.S. Bureau of Labor Statistics (BLS) industry average rate (2018) of 1.5.

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.

Regional Groundwater Storage and Recovery

Overall progress on the Regional Groundwater Storage and Recovery Project Phase 1 construction contract (Contract B) is reported at 98% complete as of the end of this quarter; this is a reduction of 1% since last quarter due to the inclusion of additional approved change orders. For Phase 2A (Contract C), the Notice to Proceed was issued on June 23. For Phase 2B (Contract D), the 100% design and negotiations of permits and easement continued during the quarter.

Alameda Creek Recapture Project

Construction of the Alameda Creek Recapture Facility is 17% complete as of the end of this quarter.

WSIP Closeout Project

Steady progress was made on the three Job Order Contracts (JOCs) for the final subproject of the WSIP Closeout Project in the Sunol Valley. JOC 77-09 was completed during this reporting period. This subproject will need to be extended for 6 months to allow completion of the improvements to the communication system's power supply system under JOC 70-14, and sluice way repair and debris removal during dry creekbed conditions under JOC 70-15.

MAJOR PROGRAM TRENDS AND RISKS

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, 2022.

The trends for the WSIP active Regional construction contracts totaled \$1.1M as of the end of the reporting period, an increase of \$0.3M compared to the last quarter. The increase is mainly due to

opening new trends for Alameda Creek Recapture Project. The following table lists the trend totals for the three construction contracts under two of the three remaining active projects:

WSIP Active Regional Projects Trend Totals (as of June 30, 2022)

Project	Trends (\$ Million)	Percent Completion ¹
Alameda Creek Recapture	\$1.1	17%
Regional Groundwater Storage & Recovery (Contract B)	\$0.0	98%
Regional Groundwater Storage & Recovery (Contract C)	\$0.0	0%

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, 2022, five (5) of the current top ten risks for active WSIP construction contracts, based on likelihood of occurrence and potential cost impact, belong to the Alameda Creek Recapture Project and five (5) belong to Regional Groundwater Storage and Recovery Project Phase 2A. The current highest risk belongs to the Alameda Creek Recapture Project which relates to delay in barge/pump fabrication and installation.

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 for each project is shown in the table; this includes 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	Forecast Remaining Contingency	% Completion
CUW35201 Alameda Creek Recapture Project (WD-2825R)	9/17/23	\$2.0M	\$1.9M	\$0.1M	17%

Contract	Final Construction Completion	Current Approved Contingency	Current Approved, Pending, and Potential Change Orders Plus Trends	Forecast Remaining Contingency	% Completion
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	9/2/22	\$22.8M	\$20.9M	\$1.9M	98%
CUW30103 Regional Groundwater Storage and Recovery (WD-2878A)	2/20/24	\$0.7M	\$0.0M	\$0.7M	0%

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

The current staff transition plan for the remainder of WSIP is included in Appendix C on page 41 of the attached WSIP Quarterly Report. The overall staffing levels in June 2022 are approximately 30 full-time equivalents (FTEs).

CLOSING

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

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HETCH HETCHY
WATER SYSTEM IMPROVEMENT PROGRAM



QUARTERLY REPORT

Regional Projects
Q4 FY 2021 | 2022
April 2022 — June 2022

Rebuilding Today for a Better Tomorrow

Published: August 1, 2022

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Quarterly Report - Q4 FY2021/2022

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, 2020, and 2022, 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, April 14, 2020, and April 26, 2022, 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
2022 (Revised)	April 26, 2022	\$4,788	02/01/27

* Final Program Completion Date

2. PROGRAM STATUS

This fourth (4th) Quarterly Report for Fiscal Year (FY) 2021-2022 presents the progress made on the WSIP Regional Program between April 1, 2022 and June 30, 2022. The program’s schedule and budget were last approved by the San Francisco Public Utilities Commission (SFPUC or Commission) on April 26, 2022. The WSIP Local Program was completed on June 3, 2020.

Figure 2.1 shows the total Current Approved Budget for the regional projects remaining in each phase of the program as of June 30, 2022. The number of projects currently active in each phase is shown in parentheses.

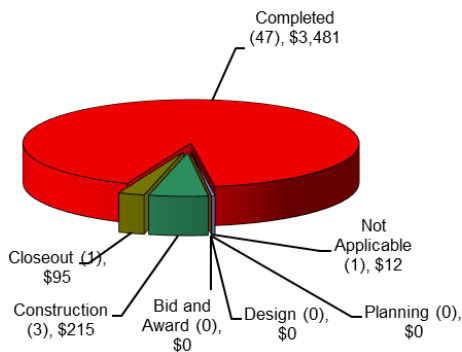


Figure 2.1 Total Current Approved Budget for Projects Active in Each Phase (\$Million)

Figure 2.2 shows the number of regional projects in the following stages of the program as of June 30, 2022:

30, 2022: Pre-construction, Construction, and Post-construction.

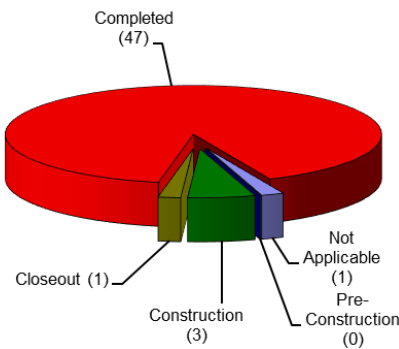


Figure 2.2 Number of Projects in Pre-construction, Construction, and Post-construction

Figure 2.3 summarizes the environmental review and permitting status of the WSIP’s 52 regional projects as of June 30, 2022.

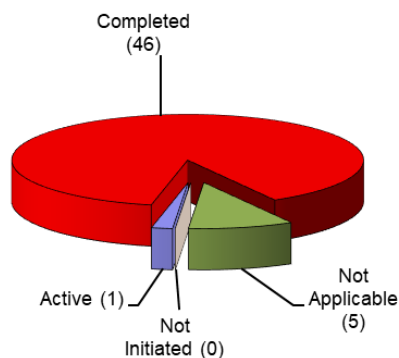


Figure 2.3 Program Environmental and Permitting Status

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	11/18/22				P		17%
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 <i>(Completed)</i> (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) 100%
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 2A) (D) Regional Groundwater Storage and Recovery (Phase 2B)	(A) 07/23/12 (B) 12/31/17 (C) 08/31/23 (D) 10/31/25				P	(A) 07/23/12	(A) 100% (B) 98% (C) 0% (D) 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, 2022 Approved, Current Approved and Q4/FY21-22 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 \$4,787.8 million. The Current Approved WSIP Budget and Forecasted Cost at completion for only the Regional Program (including construction contingency) are \$3,803.1 million. The Current Approved Budget and final expenditures for the Local Improvement Projects are each \$331.9 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)	2022 Approved Budget (\$ Million) (C)	Current Approved Budget ⁽⁷⁾ (\$ Million) (D)	Q4/FY21-22 Forecasted Costs (\$ Million) (E)	Cost Variance (\$ Million) (F = D - E)
Regional Improvement Projects	\$3,451.6	\$3,181.4	\$3,513.9	\$3,513.9	\$3,512.5	\$1.4
Construction Costs ⁽¹⁾	\$2,452.1	\$2,322.3	\$2,495.1	\$2,495.1	\$2,493.7	\$1.4
Program Delivery Costs ⁽²⁾	\$970.1	\$758.0	\$984.3	\$984.3	\$984.3	-
Other Costs ⁽³⁾	\$29.4	\$101.0	\$34.5	\$34.5	\$34.5	-
Support Projects ⁽⁴⁾	\$237.6	\$32.8	\$262.0	\$262.0	\$263.4	(\$1.4)
Construction Contingency for Regional & Support Projects ⁽⁵⁾	\$19.1	\$193.2	\$27.2	\$27.2	\$27.2	-
REGIONAL PROGRAM WITH CONTINGENCY	\$3,708.3	\$3,407.4	\$3,803.1	\$3,803.1	\$3,803.1	-
Local Improvement Projects	\$331.9	\$383.2	\$331.9	\$331.9	\$331.9	-
Local Water Supply Projects ⁽⁶⁾⁽⁸⁾	\$220.4	-	\$280.9	\$280.9	\$280.9	-
Finance ^(9,10,11)	\$372.0	\$552.0	\$372.0	\$372.0	\$372.0	-
PROGRAM TOTAL	\$4,632.6	\$4,342.6	\$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 2022 Approved Budget for construction contingency includes all change orders and trends as identified at the time of the March 2022 Revised WSIP, or projects in pre-construction, the 2022 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 2022 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 2022 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 Forecasted Construction Contingency as of Q3/FY21-22; 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/FY21-22 Forecasted Construction Contingency; and the

Forecasted Remaining Contingency as of the end of the reporting quarter. As of June 30, 2022, the Forecasted Construction Contingency is \$27.2 million, and the Remaining Contingency is \$6.7 million.

The total costs of Change Orders approved in Q4/FY21-22 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/FY21-22 Forecasted Construction Contingency ⁽¹⁾ (\$ Million) (A)	Total Approved Change Orders as of Q3/FY21-22 ^(2,3) (\$ Million) (B)	Change Orders Approved in Q4/FY21-22 ⁽²⁾ (\$ Million) (C)	Total Approved Change Orders as of Q4/FY21-22 (\$ Million) (D = B+C)	Project Savings or Director's Reserves (+) Moved to Contingency/ Funds (-) Moved out of Contingency during Q4/FY21-22 ⁽⁴⁾ (\$ Million) (E)	Q4/FY21-22 Forecasted Construction Contingency (\$ Million) (F = A + E)	Q4/FY21-22 Forecasted Remaining Contingency (\$ Million) (G = F - D)
San Joaquin Region	-	-	-	-	-	-	-
Sunol Valley Region	\$1.95	\$0.14	\$0.06	\$0.20	-	\$1.95	\$1.75
Bay Division Region	-	-	-	-	-	-	-
Peninsula Region	-	-	-	-	-	-	-
San Francisco Regional Region	\$25.23	\$19.42	\$0.84	\$20.26	-	\$25.23	\$4.97
Support Projects	-	-	-	-	-	-	-
Regional Total	\$27.18	\$19.56	\$0.90	\$20.46	-	\$27.18	\$6.72

Notes:

1. Construction Contingency approved as part of the March 2022 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 after the Commission adopted the March 2022 Revised WSIP.

Table 3.3 Forecasted Remaining Construction Contingency

Region	Q4/FY21-22 Remaining Construction Contingency ⁽¹⁾ (\$ Million) (A)	Pending Change Orders as of Q4/FY21-22 ⁽²⁾ (\$ Million) (B)	Potential Change Orders as of Q4/FY21-22 ⁽³⁾ (\$ Million) (C)	Trends as of Q4/FY21-22 ⁽⁴⁾ (\$ Million) D	Q4/FY21-22 Forecasted Remaining Construction Contingency (\$ Million) (E = A-B-C-D)
San Joaquin Region	-	-	-	-	-
Sunol Valley Region	\$1.75	\$0.10	\$0.51	\$1.08	\$0.06
Bay Division Region	-	-	-	-	-
Peninsula Region	-	-	-	-	-
San Francisco Regional Region	\$4.97	\$0.34	\$0.24	\$0.04	\$4.35
Support Projects	-	-	-	-	-
Regional Total	\$6.72	\$0.44	\$0.75	\$1.12	\$4.41

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 the construction contract management database but are still being negotiated.
4. Trends are any expected impact that the CM team believes may become a change order but are yet to be entered into the construction contract management database as a Potential Change Order.

Table 3.3 provides the forecasted remaining construction contingency. For each region as of Q4/FY21-22, it shows the Remaining Construction Contingency, Pending Change Orders, Potential Change Orders, Trends, and Forecasted Remaining Construction Contingency. As of June 30, 2022, the Total Forecasted Remaining Construction Contingency for the Regional WSIP is \$4.4 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 3.4). 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.

The spending pattern for the project is very similar from month to month as the project primarily funds program-level positions occupied by SFPUC staff and consultants. The Forecasted Total Program Management Cost is \$117.4 million, which is \$0.1 million over the Current Approved Budget of \$117.3 million. The cost variance is due to the saving of Watershed and Environmental Improvement Program transferred to the Director’s Reserve.

Table 3.4 Status of Program Management Project Cost Breakdown

Category	Expenditures To Date (\$ Million) (A)	2022 Approved Budget (\$ Million) (B)	Current Approved Budget (\$ Million) (C)	Q4/FY21-22 Forecasted Cost (\$ Million) (D)	Cost Variance (\$ Million) (E = C-D)
Management Support	\$37.77	\$46.47	\$46.47	\$46.53	(\$0.06)
Project Labor Agreement	\$3.74	\$3.84	\$3.84	\$3.84	-
Planning and Project Development	\$17.97	\$18.33	\$18.33	\$18.33	-
Program Controls	\$20.72	\$20.86	\$20.86	\$20.86	-
Program Construction Management	\$27.78	\$27.80	\$27.80	\$27.80	-
Program Management Total	\$107.99	\$117.30	\$117.30	\$117.37	(\$0.06)

4. PROGRAM SCHEDULE SUMMARY

Figure 4.1 and Table 4.1 compare the 2005 Baseline, 2022 Approved, Current Approved, and Q4/FY21-22 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 the Forecasted Schedule completion for the Regional WSIP (Local WSIP was completed in June 2020) are each February 2027. Refer to Appendix D for a graphical presentation of the WSIP Approved Project-Level Schedule.

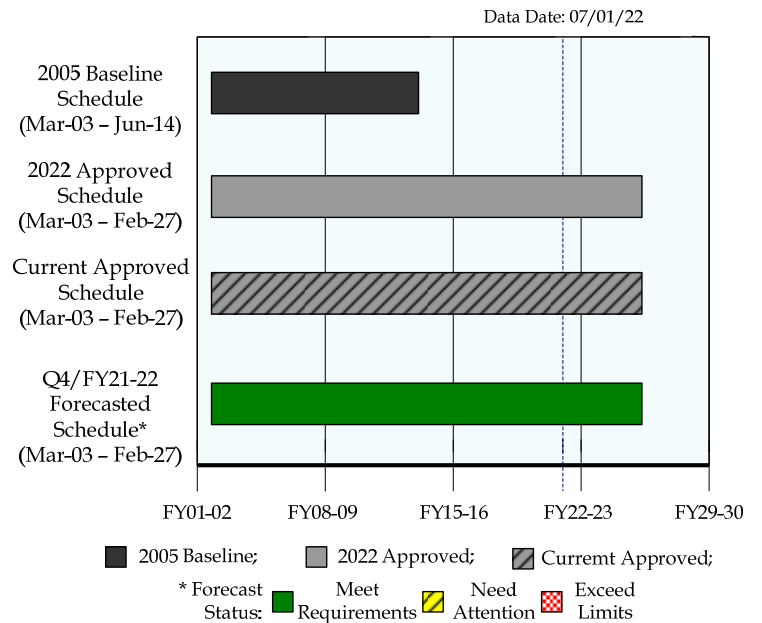


Figure 4.1 Program Schedule Summary

Table 4.1 2022 Approved vs. Q4/FY21-22 Forecasted Schedule Dates

Category	2005 Baseline Start	2022 Approved Start	Current* Approved Start	Actual Start	2005 Baseline Finish	2022 Approved Finish	Current* Approved Finish	Q4/FY21-22 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	02/01/27	02/01/27	-
Local** Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/28/13	7/31/18	06/03/20	06/03/20✓	- Completed
Overall WSIP	03/01/03	03/01/03	03/01/03	03/01/03✓	06/30/14	05/05/23	02/01/27	02/01/27	-

* The budget and schedule approved as part of the March 2022 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

5. PROJECT PERFORMANCE SUMMARY*

All costs are shown in \$1,000s as of 07/01/22

Project Name	Active Phase (**)	2005 Baseline Budget (a)	2022 Approved Budget (b)	Current Approved Budget (c)	Q4/FY21-22 Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f= c - d)	Cost Status (+)	2005 Baseline Completion (g)	2022 Approved Completion (h)	Current Approved Completion (i)	Q4/FY21-22 Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
Sunol Valley Region															
CUW35201 - Alameda Creek Recapture Project	CN	\$ 18,809	\$ 43,967	\$ 43,967	\$ 43,967	\$ 21,190	-	★	05/25/12	06/18/24	06/18/24	06/18/24	-	★	See Appendix E
CUWSVI0101 - WSIP Closeout - Sunol Valley	CN		\$ 5,990	\$ 5,990	\$ 5,990	\$ 4,891	-	★		06/30/22	06/30/22	12/31/22	6.0 mo. Late	●	See Section 6
San Francisco Regional Region															
CUW30103 - Regional Groundwater Storage and Recovery	CN	\$ 39,233	\$ 158,350	\$ 158,350	\$ 158,350	\$ 120,719	-	★	02/27/14	02/01/27	02/01/27	02/01/27	-	★	See Appendix E
Support Projects															
CUW38804 - Long Term Mitigation Endowment ++	NA		\$ 12,000	\$ 12,000	\$ 12,000	\$ 0	-	★		10/01/24	10/01/24	10/01/24	-	★	NA

* 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




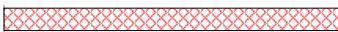


- ★ Meet Requirements: Forecasted Cost/Schedule is within Current Approved Budget/Schedule.
- ⚠ Need Attention: Forecasted Cost is over Current Approved Budget by greater than 1% and less than 10%. Or Forecasted Schedule is over Current Approved Schedule by greater than 2 months and less than 6 months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

CUWSVI0101 - WSIP Closeout - Sunol Valley

Project Description: This project consists of the following sub-projects: Alameda Siphon No, 4 Carrier Water System Modifications will make modifications of the current chemical injection system. Erosion Repair at Pond F3 East will repair the erosion and restore the drainage pipe on the east bank of Pond F3 East. SVWTP Basin Polymer Feed Facility is to build a polymer feed facility that will serve all five (5) Basins to allow this facility to better meet its LOS goals. Miscellaneous Work at Alameda West Portal, Irvington Portal and San Antonio Back-Up Pipeline will install security doors at Alameda West Portal (AWP) and Irvington Portal (IVP), couplings between the valve stem and actuator, refurbishment of uninterruptible power supply (UPS) and install enclosures for the UPS at AWP and IVP, and other related appurtenances. New Irvington Tunnel Water Quality Equipment Relocation is to relocate the water quality monitoring equipment to Building B10 for Irvington Portal 1 (IP1) and install a pump from Irvington Tunnel 2 (IT2) to Irvington Tunnel 1 (IT1). San Antonio Backup Pipeline Carrier Water System Modifications is to modify the carrier water and chemical injection system to ensure the chemicals will be injected properly. Fish Passage Facilities at the Alameda Creek Diversion Dam is to modify the satellite communication system’s power supply system, replace the main photovoltaic battery bank and realign several valves and actuator drive stems.

Region: Sunol Valley	Project Status: Construction	Environmental Status: Completed (Various)		
Project Cost:		Project Schedule:		
Approved	 \$5.99 M	Approved Jul-16		Jun-22
Forecast*	 \$5.99 M	Forecast* Jul-16		Dec-22
Actual	 \$4.89 M	Project Percent Complete: 85.6%		
				
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, (2) JOC-59-20, (4) JOC-54-02, (5) JOC 60-20, (6) JOC-60-23, and (7) SVWTP Polymer Feed Facility were all completed previously. Good progress was made on the final sub-project, Alameda Creek Diversion Dam Power and Communication Facilities. Work is being accomplished under three job order contracts (JOCs). Replacement of the main photovoltaic battery bank under JOC 77-09 was completed. Modification of the satellite communication system’s power supply system under JOC 70-14 is taking longer than anticipated due to the delay in the issuance of the task order. Installation of the system was completed in late June; functional testing and power monitoring will continue in the next quarter to ensure the system is working properly. Realignment of several valves and actuator drive stems under JOC 70-15 were completed during this quarter. However due to the presence of water inside the creek, some minor related work such as sluice way repair and final debris removal are being postponed until the water has fully receded in the later part of



Photovoltaic System, Backup Generator and Propane Tank

summer.

Issues and Challenges:

The project schedule needs to be extended for six (6) months to accommodate the time needed to complete the modification of the satellite communication system’s power supply system and for additional time for the creekbed to dry in order to complete the sluice way repair and debris removal.

7. On-Going Construction

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion*	Q4/FY21-22 Forecasted Construction Final Completion**	Approved Contract Cost +	Q4/FY21-22 Forecasted Cost++	Schedule (Cal. Days)	Cost	
Sunol Valley Region								
CUW35201 - Alameda Creek Recapture Project	06/21/21	12/19/22	09/17/23	\$ 19,713,355	\$ 20,321,911	(272)	(\$608,556)	16.6%
San Francisco Regional Region								
CUW30103 - Regional GW Storage and Recovery (Contract B)	04/06/15	12/26/21	09/02/22	\$ 63,236,588	\$ 63,821,713	(250)	(\$585,125)	98.2%
CUW30103 - Regional GW Storage and Recovery (Contract C)	06/23/22	02/20/24	02/20/24	\$ 6,850,000	\$ 6,850,000	-	-	0.0%

Program Total for On-Going Construction	Approved Contract Cost	Q4/FY21-22 Forecasted Cost*	Variance	
			Cost	Percent
	\$ 89,799,942	\$ 90,993,624	(\$1,193,682)	(1.3%)

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 CLOSEOUT

Project Title	2005 Baseline Construction Phase Completion	2022 Approved Construction Phase Completion	Current Approved Construction Phase Completion	Actual Construction Phase Completion	2005 Approved Project Completion	2022 Approved Project Completion	Current Approved Project Completion	Forecasted Project Completion	2005 Baseline Construction Phase Budget	2022 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		10/01/24	10/01/24	10/01/24		\$ 50,723,009	\$ 50,723,009	\$ 50,686,848
TOTAL										\$ 50,723,009	\$ 50,723,009	\$ 50,686,848

9. COMPLETED PROJECTS

Project Title	2005 Baseline Project Completion	2022 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2022 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	\$ 203,178,015	\$ 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
CUWSJI0101 - WSIP Closeout - San Joaquin	-	03/31/21	03/31/21	03/31/21	-	\$ 3,376,376	\$ 3,376,376	\$ 2,009,857
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
CUW37401 - Calaveras Dam Replacement	05/25/12	03/31/22	03/31/22	03/31/22	\$ 256,511,407	\$ 794,066,323	\$ 794,066,323	\$ 791,867,924
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 - SVWTP 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	\$ 27,037,926
CUW35302 - Seismic Upgrade of BDPL Nos. 3 & 4	10/15/12	07/30/18	07/30/18	07/30/18	\$ 66,792,849	\$ 72,194,219	\$ 72,194,219	\$ 70,530,532
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	-	\$ 216,722,172	\$ 216,722,172	\$ 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
CUWBDP0101 - WSIP Closeout - Bay Division	-	03/31/21	03/31/21	03/31/21	-	\$ 3,597,500	\$ 3,597,500	\$ 3,322,156
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

WSIP Quarterly Report

Project Title	2005 Baseline Project Completion	2022 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2022 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
Peninsula Region								
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
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	\$ 3,948,943	\$ 3,948,943	\$ 3,948,943
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
CUWPWI0101 - WSIP Closeout - Peninsula	-	12/30/21	12/30/21	12/30/21	-	\$ 13,579,680	\$ 13,579,680	\$ 13,479,266
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	-	04/19/19	04/19/19	04/19/19	-	\$ 14,700,669	\$ 14,700,669	\$ 14,429,323
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
CUW39401 - Watershed and Environmental Improvement Program	06/28/13	06/30/22	06/30/22	06/30/22	\$ 20,000,000	\$ 20,000,000	\$ 20,000,000	\$ 19,914,074
TOTAL					\$ 2,916,581,656	\$ 3,397,092,315	\$ 3,364,187,109	\$ 3,356,373,717

APPENDICES

- A. PROJECT DESCRIPTIONS**
- B. WSIP BUDGET AND EXPENDITURES HISTOGRAM**
- C. WSIP REGIONAL PROGRAM STAFFING PLAN**
- D. WSIP APPROVED PROJECT-LEVEL SCHEDULE**
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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 (2) 150-gallon-per-minute, parallel UV units and ancillary facilities. The units will be installed in the existing Thomas Shaft building.
- Two (2) pumps that will pump water from the Coast Range Tunnel to the new disinfection system.

CUW37301 - San Joaquin Pipeline System (Completed)

This 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, railroads, and irrigation canals. 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 building for sodium hypochlorite, hydrofluosilicic acid (i.e., fluoride), and carbon dioxide.
- Office, laboratory, and control facilities, emergency engine generators, and security-related site and access road improvements.

CUWSJI0101- WSIP Closeout - San Joaquin (Completed)

• **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 provide additional solar panels to cover power shortfalls and allow the facility to better meet its water delivery reliability LOS goal. This sub-project consists of three (3) job order contracts at three (3) sites: Oakdale, Knight Ferry Throttling Station, and San Joaquin Junction No. 4. The

scope of work as noted in the March 2016 Notice of Change includes:

- o Minor site preparation and grading work
- o Furnishing and installing new supplemental solar arrays mounted on concrete pads within security fence enclosures
- o Connections and integration of the new solar panels into the existing power system and controls
- o Installation of batteries for solar power storage on-site
- o Minor site preparation and grading work
- **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 has now 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. As noted in the March 2016 Notice of Change, 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
 - 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 (4) identical vertical turbine pumps mounted on floating barges located in existing Pond F2 (including a mooring system); four (4) 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.

CUW35501 - Standby Power Facilities - Various Locations (Completed)

Standby power requirements are provided at six (6) sites in the East Bay and on the Peninsula. Each site is either provided with an emergency generator or the electrical receptacles to accommodate a portable emergency generator.

The facilities at the six (6) sites include:

- Alameda West Portal: standby power improvements include installing a permanent 20-kilowatt (kW) emergency generator in a sound-attenuated masonry wall enclosure.
- San Antonio Reservoir and Dam: standby power improvements include providing electrical receptacles for a portable 37-kW emergency generator at two (2) locations.
- Harry Tracy Water Treatment Plant (HTWTP): standby power improvements include removing the four (4) existing, smaller emergency generators and providing two (2) permanently installed 2-megawatt (MW) emergency generators.
- Millbrae Yard: standby power improvements include replacing the existing emergency generator with a permanently installed 300-kW unit to enable this facility to function as an emergency operations center.
- San Pedro Valve Lot: standby power improvements include installing a permanent 20-kW emergency generator in a sound-attenuated masonry wall enclosure.
- Capuchino Valve Lot: standby power improvements include providing an electrical receptacle for a portable 30-kW engine generator.
- The project will also provide the trailer mounted engine generator that will be stored at

the Millbrae Yard.

CUW35901 - New Irvington Tunnel (Completed)

The NIT alignment will be located just to the south of the existing tunnel. It will be 18,660 feet long and have 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, and where it intersects inactive fault zones or in locations of poor ground conditions.

The NIT project is currently in construction and approximately 99% complete. Major project elements are listed below.

- Conventional mining methods were used for excavation 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 was completed by multiple road header tunneling machines, and limited, controlled detonation in areas of hard rock. Spoils disposal was taken to fill sites just north of the San Antonio Pump Station (SAPS) near the intersection of Calaveras Road and Interstate 680. The completed spoils fills will create a visual barrier to new quarry operation located near Calaveras Road. Potentially contaminated spoils were screened, separated, and if found to contain contaminants, hauled to a permitted landfill.
- At the Irvington Portal, tunnel connections were made to Bay Division Pipeline (BDPL) Nos. 1, 2, and 5 and to BDPL Nos. 3 and 4. Control valves were directly buried with instrumentation and electrical gear in a small control building. At the Alameda West Portal, the tunnel was 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.
- A new access bridge was constructed across Alameda Creek to accommodate temporary construction traffic and on-going SFPUC Alameda West Portal operations.

- A Groundwater Management Program was developed that includes two (2) years of pre-construction monitoring of wells, springs, creeks, ponds, and wetlands; environmental habitat construction mitigation measures; and two (2) 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 were constructed, including undergrounding of portal structures and new card access controlled gates and security fences.
- In the March 2014 Notice of Change, simplifications were made to the design of the new security structure for the existing Alameda West Portal. The design changes included a more secure structure with a smaller footprint and removal of pipe manifolds that will no longer be in service.

CUW35902 - Alameda Siphon #4 (Completed)

The Alameda Siphon #4 Project extends approximately 3,000 feet from the Alameda East Portal across both the Calaveras Fault and Alameda Creek to the Alameda West Portal.

The project primarily consists of:

- A 66-inch-diameter welded steel pipeline with 310 feet of special trench design and thicker-walled pipe in the fault rupture zone, and a tunneled crossing of Alameda Creek.
- A 96-inch-diameter “blending structure” consisting of a pipe and valve manifold near the Alameda West Portal that will blend SVWTP and Hetch Hetchy water so that the existing and new Irvington Tunnels will receive a uniform quality of water.
- New isolation/throttling valves on Alameda Siphons No. 3 and 4 and new isolation valves on Alameda Siphons No. 1 and 2. The valves will be installed upstream of the blending structure.
- Ventilation improvements at Alameda East Portal for the Coast Range Tunnel required for construction access.
- New chemical injection facilities on Alameda Siphon No. 4.
- Relocation and extension of the existing overflow pipe from the Alameda East Portal about 500 feet to an existing quarry, and site fencing at Alameda East Portal. The overflow to

the existing quarry includes a grouted rock riprap channel down the side of the quarry for erosion protection.

- Road improvements at the intersection with Calaveras Road for construction access.

CUW37001 - Pipeline Repair & Readiness Improvements (Completed)

This project is 100% complete and has been closed out. The project was separated into the three (3) following implementation phases:

- Phase A: Procurement of varied lengths and sizes of welded steel pipe and fittings for stockpiling at new storage facilities at seven (7) locations along the transmission system, west of the Coast Range Tunnel.
- Phase B: Procurement and installation of a pipe rolling machine at the Sunol Yard. The rolling machine, which has the capability to roll pipe sections up to 9 feet in diameter, will be housed in a new building with an emergency power supply.
- Phase C: Development of a pipeline repair prioritization plan, on-call emergency repair procedures and contracts, and mutual assistance agreements.

CUW37401 - Calaveras Dam Replacement (Completed)

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 (2) 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 (3) 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 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 (4) 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 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 changes as previously noted in the March 2014 Notice of Change.
- Additional slope reinforcement in Borrow Area B and import of offsite rockfill as noted in the March 2016 Notice of Change.
- Repairs to the landslide portion of Calaveras Road and restoration of the West Haul Road as noted in the scope refinements listed below for this March 2018 Notice of Change.
- For the ACDD fish ladder, to address the

potential landslide hazard and further protect the fish passage structure, as noted in the scope refinements listed below for this March 2018 Notice of Change, 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 installing a hypolimnetic oxygenation system and associated cryogenic (oxygen generation) equipment near the dam. The addition of oxygen into the reservoir will limit the negative effects of algal blooms and may promote a healthier fish habitat. The system will continue to be usable following completion of the replacement Calaveras Dam. The project primarily consists of the new cryogenic equipment, two (2) diffuser systems in the reservoir, and miscellaneous site work.

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 (3) 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 to 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 is included around the quarry pond to minimize groundwater intrusion and to ensure slope stability.

CUW38101 - SVWTP Expansion & Treated Water Reservoir (Completed)

The project primarily consists of:

- The expansion improvements, which increase the sustainable capacity to 160 mgd, include the addition of a new flocculation/sedimentation basin and the retrofit of six (6) of the twelve (12) existing filters. Design of improvements to the remaining six (6) filters was performed under the project, and was included as an optional bid item in the construction contract. As a result, upgrades to all 12 filters were able to be performed under the construction contract, providing an additional factor of safety for reliable and sustainable production of 160 mgd required to meet the LOS goals established for the system.
- A single 17.5-million-gallon (mg) circular TWR which was constructed along with a new 3.5-MG rectangular chlorine contact tank on the northern portion of the existing plant site. Roughly 400,000 cubic yards of excavated material was hauled to a disposal site immediately east of the plant for disposal.
- New chemical storage and feed facilities for disinfection are constructed including sodium hypochlorite and ammonia. New fluoride facilities were also added.
- Construction of approximately 2,700 feet of 78-inch-diameter pipe that connects the new TWR to the existing plant discharge pipeline. This included a tunneled crossing of Alameda Creek.
- Nine (9) existing chemical tanks and associated electrical and instrumentation components were replaced under the construction contract. The existing chemical tanks and the associated electrical and instrumentation had reached the end of their useful life and were in jeopardy of failure.
- Miscellaneous plant improvements include a new emergency generator and improvements to the plant electrical system, substation, electrical panels, and motor control centers; an upgrade of the instrumentation and controls; a new filter

washwater recovery basin; improvements to the flow distribution structure and associated facilities; replacement of the plant's existing boiler; improvements to the influent chemical mixing system; and repaving of the existing plant access road.

CUW38601 - San Antonio Pump Station Upgrade (Completed)

The project consists of:

- Replacement of the three (3) 1,000-horsepower electrical pumps.
- Addition of two (2) 1.5-megawatt emergency generators. The generators are sized to power the three (3) 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

- **Alameda Siphon No. 4 Carrier Water System Modifications** - The CUW35902 Alameda Siphon No. 4 Project was completed in 2013. Since that time, new facilities that have been brought on-line as well as other changes have occurred in water operations, have resulted in an apparent drop in water pressures and volumes at the Sunol Valley Chloramination Facility. This has reduced the available water needed for the current carrier water 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 better 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 of 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
 - o Plumbing and control connections between the new facilities and the current system
- **Erosion Repair at Pond F3 East** - The 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 and restore the drainage pipe through a job order contract including:

- o New rockfill on the east back of the quarry pond from the current drainpipe to the toe of the bank
- o Excavation and grading to remove loose bank debris and prepare the subgrade slope to receive new rockfill
- o Extension of the existing drainpipe downslope to the water line of the pond
- o Temporary access improvements at the side bank of the pond for a crane and other equipment to deliver to, and place new rockfill and other materials into, the repair area

• **Sunol Valley Water Treatment Plant Basin 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 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 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
- o Possible extension of the new polymer to optimize water production from the four (4) older basins

• **Miscellaneous Work at Alameda West Portal,**

Irvington Portal and San Antonio Back-Up Pipeline - The CUW 35901 New Irvington Tunnel (NIT) was completed in 2017, and the CUW 37403 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

• **New Irvington Tunnel 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. Fish Passage facilities at the Alameda Creek Diversion Dam is to modify the VSAT power supply system, replace the main photovoltaic battery bank and realign several valves and actuator drive stems.

• **Alameda Creek Diversion Dam Power and**

Communication Facilities (new sub-project addition in 2022) - The CUW37401 Alameda Creek Diversion Dam Fish Passage Facilities (WD-2729 contract) is a sub-project to the Calaveras Dam Replacement Project, which will close out on 3/31/2022. After operating the fish passage facility for over one year, a few deficiencies were discovered in the power system for the communication facilities, the main power system, and a few of the valves and gates. Job Order Contracts (small contracts less than one million dollars in value) will be used to address these issues under this new sub-project. This subproject is to modify the VSAT power supply system, replace the main photovoltaic battery bank and realign several valves and actuator drive stems.

BAY DIVISION REGION

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

The project consists of:

- Two (2) 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 (4) 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 existing pipeline fault crossing between the two (2) crossover/isolation valve vaults constructed under the BDPL Nos. 3 & 4 Crossover/Isolation Valves Project is about 2,400 feet in length, and consists of BDPL No. 3, a 78-inch-diameter reinforced concrete cylinder pipe, and BDPL No. 4, a 96-inch-diameter PCCP. These vaults are located east and west of I-680 near the intersection of Mission Boulevard. The current project scope includes replacement of about 2,300 feet of BDPL No. 3. Ongoing investigations have determined that improvements to BDPL No. 4 are also required to facilitate the failure of BDPL No. 4 in a controlled manner that does not cause the failure of BDPL No. 3. It is planned that about 400 feet of the new BDPL No. 3 will cross Trace A under I-680 in an existing oversized corrugated metal pipe; about 300 feet that crosses Trace B under Mission Blvd. will be in a newly constructed concrete vault ("box culvert"); and the remaining new pipeline will be buried. All new construction will be in the SFPUC's existing right-of-way (ROW).

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 (2) 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 (2) Alameda County Water District water pipelines, one (1) Union Sanitary District sewer pipeline, one (1) conduit of AT&T phone lines, and one (1) 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 (5) 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 (7) 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 (2) 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 (2) facilities were added to the original scope of work as part of the March 2014 Revised WSIP and are necessary to ensure the project will meet LOS goals:

- 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.

- 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 original 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 provides for the installation 640 lineal 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)

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 (3) 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 (4) 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 (6) 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% 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 (6) reaches of pipe (144 feet total out of 16 miles) that are potentially distressed. During initial investigations, the condition of one (1) 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 (5) 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 (1) 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 (Completed)

• **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** - Due to the drought conditions and timing of hydro-seeding performed for the Bay Tunnel Project outside of the typical seasonal window, it may not be possible to file the Notice of Termination (NOT) to close out the storm water permit prior to the Bay Tunnel Project closeout date, as the 70% growth take requirement, with less than 10% noxious weeds, may not be achieved by that time. Accordingly, the scope of this sub-project provides for monitoring of the 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, based

on recent discussions, Operations staff are requesting 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 potential delays to the Bay Tunnel Project, at high cost, 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 replacing of the bolts (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. The proposed work on the valve will be done during the shutdown of the Bay Tunnel for warranty inspection in Winter 2016/2017.

• **Ventilation and Sump Pump Systems Installation (new sub-project in 2018)** - 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 (2) 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 raising the wall that is located on top of the upstream face of the dam and raising 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 an 8-foot-diameter welded steel liner.
- Vertical shafts on each end of the tunnel to accommodate the TBM and future maintenance.
- The southern shaft will include a connection to the existing CSBPL near the north end of the existing Crystal Springs Bypass Tunnel; the existing pipeline has been determined to be seismically reliable in this area.
- The northern shaft of the new tunnel will tie into the southern ends of both the Crystal Springs Pipeline (CSPL) No. 2 and the Sunset Supply Pipeline (SSPL). The connecting segment and tie-in to the SSPL will be provided by this project.

However, the connecting segment and a blind flange for CSPL No. 2 will be provided by the Crystal Springs Pipeline No. 2 Replacement Project, and this project will tie into the blind flange. This contractual arrangement is used to prevent two (2) shutdowns of the CSPL No. 2.

- New isolation valves and valve vaults.
- Standby power near valve vault G40.
- The existing pipeline will remain in service to provide redundancy for inspection of the tunnel.

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 the 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 includes 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 also provided an opportunity to perform a condition assessment of the reservoir interior that has been used to help identify work associated with the Pulgas Balancing - Structural Rehabilitation & Roof Replacement Project.

CUW36102 - Pulgas Balancing - Discharge Channel Modifications (Completed)

The discharge channel modifications to be built under this project will accommodate the anticipated maximum flow of 250 mgd. Project components include raising the channel walls, repairing concrete cracks and exposed reinforcing steel, strengthening and interconnecting the channel floor sections, and strengthening the tall

tapered wall near the Pulgas Tunnel.

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

The project includes structural rehabilitation of the reservoir, which consists of seismic retrofit of the walls, installation of a new steel frame roof, and repairs of concrete cracks and exposed reinforcing steel. The general rehabilitation also includes the installation of a new ventilation system and sampling ports, the replacement of utility piping, and the upgrade of the electrical system.

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

Improvements to the dechloramination and pH control facilities are necessary to address immediate compliance issues. The modifications are anticipated to primarily be made to the flow measurement and control system, and to the various process control and chemical feed systems. Emphasis will be placed on chlorine removal and pH adjustment first to comply with existing regulations, with consideration towards the interdependent secondary goal of maximizing ammonia removal for nutrient control in the reservoirs. The scope of this project will be refined further as design efforts continue to move forward.

CUW36501 - Cross Connection Controls (Completed)

The project consists of providing improvements at the 304 sites identified 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 protection devices
- Reconstruct or raise existing vaults
- Install new vault covers
- Replace existing air valves
- Modify, relocate, or remove existing blow-off facilities

CUW36601/02/03, Harry Tracy Water Treatment Plant Short-Term Improvements

The projects consist of:

- CUW36601 (HTWTP Short-Term Improvements - Demo Filters): Retrofit of two (2) filters and full-scale performance demonstration testing (project has been completed).
- CUW36602 (HTWTP Short-Term Improvements - Remaining Filters): Scope of that project combined with Project CUW36602.
- CUW36603 (HTWTP Short-Term Improvements - Coagulation & Flocculation/Remaining Filters):
 - o Coagulation improvements that 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.
 - o Flocculation improvements that include reconfiguring the baffling system to reduce headloss by widening the channels, adding new mechanical mixers with variable speed controls to improve performance and efficiency, and seismically retrofitting the walkways and basin walls.
 - o Filtration modifications to eight (8) of the ten (10) existing filters (two (2) were replaced in Project CUW36601), replacing effluent control valves and backwash supply valves, providing a filter to waste system, installing new underdrains and media, and seismically retrofitting the basin walls. 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.

CUW36701 - HTWTP Long-Term Improvements (Completed)

The project consists of:

- Hydraulic improvements in the various treatment units to reduce headloss and increase capacity.
- Improvements to the disinfection process by upgrading the ozone generation system and backup oxygen supply.
- Expansion of the filtration process capacity by

adding five (5) new filters.

- Improvements to the sludge handling system, including the addition of improved thickening and dewatering systems.
- Improvements to the washwater system, including the addition of a second washwater tank, associated equipment and piping.
- Seismic upgrade to all critical process units.
- Electrical upgrade, including a new substation, switchgear, and motor control center. New emergency generators are being provided as part of the Standby Power Facilities - Various Locations Project.
- Interim seismic response improvements, such as automated valves, to minimize seismic hazards until the long-term improvements are complete.
- New 11.0 mg TWR and subsequent abandonment of the existing 6.5 mg and 8.0 mg TWRs.
- New seismically reliable pipelines just east of the existing TWRs.
- Miscellaneous improvements to chemical feed systems, site piping, drainage, and roads.
- Addition of a third 2-megawatt generator set to satisfy emergency power needs of new facilities added as part of the project;
- Replacement of parallel switchgear and motor control center to accommodate addition of third generator set and to provide additional operational flexibility;
- Improvements to plant's recloser to increase reliability of PG&E power to the plant;
- Additional seismic anchorage of existing equipment; and
- Hydraulic modifications to coagulation and flocculation basins.

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 (3) 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 currently includes the following components: The refined project scope (Phase 1) currently includes the following components at five (5) locations on the San Francisco Peninsula to address Serra Fault Crossing locations and liquefaction hazard potential in the Colma Creek area:

- 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 (2) 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)

This project is 100% complete and has been closed out. The project primarily consists of replacing

two (2) 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)

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 CSSA Pipeline, and the San Andreas outlet structures.

The project primarily consists of:

- The Upper Crystal Springs Dam includes two (2) discharge culverts. During geotechnical investigations, it was confirmed that the lower culvert crosses the 1906 San Andreas Fault. Improvements will be made to the lower culvert to ensure its operation following a San Andreas Event. This will involve lining the culvert to provide operational and seismic protection and providing a second discharge riser on the east side of the San Andreas Fault.
- The Lower Crystal Springs Outlet Structures Nos. 1 and 2 improvements include removal of all equipment from the outlet towers and installation of new submerged adit valves; removal of the free-standing portion of the towers and bridge to address seismic concerns; installation of reliable adit selection system; and installation of fish screens. Additionally, the tunnels and pipe systems leading from the outlet structures to the CSPS will be improved.
- A new CSPS, together with site piping and valving, will be constructed with increased capacity to meet LOS goals and other functionalities, similar to those provided by the existing pump station. Additionally, a new electrical substation; emergency backup electrical generators for emergency demands, yard valves and small auxiliary pump (but not for large pumps); and security-related site improvements will be provided.
- The emergency chlorination system at the existing CSPS will be replaced with a portable

chlorination system to provide more reliable response during an emergency.

- The CSSA Pipeline improvements include improvements to the first 800 feet of pipeline (upstream end of pipeline) to provide reliable operation at a higher operating pressure; replacement of the last 1,400 feet of the pipeline (downstream end of pipeline) to address seismic hazards; replacement and refurbishment of all appurtenances and lining to provide a 50-year life and protect against surge and seismic hazards; improvements, installation, and repair to 31 drainages that cross the pipeline alignment; and road improvements to provide access for maintenance and emergency response.

- The San Andreas Reservoir Outlet Structure Nos. 2 and 3 improvements include seismic retrofit to the structures; construction of an approach channel; modifications to the adits; replacement of all equipment in the towers; and installation of emergency isolation valves, reliable adit selection systems, and fish screens.

- The pipe in the tunnel leading from the San Andreas Outlet Structure No. 2 to the raw water pump station at the HTWTP will be replaced with a tunnel liner system.

- The tunnel portal of San Andreas Outlet Structure No. 3 will be retrofitted to protect the pipeline from the Serra Fault crossing.

- The isolation valves at Upper Crystal Springs Dam were removed from the contract per direction from DSOD. The concern was that the installation of these valves would bring the Upper Crystal Springs Dam (Hwy 92) under DSOD's jurisdiction.

- Part of one segment of pipeline from the Crystal Springs Pipeline No. 2 project was added to this contract. This segment runs along the access road to the pump station and was added to avoid conflict between different Contractors.

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

The major project elements consist of:

- Seismic reliability improvements, which include replacing or relocating a total of 1.7 miles of pipe at 12 different locations, sliplining 3.5 miles of pipe, retrofitting pipe bridge pier supports at two (2) creek crossings, providing a new connection at

the CSPS, and providing a connecting segment with a blind flange for later connection to the NCSBT. The tie-in to the NCSBT will be performed under the NCSBT Project, eliminating the need for a second shutdown of the CSPL No. 2.

- Installing a new isolation valve near the CSPS area.

- Performing site improvements, including the installing fences and enclosures for exposed facilities, concealing exposed portions of pipe, and painting exposed portions of pipe.

- Upgrading the cathodic protection system along the length of the pipeline.

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

This project is 100% complete and has been closed out. The major project elements include:

- Installation of 4.4 miles of 36-inch-diameter pipe with three (3) bore-and-jack street crossings along 19th Avenue and John Daly Boulevard.

- Installation of five (5) service connections.

- Installation of one (1) altitude valve at Merced Manor Reservoir, six (6) isolation valves, and a flow meter.

- Installation of a new cathodic protection system.

- Installation of three (3) connections to the San Andreas Pipeline No. 2 (SAPL2).

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

The project includes a general mechanical and seismic upgrade of existing facilities and the addition of a pressure-reducing station. Miscellaneous work will also be performed at the Pulgas Pump Station and the Pulgas Tunnel Air Shaft to facilitate moving flow southward through the system at higher pressures than normal.

The major work elements at the various sites primarily include:

- The Baden Valve Lot improvements include installation of a new pressure-reducing valve to allow water to flow from the HTWTP high-pressure zone to the low-pressure supply zone, installation of five (5) new isolation valves, replacement of three (3) existing valves, seismic

retrofit of eight (8) existing vaults, replacement of onsite piping segments, replacement of the existing electrical switchgear and transformer, replacement of three (3) pumps, installation of variable frequency drives, and other miscellaneous improvements

- The San Pedro Valve Lot improvements include seismic retrofit of two (2) valve vaults, modification of the electric valve operators, installation of a new air valve, and miscellaneous site drainage improvements
- The Pulgas Pump Station improvements include replacement of one (1) isolation valve
- The Pulgas Tunnel Air Shaft improvements include site work to stabilize slopes

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 (2) 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, due to 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 (1) 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 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. 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 was seeping through wall penetrations into G36 and G38 vaults. Due to the high moisture, some electrical switches and two (2) 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 LCSID** - 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; and attendance of construction meetings and participating in other activities concerning the water quality in Lower Crystal Springs Reservoir, security measures, and other aspects affecting SFPUC assets.

• **Harry Tracy Water Treatment Plant (HTWTP) Improvements (new sub-project in 2018)** - 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 (new sub-project in 2018)** - 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 original scope of the Regional Groundwater Storage and Recovery (RGWSR) project was planned to be constructed in two (2) phases. The original scope of Phase 1 included construction of 13 new deep groundwater wells, and the original

scope of Phase 2 included construction of 2 to 3 additional wells, depending upon well yield. Based on the modelling data inputs and results, it is projected that the 13 new wells constructed in Phase 1 would produce approximately 6.2 mgd of dry year supply over 7.5 years. Operating the RGSR Project during times of drought will provide data and insights into how much water can be reasonably expected to be produced by the project and if additional well stations are needed to reach the desired drought period pumping capacity. In addition to the need for collecting operational data to determine the pumping capacity of the 13 new wells, the Daly City Recycled Water Expansion Project proposes to serve recycled water to existing irrigated properties (gold courses and cemeteries) in the Colma area for irrigation use. Replacing groundwater with recycled water for irrigation use will decrease or eliminate the cemeteries' use of the aquifer, creating more in lieu storage in the aquifer for water supply use. The SFPUC will identify potential benefits to the aquifer resulting from the Daly City Recycled Water Expansion Project during project planning and design, as well as monitor operation of the project. Given the considerations noted above, the SFPUC modified the scope of Phase 2 in 2018 to install up to three (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 test wells will allow for determination as to whether the identified sites could be viable 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. The test wells would not be converted to production wells at this time. Proceeding with these changes to Phase 2 will allow all 13 new Phase 1 RGWSR wells to be operated to gain experience and insight into the pumping capacities of each individual well in addition to how the wells work in combination with each other and existing municipal and irrigation wells. Staff will gain valuable experience regarding the relationship of RGWSR drought year pumping to

the management of the groundwater basin. Operational experience will allow refinement of the modelled dry year water supply yield of the RGWSR project. The changes to RGWSR Phase 2 also allows for the collection of test well data at up to 3 locations for use in future planning if the operational experience with the 13 wells shows the need for more pumping capacity. This option also allows for the basin effects of the Daly City Recycled Water Expansion Project to be identified and may provide greater flexibility in the future to utilize the basin for water supply.

The approved scope for the RGWSR remains the same as approved in April 2018. However, since 2018 several scope refinements and some additions have been required for successful implementation of the project. Two out of three of the proposed test wells, Ludeman North and Centennial Trail, were installed. The third well, Ludeman South, was not built due to siting and constructability issues. The initial test results from the two test wells indicated that the combined yield of the two wells might be up to 0.6MGD. Based on the relatively low yield from both locations and additional costs required to upsize the Millbrae treatment facility in order to accept and treat these additional flows, it was decided that the test wells would not be converted to production wells at this time. However, these wells will provide valuable information related to water quality and potential pumping capacities that can be used for future planning and decision making.

Below are the Phase 1 modifications and additional work that increased the contract cost for the Phase 1 construction contract:

- Several modifications resulted during the installation of the sodium hydroxide treatment systems (for pH control):

1. Potential water quality issues were anticipated in blending groundwater with distribution system water at two of the well stations that were planned to connect to Daly City's and Cal Water's systems; these two well stations were subsequently returned to the SFPUC and were connected to the SFPUC's water system. Sodium hydroxide systems needed to be added for these two wells in order to raise the pH to be consistent with SFPUC's water quality.

2. At five of the well stations, to prevent potential scaling and plugging of the groundwater pipeline after sodium hydroxide addition, modifications to the chemical injection systems were made to improve mixing by moving the injection point closer to the transmission line.

3. Miscellaneous modifications were implemented including addition of chemical piping double-containment systems; retrofits to the chemical rooms to accommodate the revised sodium hydroxide injection systems; restoration of landscape and hardscape; and installation of new fencing at several well stations.

- During construction, the decision was made to change the ammonia chemical (used to create chloramine for disinfection) from aqueous ammonia to liquid ammonium sulfate, which has been found to be much safer for worker handling. This change required revisions to engineering, operational, and maintenance requirements and documents; revisions to the application for the conditional Division of Drinking Water permit; and modifications to the chemical metering pumps, chemical piping and feed systems, and programming and controls systems.

- Seven (7) remote water quality analyzer stations were installed to replace manual water sample stations in order to collect real time data needed for water quality compliance at key monitoring point locations.

- Poor pump performance at three locations was investigated and found to be due to internal corrosion and/or presence of a foreign object. The modifications to correct performance issues included investigations and forensic testing, installation of cathodic protection systems, replacement of damaged well column pipes and shafts, and well rehabilitation.

- Modification to the existing access road through Bay Area Rapid Transit's (BART's) right of way into one of the well stations was required to accommodate the turning radius of chemical delivery trucks and Fire Department emergency vehicles. The acquisition of the access permit from BART was significantly delayed while easement negotiations were ongoing. Additionally, Town of Colma required changes to the access design for traffic control requirements.

CUW35801 - Sunset Reservoir - North Basin (Completed)

This project is 100% complete and has been closed out. The project primarily 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 repairs of deteriorated concrete, replacement of part of the reservoir lining material, replacement of the inlet piping, installation of security fencing, landscaping upgrades, and other miscellaneous site improvements.

CUW37201 - University Mound Reservoir - North Basin (Completed)

The project primarily 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 repairs of deteriorated concrete; replacement of the reservoir lining material; replacement of the inlet/outlet, drain, and overflow piping; replacement of outlet and drain valves; landscaping upgrades 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, gate installation. This project will however fund the furnishing and installing Access Control and Alarm Monitoring System (ACAMS) and Digital Video Surveillance System (DVSS) equipment, and necessary security systems.

CUW38801 - Programmatic EIR (Completed)

This project includes the preparation of a Programmatic Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA). The WSIP establishes LOS goals and system performance objectives and includes a number of projects that will improve the Regional Water System in respect to water quality, seismic reliability, delivery reliability, and water supply to meet delivery needs through the year 2030. 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.

The PEIR was certified by the San Francisco Planning Commission on October 30, 2008. On that same day the SFPUC approved the WSIP Goals and Objectives and adopted the CEQA Findings, including a statement of overriding consideration and the Mitigation Monitoring and Reporting Program (MMRP).

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 description includes development of compensation sites to preserve, enhance, restore, or create approximately 2,350 acres of tidal marsh, vernal pools, sycamore and oak riparian woodland, oak woodland and savannah, and serpentine and annual grasslands. 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 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 the addition of mitigation for the fountain thistle and changes in the Calaveras Dam Replacement Project.

CUW38803 - Vegetation Restoration of WSIP Construction Sites (Completed)

The purpose of this project is to provide maintenance, monitoring and reporting of onsite habitat restoration installed at the various WSIP construction sites after project construction work is completed.

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 requested

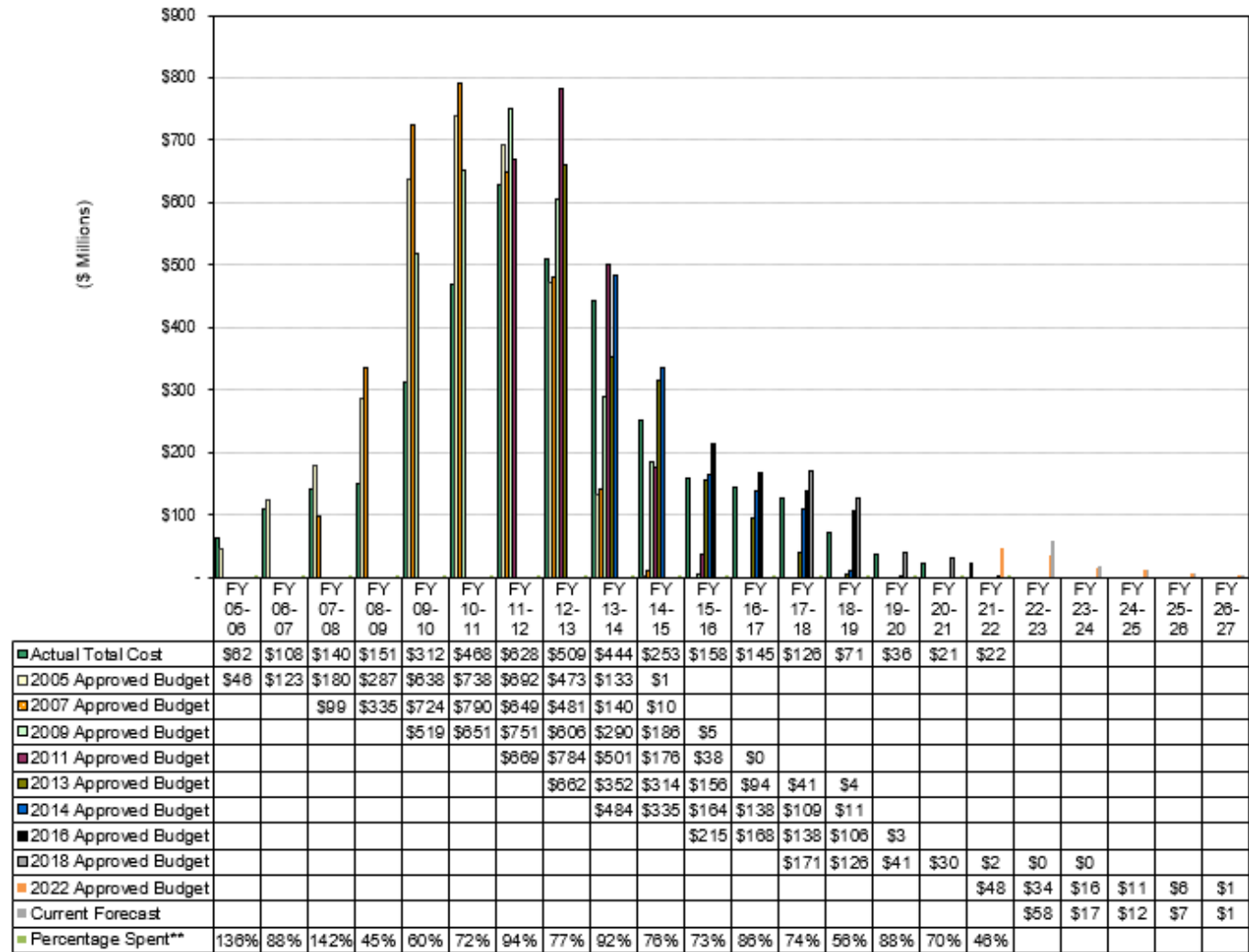
by the United States Army Corps of Engineers and California Department of Fish and Wildlife to provide a secure source of funds for the perpetual monitoring and maintenance of the Bioregional Habitat Restoration sites constructed in the SFPUC watershed.

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; and identify critical watershed lands for protection by purchasing fee title and/or perpetual conservation easements. The program also supports projects that enhance public awareness and provide education opportunities related to water quality, water supply, conservation, and environmental stewardship issues. These projects include construction of the proposed Alameda Creek Watershed Center and improved public access (e.g., trail connections) compatible with watershed management plans and policies.

Initially, specific projects were identified, including the Repair or Replacement of Niles Gage and Watershed Road Management Plan and Improvements - both in the Alameda Creek watershed. After further research and planning, the program's focus has shifted towards permanently protecting Alameda Creek watershed lands through conservation easements and/or fee title purchase of property from willing landowners and providing education opportunities that will further the goals of the Water Enterprise Environmental Stewardship Policy. Opportunities that are consistent with the WEIP description and purpose in the Peninsula and Tuolumne watersheds will be considered as well.

APPENDIX B. BUDGET AND EXPENDITURE HISTOGRAM*



All costs are shown in \$ Millions.

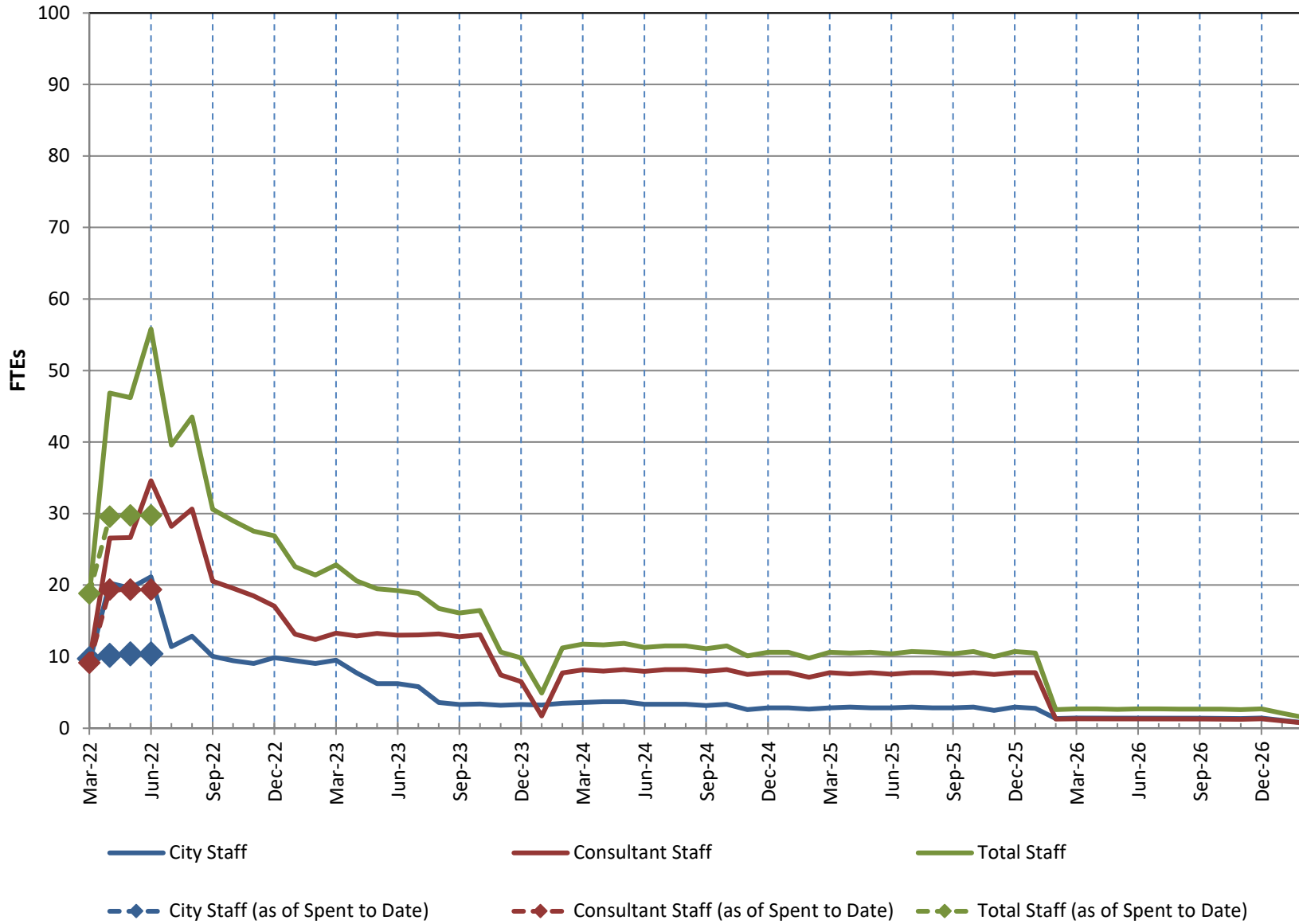
* The histogram does not reflect budget and expenditures prior to FY 2005-2006.

** 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/FY21-22 and cost projections (Current Forecast) from FY22-23 through program completion currently forecast for February 2027. Actual annual expenditures have ranged from 45% to 138% of planned expenditures.

Appendix C. WSIP Regional Program Staffing Plan








APPENDIX E. PROJECTS WITHIN BUDGET AND SCHEDULE

CUW35201 - Alameda Creek Recapture Project

Project Description: The planned facilities include the following components: four (4) identical vertical turbine pumps mounted on floating barges located in existing Pond F2; four (4) flexible discharge pipelines extending from each pump to a new pipe manifold located on shore; a 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; power lines from the existing Hetch Hetchy Water & Power Calaveras Electrical Substation installed on new power poles; and general site improvements.

Region: Sunol Valley	Project Status: Construction	Environmental Status: Completed (EIR)
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Project Cost:		Project Schedule:	
Approved 	\$43.97 M	Approved Sep-03 	Jun-24
Forecast* 	\$43.97 M	Forecast* Sep-03 	Jun-24
Actual 	\$21.19 M	Project Percent Complete: 49.2%	

 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✓	12/18/20✓	06/21/21✓	09/17/23

Progress and Status:

A second partnering meeting was held during the quarter. Design modifications continued to be prepared for the following due to changed conditions in the field: water inlet pipeline alignment due to erosion conditions around the Pond F2; the barge’s mooring and anchoring system due to the potential for greater water elevation fluctuations in the quarry than anticipated; and relocation of the effluent pipeline tie-in point to the existing 36-inch diameter pipeline due to corrosion at the original tie-in location. The design team is also investigating options to repair the existing 36-inch diameter pipeline downstream of the tie-in due to the corrosion found on the pipe. Additionally, the design team is investigating alternate access roads to the pond for construction and long-term access due to erosion of the existing access road. The contractor continued this quarter to report notices of material shortages, longer lead-time estimates, and cost increases related to COVID-19. Coordination with the quarry operator on erosion repairs continued.



Erosion Along Existing Access Road






Issues and Challenges:

Although there is no change in forecast at this time, the changes in existing conditions reported on this and last quarter are being evaluated to determine the resulting impacts to schedule and cost, and any such impacts will be reported in the future.

CUW30103 - Regional Groundwater Storage and Recovery

Project Description: The current scope was planned to be constructed in two (2) phases. Phase 1 included construction of 13 wells to produce 6.2 mgd of dry year supply over 7.5 years. Operating the wells during drought will provide data and insights into how much water can be reasonably expected to be produced, and if additional well stations are needed to reach the desired drought period pumping capacity. Phase 2 included construction of two (2) installed test wells, completion of the South San Francisco (SSF) Main well, pipeline, and other work. The test wells which would not be converted to production wells at this time will allow for determination as to whether the identified sites could be viable production wells, and will provide information to water quality and pumping capacities that can be used for future planning. Phase 2 has been separated into two contracts due to the long lead-time required for easements and permits for work at the SSF well site. Phase 2A includes installation of cathodic protection, well rehabilitation, and other mechanical work. Phase 2B consists of work at the SSF Main Well and pipeline installation to connect the well to Cal Water’s treatment facility.

Region: San Francisco Regional	Project Status: Construction	Environmental Status: Active (Various)
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Project Cost:	Project Schedule:
Approved  \$158.35 M	Approved Jun-03  Feb-27
Forecast*  \$158.35 M	Forecast* Jun-03  Feb-27
Actual  \$120.72 M	Project Percent Complete: 82.4%

 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✓ (D) 06/30/23	(A) 09/07/11✓ (B) 09/22/14✓ (C) 09/27/21✓ (D) 08/01/23	(A) 01/30/12✓ (B) 04/06/15✓ (C) 06/23/22✓ (D) 02/01/24	(A) 09/05/12✓ (B) 09/02/22 (C) 02/20/24 (D) 01/31/26

+ Project includes multiple construction contracts: (A) WD-2600 Test well drilling; (B) WD-2668 Well station (13 wells) – Phase 1; (C) WD-2878A RGSR Phase 2A; (D) RGSR Phase 2B

Progress and Status:

Progress and Status: For Phase 1 (Contract B), construction of the access road into Mission (also known as Treasure Island) Well & Treatment Facility has been completed. The Commission approved on June 28, 2022 two purchase and sale agreements and two permanent easements to provide site access and power to groundwater facilities at or near the Mission Well site. For Phase 2A (Contract C), a pre-construction meeting was held on Jun 22. Notice to Proceed was issued on Jun 23. For Phase 2B (Contract D), the 100% design continued to progress during the quarter; draft designs were issued on June 18 for the new PG&E underground vault and for the conduit layout crossing El Camino Real and Del Paso Roads.



Serramonte Boulevard Well & Treatment Facility in Colma, CA

Issues and Challenges:

The forecasted schedule for the Phase 2A subproject construction contract was increased during the quarter due to the contractor’s delay in submitting its proof of liability insurance.

APPENDIX F. LIST OF ACRONYMS

AAR	Alternative Analysis Report	FC	Final Completion
AC	Asphalt Concrete	FEIR	Final Environmental Impact Report
ACAMS	Access Control and Alarm Monitoring System	FTE	Full-Time Equivalent
ACDD	Alameda Creek Diversion Dam	FY	Fiscal Year
ACDT	Alameda Creek Diversion Tunnel	HH	Hetch Hetchy
ADA	Americans with Disabilities Act	HHWP	Hetch Hetchy Water and Power
AGM	Assistant General Manager	HTWTP	Harry Tracy Water Treatment Plant
ARM	Active Risk Manager	IVP	Irvington Portal
AWP	Alameda West Portal	JOC	Job Order Contract
BART	Bay Area Rapid Transit	LCSD	Lower Crystal Springs Dam
BAWSCA	Bay Area Water Supply and Conservation Agency	LCSDI	Lower Crystal Springs Dam Improvements
BDPL	Bay Division Pipeline	LOS	Levels of Service
BHR	Bioregional Habitat Restoration	MG	Million Gallons
BLS	Bureau of Labor Statistics	MGD	Million Gallons per Day
CalTrans	California Department of Transportation	MND	Mitigated Negative Declaration
CATEX	Categorical Exemption	MOA	Memorandum of Agreement
CCSF	City and County of San Francisco	MOU	Memorandum of Understanding
CDD	City Distribution Division	MPP	Mobile Pilot Plant
CDRP	Calaveras Dam Replacement Project	N/A	Not Applicable
CEQA	California Environmental Quality Act	NDA	Nondisclosure Agreement
CER	Conceptual Engineering Report	NEG DEC	Negative Declaration (also shown as ND)
CIP	Capital Improvement Program	NEPA	National Environmental Policy Act
CM	Construction Management	NIT	New Irvington Tunnel
CMB	Construction Management Bureau	NMFS	National Marine Fisheries Service (under NOAA)
CMIS	Construction Management Information System	NOAA	National Oceanic and Atmospheric Agency
CO	Change Order	NTP	Notice to Proceed
COVID-19	Coronavirus Disease of 2019	O&M	Operation and Maintenance
CPI	Cost Performance Index	PCCP	Pre-stressed Concrete Cylinder Pipe
CSPS	Crystal Springs Pump Station	PEIR	Program Environmental Impact Report
CSSA	Crystal Springs/San Andreas	PG&E	Pacific Gas and Electric Company
DB	Design, Build	PLC	Programmable Logic Control
DDW	Division of Drinking Water	PV	Photovoltaic
DSOD	Division of Safety of Dams (State of California)	RFI	Request For Information
DVSS	Digital Video Surveillance System	ROW	Right-of-Way
DWR	Department of Water Resource	SABPL	San Antonio Backup Pipeline
EBMUD	East Bay Municipal Utility District	SAPL	San Antonio Pipeline
EIR	Environmental Impact Report	SAPS	San Antonio Pump Station
EIS	Environmental Impact Statement	SBA	South Bay Aqueduct
EV	Earned Value	SCADA	Supervisory Control and Data Acquisition
EVM	Earned Value Management		

SFPUC	San Francisco Public Utilities Commission
SJPL	San Joaquin Pipeline
SMC	San Mateo County
SMP	Surface Mining Permit
SPI	Schedule Performance Index
SQS	Supplier Quality Surveillance
SSBPL	Sunset Supply Branch Pipeline
SSPL	Sunset Supply Pipeline
STO	Supplemental Task Order
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
USD	Union Sanitary District
UV	Ultra Violet
VFD	Variable Frequency Drive
VSAT	Very Small Aperture Terminal
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

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