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DATE: November 6, 2018

TO: Commissioner, Vince Courtney, President
Commissioner, Ann Moller Caen, Vice President
Commissioner, Francesca Vietor
Commissioner, Anson Moran
Commissioner, Ike Kwon

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

RE: WSIP Regional Projects Quarterly Report
1st Quarter / Fiscal Year 2018-2019

Enclosed please find the Water System Improvement Program (WSIP) Regional Projects Quarterly Report for the 1st Quarter (Q1) of Fiscal Year (FY) 2018-2019. 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, 2018 through September 30, 2018.

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".

It should be noted that this report does not include all the expenditures accrued for the work completed from July 1, 2017 through September 30, 2018 due to challenges associated with the migration of the City financial system from FAMIS to PeopleSoft. We are working diligently with the Controller's Office to address these challenges.

STATUS AND PERFORMANCE SUMMARY

Overall, WSIP regional projects are 95.9% complete as of September 30, 2018.

As of the end of the reporting period, planning, environmental, design, and construction activities are 99.7%, 99.3%, 97.7%, and 96.6% complete, respectively. The following table shows the number of projects and the total approved value of these projects that are active in the WSIP's various phases.

Status of WSIP Regional Projects (as of September 30, 2018)

Project Phase	No. of Projects	Percent by No. of Projects	Total Project Value ($M)	Percent by Project Value
Planning	0	0%	$0	0%
Design	4	8%	$75	2%
Bid & Award	0	0%	$0	0%
Construction	5	10%	$1,016	27%
Close-Out	1	2%	$96	3%
Completed	41	79%	$2,603	68%
Not Applicable[2]	1	2%	$12	0%
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 one project that does not include construction: the Long-Term Mitigation Endowment.

PROGRAM UPDATE

As of the end of the reporting period, five (5) regional projects with a total value of $1,016M are in construction and forty-two (42) projects with a total value of $2,699M are in close-out or have been completed. Forty (40) out of forty-three (43) Regional WSIP projects with specific Level of Service (LOS) goals have achieved their LOS goals to date. Besides the WSIP Closeout Projects, the two (2) Regional projects remaining in pre-construction are the Alameda Creek Recapture Project and the Watershed and Environmental Improvement Program.

As of the end of the reporting period, the forecasted total program cost (regional and local projects) is $4,787.8M, which is the same as the Commission Approved Budget. As of the end of the reporting period, all approved change orders (COs) on active construction contracts total $438.1M, and the current remaining construction contingency is $38.8M. Also, as of the end of the reporting period, all pending and potential COs, and trends total $21.4M. Therefore, if all pending and proposed COs and trends become approved COs, the current forecasted remaining construction contingency is $17.4M.

The current forecasted date to complete the overall WSIP is the same as the current approved date of December 2021.

UPDATE ON PROJECTS IN PRE-CONSTRUCTION

Alameda Creek Recapture

During this quarter, the team continued to work on the Environmental Impact Report (EIR) recirculation, including but not limited to responses for comments from the California Department of Fish and Wildlife, National Marine Fisheries Service, and others.

WSIP Closeout Projects

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

In the San Joaquin Region, the Tesla Portal slab and drainage improvement work is complete. Project consultant, AECOM, has completed the re-evaluation of the existing photo-voltaic systems for three sites and results are currently being reviewed by the project team.

In the Sunol Valley Region, work for the erosion repairs at Pond F3 East will be included in the same construction contract with the Turner Dam Spillway Erosion Project, which is a non-WSIP project. The project team anticipates advertising the project for bid in the next quarter. For the New Irvington Tunnel (NIT) Portal Water Quality Equipment Relocation, SFPUC issued Notice to Proceed (NTP) to the construction contractor, CalState. The contractor began to prepare RFIs and submittals on the project. For the SVWTP Polymer Feed Facility (aka Basin 5) full scale testing has begun, and work continued to complete design criteria and the Conceptual Engineering Report (CER). Other ongoing projects in design include SABPL Water Carrier System Modification and Alameda Siphon 4 Water Carrier Water System Modification.

In the Bay Division Region, the project team has issued NTP to the JOC Contractor, CalState, for the Ventilation & Sump Pump Installation. CalState has started to prepare RFIs and submittals on the project. Bid packages for the installation of a V-Ditch and BDPL 3 pipe coating work has been completed and will be issued to the JOC contractor when ventilation & sump pump work is completed in the next quarter.

In the Peninsula Region, the Crystal Springs Dam Stilling Basin, Dissipation Structure, and H53 Valve project will be re-bid next quarter. The bridge opening for the Lower Crystal Springs Dam Bridge Replacement project, a joint project with San Mateo County (SMC), is forecasted for late 2018. SFPUC will share costs with San Mateo County for the new security fencing for the bridge and dam. A new JOC will be set up to address the gap between the Lower Crystal Springs Dam north parapet wall and the new bridge abutment and is forecasted to start in early 2019.

Several JOC task orders have been initiated for the Harry Tracy Water Treatment Plant facility: 1. JOC 59-01 – Electrical & Mechanical Piping Modifications. The contractor began construction late this quarter and is scheduled to be completed next quarter 2. JOC-59-17 - Emergency Generators Filters Upgrades. The design drawings were finalized. The purchase order for filters was dispatched, and these filters will be delivered in November. The JOC contractor received NTP late this quarter and will begin filter replacement work next quarter. 3. Variable Frequency Drive

Controllers (VFDs) – Testing of the VFDs was completed. An alternative has been selected for the design work, which will be completed next spring. 4. Vibration Control Panel and Circuit Breakers. Existing conditions were reviewed. A consultant will be enlisted to complete the design work next spring. 5. Equalization Basin Mixers – Engineers reviewed the existing conditions with the mixer vendor and found that the mixer supports and guides were bent out of position. Engineers are working with the vendor for interim and long-term solutions to address the failed mixers. 6. Erosion on CSSA Pipeline – The design was completed. An informal contract was advertised and bid, and bids were received this quarter. The contractor is anticipated to start repair work next quarter.

UPDATE ON PROJECTS IN CONSTRUCTION

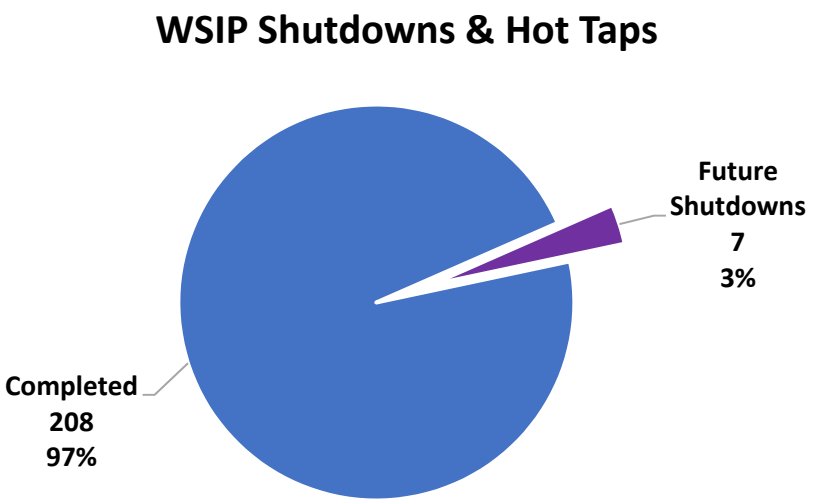
Steady progress was reported on the ongoing WSIP construction activities. As of the end of September 2018, WSIP regional construction contracts (including active, completed, and future contracts) are 97.9% complete overall, an increase of 0.2% during the quarter. Actual progress is below the Late Planned performance of 98.8%.

The WSIP Program has achieved a major milestone during the reporting period with the new replacement dam at Calaveras Reservoir reaching its full height. As the earth and rock fill dam is now topped-out, the dam construction portion of the project is complete. The contractor still needs to construct access roads, automate instrumentation and controls, restore the site, and place rock slope protection before the construction of the overall project is complete, slated for spring of next year.

A review of the construction work hours recorded over the last five years shows continued ramping down of construction activities, with monthly work hours peaking at 206,400 in August 2012, compared to a total of 30,897 work hours recorded in September 2018. The monthly average workhours in the reporting Quarter was 33,334, a decrease compared to the 63,387 monthly average workhours for the same period in 2017.

As of the end of September 2018, monitored exposure hours on WSIP regional projects totaled 9.6 million construction person-hours. Since the implementation of the WSIP Safety Approach in April 2009, the total lost time incidence rate is at 0.52, compared to the U.S. Bureau of Labor Statistics (BLS) industry average rate (2016) of 1.7.

To date, 208 out of 215 (97%) of the planned shutdowns and hot taps have been completed. Currently, there are no active shutdowns/hot taps and 7 future planned shutdowns.



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

Calaveras Dam Replacement

Overall progress on the Calaveras Dam Replacement current construction contract is reported at 95.7% as of the end of the quarter, which is an increase of 1.7% during the period. Dam embankment placement activities completed ahead of schedule, and progress is above the planned progress of 95.2% according to the late baseline curve. The California Division of Safety of Dams (DSOD) recently provided certification that the dam may now be used to impound water, a major project milestone.

Regional Groundwater Storage and Recovery

Overall progress on the Regional Groundwater Storage and Recovery construction contract is reported at 97.9% as of the end of the quarter. This value is below the value reported during the previous quarter due to the approval of $2.3M of change orders during the period. The contractual Substantial Completion was achieved as of December 31, 2017. The Contractor is addressing miscellaneous punch-list items at all 13 sites. Operational startup and testing is planned to begin at all sites in November 2018.

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

The Fish Passage Facilities within the Alameda Creek Watershed construction is 94.1% complete - an increase of 6.5% during the Quarter. As of the end of the Quarter, the Contractor was working on insulation, roofing, and siding installation at the maintenance/control building. The culvert headwall at Geary Road Improvement Project (GRIP) Site #3 is now formed, poured, and stripped; and the temporary staging area at Turnout #3 has been established in preparation for GRIP Site #2 work. Other ongoing work includes instrumentation and controls, SCADA, and davit and life line safety system for the fish ladder and the diversion dam.

MAJOR PROGRAM TRENDS AND RISKS

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

WSIP Management submits to the Commission on a quarterly basis a separate report on the status of Change Orders. This section summarizes the major program trends and risks being tracked as of September 30, 2018.

The trends for the WSIP Active Regional construction contracts totaled $11.5M as of the end of the reporting period, a decrease of $3.7M during the period. Approximately 44% of the total trends at the end of September 2018 belong to the Fish Passage Facilities Project, 41% to the Calaveras Dam Replacement Project, and 15% to the Regional Groundwater Storage & Recovery Project. The following table lists the trend totals for active projects:

WSIP Active Regional Projects Trend Totals (as of September 30, 2018)

Project	Trends ($ Million)	Percent Completion[1]
Fish Passage Facilities at ACDD	$5.1	94%
Calaveras Dam Replacement	$4.7	96%
Regional Groundwater Storage & Recovery	$1.7	98%

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

The WSIP Risk Management System ranks risks based on a combination of likelihood of occurrence and potential cost impact to the SFPUC. On that basis, and as of September 30, 2018, the Calaveras Dam Replacement project has two of the top ten program risks, the Fish Passage Facilities within the Alameda Creek Watershed project has four, and the Regional Groundwater Storage and Recovery project has the remaining four. The current highest risk in the program is from the Fish Passage Facilities within the Alameda Creek Watershed project and concerns the potential claimed costs associated with an accelerated schedule to mitigate for previous schedule impacts. The following table lists the projects with the largest risks.

Top 10 Risks of WSIP Regional Projects (as of September 30, 2018)

Project	No. of Top 10 Risks	Percent Completion[1]
Risk Ranking Based on Likelihood of Occurrence and Potential Cost Impact		
Fish Passage Facilities at ACDD	4	94%
Regional Groundwater Storage & Recovery	4	98%
Calaveras Dam Replacement	2	96%

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

Based on the risks summarized above, the three (3) active construction contracts that carry the greatest potential to impact the Program's overall cost and schedule are the Fish Passage Facilities within the Alameda Creek Watershed, the Regional Groundwater Storage & Recovery project, and the Calaveras Dam Replacement.

Fish Passage Facilities within the Alameda Creek Watershed

This project is currently reporting on 78 active trends that total $5.1M, a decrease of $0.1M from the value reported last quarter. The current largest two trends relate to the volume of subterranean water flow beneath the creek for the second and first construction season respectively. The third largest trend covers the costs of shoring, both upstream and downstream, required due to over-excavation. Other large trends concern the increase in the allowance for the storm-water pollution prevention plan (SWPPP) and a new trend for the increased cost of structural backfill material associated with a change in that material. Additional trends address additional shoring depth, alternative fall protection system, headwall length increases, removal of potential rock fall hazard on the left bank, cleanout of training wall sediment, and several differing site conditions.

The 80% risk confidence level as of the end of September 2018 is estimated at $5.7M which is an increase of $2.2M from the value reported last quarter. Four of the current top ten risks for the active WSIP construction contracts, based on likelihood of occurrence and potential cost impact, belong to this contract. The current highest risk addresses the potential for contractor claims associated with the accelerated schedule to mitigate for previous schedule impacts. Other high risks include the risk of differing site conditions for global landslide due to actual conditions not represented in the geotechnical report, the potential for insufficient creek flow to test the system upon substantial completion, the risk of SCADA and instruments not working properly, and the potential of mishandling storm-water runoffs leading to a violation of the construction general permit.

Other risks include the potential for the access road becoming impassable due to heavy rains next rainy season, the risk of fish ladders and screens not functioning as planned, the possibility for project delays resulting in additional late changes, the potential for excessive dewatering needed

during the dry season in case the hydraulic grade line is greater than reasonably anticipated, and the risk of a naturally occurring wildfire.

Regional Groundwater Storage and Recovery

This project is currently reporting on 11 active trends that total $1.7M, a decrease of $0.1M during the quarter. The largest trend at the end of the period is a new one, for budget for a JOC to build an access road. The second largest trend addresses the rental of generators for temporary power during commissioning. The third highest trend contemplates the addition of seven hot taps to calibrate the flowmeters.

Other relevant trends include costs for additional backflow preventers, extended overhead due to delays, potential revisions to the PLC programming, addressing sodium hydroxide issues at the Funeral Home and Linear Park sites, eyewash installation in pump room sinks, additional site restoration, miscellaneous plumbing and chemical changes, and furnishing portable sodium fluoride ventilation. Partially offsetting these trends are a potential credit for steel plates and an expected surplus in bid item 05: Environmental Mitigation.

The 80% risk confidence level as of the end of the reporting period is estimated at $1.4M which is an increase of $0.5M from the value reported last quarter. Four of the current top ten risks for the active WSIP construction contracts, based on likelihood of occurrence and potential cost impact, belong to this contract. The current largest risk concerns the challenges in meeting water quality requirements due to the potential for high levels of ammonia. The second highest risk is in not meeting regulatory and operational requirements for taste and odor and the potential delay to the seven-day start-up and testing activities while these requirements are being met. The third highest risk considers the potential costs from design errors and/or omissions. Additional risks include the potential for delays in finalizing permanent easements, the risk of project impacts due to turnover of key personnel, schedule delays caused by longer turnaround in submittals and RFIs, and the potential for encountering unforeseen underground utilities.

Calaveras Dam Replacement

As of the end of September 2018, there are 16 active trends on this contract, totaling $4.7M, a decrease of $3.5M during the quarter. The largest trend is related to the potential quantity overrun of zone embankment materials, which trend was reduced during the quarter due to the issuance of related change orders. The second largest trend is a new trend added this quarter to account for the potential overrun in the Asphalt Concrete (AC) Pavement bid item and for the re-paving of Calaveras Road. The third largest trend is for differing geotechnical site conditions regarding the existing native soil condition. Other high trends include adjustments to the home office overhead rate, left abutment erosion control during construction, the continuation of the bird deterrent program, and access to permanent instrumentation required for long-term operations and maintenance. Additional trends cover the Disposal Site No. 3 (DS-3) Pond demolition and concrete disposal and bid item overrun for foundation cleaning, bathymetric surveying, and adding rock surfacing on the left wall of the approach channel.

Two of the current top ten risks for the active WSIP construction contracts, based on likelihood of occurrence and potential cost impact, belong to this contract. The estimated value of the 80% risk confidence level is $1.2M, a decrease of $0.1M from the value reported for the previous quarter.

The current largest risk to the project is associated with the potential costs to repair Calaveras Road in case of another weather event causing landslides that would block access to the site. The second highest risk considers the potential for weather delays in excess of contractual agreements. The third highest risk is potential long-term erosion of the left abutment and associated water quality issues. Other high risks include encountering high levels of naturally occurring asbestos (NOA) beyond the contractor's control, adverse environmental conditions or encountering protected and endangered species impacting construction, and the potential for additional excavation of the left wall approach channel if the rock conditions are not as competent as expected.

Additional risks include the risk of experiencing access constraints due to eagle nesting impacting construction or the use of West Haul Road, the risk of manufacturer's lead time of imported material and equipment directly affecting schedule installation and limiting work activities, the potential to violate the permit associated with the storm water pollution prevention plans (SWPPP), and the risk of failures of temporary quarry slopes.

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 all approved, pending and potential change orders as well as all current trends have been accounted for in each project.

Contract	Final Construction Completion	Current Approved Contingency	Current Approved, Pending, and Potential Change Orders Plus Trends	Remaining Contingency	% Completion
CUW37401 CDRP Construction Contract (WD-2551)	05/28/19	$337.5M	$327.0M	$10.5M	96%
CUW37401 Alameda Creek Diversion Dam Fish Passage Facility (WD-2729)	12/16/18	$11.7M	$11.7M	$0	95%
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	06/28/19	$16.6M	$16.5M	$0.15M	98%

As can be seen in the table, the Calaveras Dam Replacement construction contract has remaining construction contingency of $10.5 million. This remaining contingency is available to cover additional change orders during construction that may result from triggering of remaining project risks. As of the end of the reporting period, the 80% risk confidence level was $1.2 million; therefore, this construction contract likely has more than sufficient contingency to cover remaining known project risks.

The Fish Passage Facilities at Alameda Creek Diversion Dam is estimated to use all approved contingency for change orders in process and forecasted trends as of the end of the reporting period. Therefore, it is likely that this construction contract may require additional contingency to cover the potential cost of remaining risks, valued at $5.7 million at the 80% risk confidence level. Since this project is a sub-project of the Calaveras Dam Replacement, the remaining unused

contingency in the larger contract may become available to cover any additional contingency needs for the smaller contract.

The Regional Groundwater Storage and Recovery current construction contract is estimated to have approximately $0.15 million in remaining contingency after accounting for all change orders in process and forecasted trends. This compares to remaining risks at the 80% risk confidence level of $1.2 million; therefore, it is possible some additional contingency may be needed for this construction contract, and would likely be funded from WSIP Director's Reserve, currently forecast at $3.78 million for the entire WSIP, if needed.

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 on a rotation monthly in order to review status of every budget line item at least twice quarterly. As a result of these meetings, staffing adjustments are made in real time to ensure project teams work within the existing budgets, and where appropriate, 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, the overall staffing levels in March 2018 were approximately 110 full-time equivalents (FTEs), which has decreased sharply to approximately 70 FTEs in September 2018. The decrease is equally attributable to both City and consultant staff ramping down activities as projects complete construction and close out. Actual staffing levels will continue to be tracked monthly against this plan and appropriate staff adjustments made accordingly to ensure staffing levels stay within the remaining available budget.

In addition, we are continuing to implement our industry best practice Construction Management (CM) Business Processes and Procedures to ensure the 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 2018 | 2019
July 2018 — September 2018

Rebuilding Today for a Better Tomorrow

Published: 11/06/2018

Quarterly Report - Q1 FY2018/2019

Water System Improvement Program - Regional Projects

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1. PROGRAM DESCRIPTION

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

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

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

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

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

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

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

* Final Program Completion Date

2. PROGRAM STATUS

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

Figure 2.1 shows the total Current Approved Budget for the regional projects remaining in each phase of the program as of September 30, 2018. The number of projects currently active in each phase is shown in parentheses.

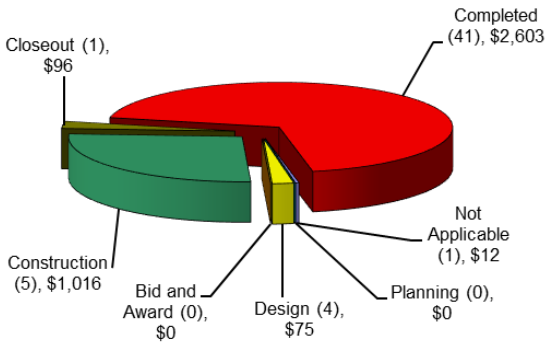

Figure 2.1 Total Current Approved Budget for Projects Active in Each Phase ($Million)

Figure 2.2 shows the number of regional projects in the following stages of the program as of September 30, 2018: Pre-construction, Construction, and Post-construction.

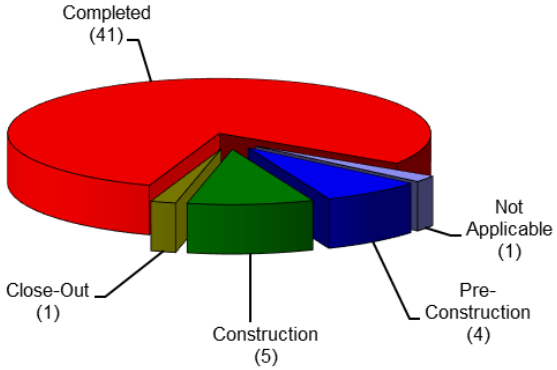

Figure 2.2 Number of Projects in Pre-construction, Construction, and Post-construction

Figure 2.3 summarizes the environmental review and permitting status of the WSIP's 52 regional projects as of September 30, 2018.

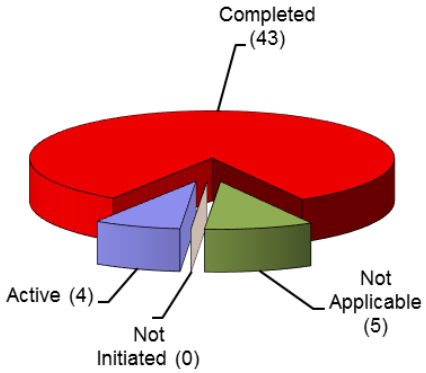

Figure 2.3 Program Environmental and Permitting Status

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 40 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 *(Completed)*	08/31/10	P				08/31/10	100%
CUW37301	San Joaquin Pipeline System *(Completed)* (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; *Completed*)	05/13/11			P		05/13/11	100%
CUW38401	Tesla Treatment Facility *(Completed)* (A) DB116 Tesla Treatment Facility Design-Build Contract (B) HH953 Tesla Portal Protection	(A) 06/24/11 (B) 08/05/13	P	S	S		(A) 06/24/11 (B) 08/05/13	100%
Sunol Valley Projects								
CUW35201	Alameda Creek Recapture	11/30/20				P		0%
CUW35501	Standby Power Facilities - Various Locations *(Completed)* (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 *(Completed)*	09/19/15		S	P		02/27/15	100%
CUW35902	Alameda Siphon #4 *(Completed)*	12/16/11		P	S		12/16/11	100%
CUW37001	Pipeline Repair & Readiness Improvements *(Completed)* (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) 09/17/18		S	P	S		(A) 96% (B) 95%
CUW37402	Calaveras Reservoir Upgrades *(Completed)*	10/06/05	P				10/06/05	100%
CUW37403	San Antonio Backup Pipeline *(Completed)*	12/31/14			P		12/31/14	100%
CUW38101	SVWTP Expansion & Treated Water Reservoir *(Completed)*	05/17/13	P		P		05/17/13	100%
CUW38601	San Antonio Pump Station Upgrade *(Completed)*	06/30/11			P		06/30/11	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		
Bay Division Projects								
CUW35301	BDPL Nos. 3 & 4 Crossover/Isolation Valves *(Completed)*	11/15/07		P			11/15/07	100%
CUW35302	Seismic Upgrade of BDPL Nos. 3 & 4 *(Completed)*	10/26/15		P			06/20/14	100%
CUW36301	SCADA System - Phase II *(Completed)*	11/29/10			P		11/29/10	100%
CUW36801	BDPL Reliability Upgrade – Tunnel *(Completed)*	05/20/15		P	S		10/15/14	100%
CUW36802	BDPL Reliability Upgrade – Pipeline *(Completed)* (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 *(Completed)*	05/28/10			P		05/28/10	100%
CUW38001	BDPL Nos. 3 & 4 - Crossovers *(Completed)*	08/15/12		P	S		08/15/12	100%
CUW38901	SFPUC/EBMUD Intertie *(Completed)*	09/07/07			P		09/07/07	100%
CUW39301	BDPL No. 4 Condition Assessment PCCP Sections *(Completed)*	02/06/09		P	S		02/06/09	100%
Peninsula Projects								
CUW35401	Lower Crystal Springs Dam Improvements *(Completed)*	11/20/11			P	S	11/20/11	100%
CUW35601	New Crystal Springs Bypass Tunnel *(Completed)*	07/14/11		P	S		07/14/11	100%
CUW35701	Adit Leak Repair - Crystal Springs/Calaveras *(Completed)*	11/30/07			P		11/30/07	100%
CUW36101	Pulgas Balancing - Inlet/Outlet Work *(Completed)*	02/02/06	P		S		02/02/06	100%
CUW36102	Pulgas Balancing - Discharge Channel Modifications *(Completed)*	10/23/09			P		10/23/09	100%
CUW36103	Pulgas Balancing - Structural Rehabilitation & Roof Replacement *(Completed)*	07/26/11	P		S		07/26/11	100%
CUW36105	Pulgas Balancing - Modifications of the Existing Dechloramination Facility *(Completed)*	08/27/12	P		S		08/27/12	100%
CUW36501	Cross Connection Controls *(Completed)*	11/26/08	P				11/26/08	100%
CUW36601	HTWTP Short-Term Improvements - Demo Filters *(Completed)*	01/11/06		P	S		01/11/06	100%
CUW36603	HTWTP Short-Term Improvements - Coagulation & Flocculation/Remaining Filters *(Completed)*	12/21/09		P	S		12/21/09	100%
CUW36701	HTWTP Long -Term Improvements *(Completed)*	09/08/15		P	S		09/08/15	100%
CUW36702	Peninsula Pipelines Seismic Upgrade *(Completed)*	10/30/15		P			10/30/15	100%
CUW36901	Capuchino Valve Lot Improvements *(Completed)*	02/14/08			P		02/14/08	100%
CUW37101	Crystal Springs/San Andreas Transmission Upgrade *(Completed)*	06/30/14		P	S		09/02/14	100%
CUW37801	Crystal Springs Pipeline No. 2 Replacement *(Completed)*	01/31/13		P	S		01/31/13	100%
CUW37901	San Andreas Pipeline No. 3 Installation *(Completed)*	03/29/11		P	S		03/29/11	100%
CUW39101	Baden & San Pedro Valve Lots Improvements *(Completed)*	03/31/11		P	S		03/31/11	100%

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

Notes:

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

3. PROGRAM COST SUMMARY

Table 3.1 provides an overall program-level cost summary of the WSIP Regional Program. It shows the Expenditures to Date; the 2005 Baseline, 2018 Approved, Current Approved and Q1/FY18-19 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 the Regional Program (including construction contingency) are $3,803.1 million. The Current Approved WSIP Budget and Forecasted Cost at completion for the Local Improvement Projects are $331.4 million. Refer to Appendix B for a graphical representation of how the WSIP budget and actual expenditures have changed over time.

Table 3.1 Program Cost Summary

Cost Categories	Expenditures To Date ($ Million) (A)	2005 Baseline Budget ($ Million) (B)	2018 Approved Budget ($ Million) (C)	Current Approved Budget [7] ($ Million) (D)	Q1/FY18-19 Forecasted Costs ($ Million) (E)	Cost Variance ($ Million) (F = D - E)
Regional Improvement Projects	**$2,946**	**$3,181**	**$3,081.4**	**$3,081.4**	**$3,079.9**	**$1.5**
Construction Costs [1]	$1,992	$2,322	**$2,065.9**	$2,065.9	$2,063.3	$2.6
Program Delivery Costs [2]	$927	$758	**$984.8**	$984.8	$985.9	($1.1)
Other Costs [3]	$26	$101	**$30.7**	$30.7	$30.7	-
Support Projects [4]	**$218**	**$33**	**$244.9**	**$244.9**	**$246.3**	**($1.4)**
Construction Contingency for Regional & Support Projects [5]	**$425**	**$193**	**$476.8**	**$476.8**	**$476.9**	**($0.1)**
REGIONAL PROGRAM WITH CONTINGENCY	**$3,588**	**$3,407**	**$3,803.1**	**$3,803.1**	**$3,803.1**	**-**
Local Improvement Projects	$331	**$383**	**$331.4**	**$331.4**	**$331.4**	**-**
Local Water Supply Projects [6][8]	**$112**	**-**	**$281.3**	**$281.3**	**$281.3**	**-**
Finance	**$372**	**$552**	**$372.0**	**$372.0**	**$372.0**	**-**
PROGRAM TOTAL	**$4,404**	**$4,343**	**$4,787.8**	**$4,787.8**	**$4,787.8**	**-**

Notes:

1. **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.
2. **Delivery Costs** include project management, planning, environmental (CEQA, permitting, construction compliance), design, construction management, and engineering support during construction.
3. **Other Costs** include environmental mitigation, art enrichment, security improvements, and real estate expenses.
4. **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.
5. Expenditures to Date for Construction Contingency for Regional and Support projects correspond to the Total Approved Change Orders on those projects. For projects with ongoing or completed construction, the 2018 Approved Budget for construction contingency includes all change orders and trends as identified at the time of the March 2018 Revised WSIP, as well as additional contingency funding allocated to cover the 80% confidence level risks identified at the time of the March 2018 Revised WSIP. For projects in pre-construction, the 2018 Approved Budget for construction contingency includes 10% of the estimated construction base bid.
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 2018 Revised WSIP, plus any additional budget changes approved by the Commission as part of additional contingencies on construction contracts.
8. The WSIP Local Water Supply projects underwent a September 2013 re-baseline. Only the original WSIP portion of the re-baselined costs is reported here. The remaining budget is funded under the Water Enterprise CIP and is managed outside the purview of the WSIP.
9. The original $522M estimate of financing cost was based on a memorandum to the Commission dated November 23, 2005.
10. The financing cost budget of $372M that was included in the March 2018 Revised WSIP includes all financing costs appropriated to date.
11. The actual financing cost is assumed to match the budgeted financing cost. Final reconciliation of all associated financing costs will occur upon WSIP completion.

Table 3.2 provides the current remaining construction contingency. For each region, it shows the 2018 Approved Construction Contingency; the Total Approved Change Orders prior to the reporting quarter; Change Orders Approved during the reporting quarter; Total Approved Change Orders through the reporting quarter; Project Savings Moved to Contingency/ Funds Moved out of Contingency during the Reporting Quarter; the Q1/FY18-19 Forecasted Construction Contingency; and the Remaining Contingency as of the end of the reporting quarter. As of September 30, 2018, the Forecasted Construction Contingency is $476.9 million and the Current Remaining Contingency is $38.8 million.

The Change Orders Approved in Q1/FY18-19 are shown in Table 3.2. Table 3.3 provides further information at the construction contract level for all subsequent approved change orders.

Table 3.2 Current Remaining Construction Contingency

Region	Q4/FY17-18 Forecasted Construction Contingency [1] ($ Million) (A)	Total Approved Change Orders as of Q4/FY17-18[2,3] ($ Million) (B)	Change Orders Approved in Q1/FY18-19[2] ($ Million) (C)	Total Approved Change Orders as of Q1/FY18-19 ($ Million) (D = B+C)	Project Savings or Director's Reserves (+) Moved to Contingency/ Funds (--) Moved out of Contingency during Q1/FY18-19 [4] ($ Million) (E)	Q1/FY18-19 Forecasted Construction Contingency ($ Million) (F = A + E)	Q1/FY18-19 Remaining Contingency ($ Million) (G = F - D)
San Joaquin Region	$0.22	-	-	-	-	$0.22	$0.22
Sunol Valley Region	$390.63	$360.85	$1.08	$361.92	$0.18	$390.81	$28.89
Bay Division Region	$8.65	$8.16	-	$8.16	-	$8.65	$0.50
Peninsula Region	$57.82	$56.79	-	$56.79	-	$57.82	$1.03
San Francisco Regional Region	$17.58	$8.78	$2.28	$11.06	-	$17.58	$6.52
Support Projects	$2.01	$0.14	-	$0.14	($0.21)	$1.80	$1.67
Regional Total	**$476.91**	**$434.71**	**$3.35**	**$438.07**	**($0.03)**	**$476.88**	**$38.82**

Notes:

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

Table 3.3. Details on Transactions Out of and Into Contingency

Project No. - Contract	Transactions Out of Contingency			Transactions Into Contingency		
	Approved Change Orders ($ Million) (A)	Budget Underrun at Project Completion / Director's Reserve Moved Out of Project ($ Million) (B)	Sub Total ($ Million) (C = A + B)	Savings Due to Low Bid ($ Million) (D)	Budget Overrun at Project Completion / Director's Reserve Moved to Project ($ Million) (E)	Sub Total ($ Million) (F = D + E)
Sunol Valley Region	**$1.08**	**-**	**$1.08**	**-**	**$0.18**	**$0.18**
CUW37401 Calaveras Dam Other Construction WD-2729	$1.08		$1.08	-	-	-
CUWSVI0101 WSIP Closeout - Sunol Valley	-		-	-	$0.18	$0.18
San Francisco Regional	**$2.28**	**-**	**$2.28**	**-**	**-**	**-**
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	$2.28	-	$2.28	-	-	-
Support Projects	**-**	**$0.21**	**$0.21**	**-**	**-**	**-**
CUW36302 System Security Upgrade WD-2707	-	$0.21	$0.21	-	-	-
Regional Total	**$3.35**	**$0.21**	**$3.56**	**-**	**$0.18**	**$0.18**

Table 3.4 Forecasted Remaining Construction Contingency

Region	Q1/FY18-19 Remaining Construction Contingency [1] ($ Million) (A)	Pending Change Orders as of Q1/FY18-19 [2] ($ Million) (B)	Potential Change Orders as of Q1/FY18-19 [3] ($ Million) (C)	Trends as of Q1/FY18-19 [4] ($ Million) D	Q1/FY18-19 Forecasted Remaining Construction Contingency ($ Million) (E =A-B-C-D)
San Joaquin Region	$0.22	-	-	-	$0.22
Sunol Valley Region	$28.89	$3.93	$2.58	$9.82	$12.55
Bay Division Region	$0.50	($0.09)	-	-	$0.59
Peninsula Region	$1.03	-	-	-	$1.03
San Francisco Regional Region	$6.52	$1.99	$1.74	$1.69	$1.09
Support Projects	$1.67	($0.26)	-	-	$1.92
Regional Total	**$38.82**	**$5.57**	**$4.32**	**$11.52**	**$17.40**

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/FY18-19, it shows the Remaining Construction Contingency, Pending Change Orders, Potential Change Orders, Trends, and Forecasted Remaining Construction Contingency. As of September 30, 2018, the Total Forecasted Remaining Construction Contingency is $17.4 million. This amount does not include funds that are currently held in Director's Reserve.

The Program Management project includes programmatic activities that span multiple regions and benefit several WSIP projects (Table 3.5). The project provides funding for the following functions and resources: SFPUC Staff assigned to the management of the overall program; consultants supporting SFPUC staff at the program level (program, project and pre-construction management consultant, program construction management consultant, program control consultant); labor relations, including management of the project labor agreement; communication and public outreach; programmatic legal support; real estate acquisitions; program controls, including the tracking and reporting of all WSIP efforts; and program-level construction management activities associated with quality assurance, risk management, the Supplier Quality Surveillance (SQS) Program, operations assistance, safety, and training.

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

Table 3.5 Status of Program Management Project Cost Breakdown

Category	Expenditures To Date ($ Million) (A)	2018 Approved Budget ($ Million) (B)	Current Approved Budget ($ Million) (C)	Q1/FY18-19 Forecasted Cost* ($ Million) (D)	Cost Variance ($ Million) (E = C-D)
Management Support	$36.8	$42.8	$42.8	$44.2	($1.4)
Project Labor Agreement	$3.7	$3.8	$3.8	$3.8	-
Planning and Project Development	$17.9	$18.3	$18.3	$18.3	-
Program Controls	$19.4	$19.8	$19.8	$19.8	-
Program Construction Management	$27.3	$28.0	$28.0	$28.0	-
Program Management Total	**$105.1**	**$112.7**	**$112.7**	**$114.1**	**($1.4)**

The spending pattern for the project is very similar from month to month as the project primarily funds program-level positions occupied by both SFPUC staff and consultants. The Forecasted Total Program Management Cost is $114.1 million, which is $1.4 million over the Current Approved Budget of $112.7 million due to the 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, 2018 Approved, Current Approved, and Q1/FY18-19 Forecasted Schedules for the WSIP Regional Program. Refer to the "Cost and Schedule Status" notes in Section 5 for the criteria associated with the three color-coded Forecast Status levels in Figure 4.1 – Meet Requirements, Need Attention, and Exceed Limits. The Current Approved and Forecasted Schedule completion for the overall WSIP (including Regional and Local Programs) are in December 2021. Refer to Appendix C for a graphical presentation of the WSIP Approved Project-Level Schedule.

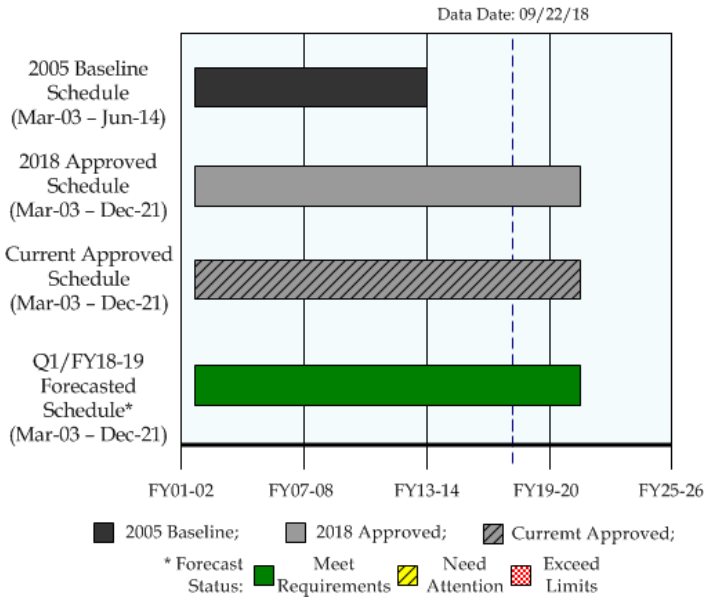

Figure 4.1 Program Schedule Summary

Table 4.1 2018 Approved vs. Q1/FY18-19 Forecasted Schedule Dates

Category	2005 Baseline Start	2018 Approved Start	Current* Approved Start	Actual Start	2005 Baseline Finish	2018 Approved Finish	Current* Approved Finish	Q1/FY18-19 Forecasted Finish	Schedule Variance (Months)
Regional Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/30/14	12/30/21	12/30/21	12/30/21	-
Local** Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/28/13	7/31/18	7/31/18	03/29/19	7.9 (Late)
Overall WSIP	03/01/03	03/01/03	03/01/03	03/01/03✓	06/30/14	12/30/21	12/30/21	12/30/21	-

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

** Excluding Local Water Supply Projects

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5. PROJECT PERFORMANCE SUMMARY*

All costs are shown in $1,000s as of 09/22/18

Project Name	Active Phase (**)	2005 Baseline Budget (a)	2018 Approved Budget (b)	Current Approved Budget (c)	Q1/FY18-19 Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f= c - d)	Cost Status (+)	2005 Baseline Completion (g)	2018 Approved Completion (h)	Current Approved Completion (i)	Q1/FY18-19 Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
San Joaquin Region															
CUWSJI0101 - WSIP Closeout - San Joaquin	CN		$ 4,376	$ 4,376	$ 4,376	$ 494	-	★		12/20/19	12/20/19	12/20/19	-	★	See Appendix E
Sunol Valley Region															
CUW35201 - Alameda Creek Recapture Project	DS	$ 18,809	$ 34,000	$ 34,000	$ 34,000	$ 12,097	-	★	05/25/12	11/03/21	11/03/21	11/03/21	-	★	See Appendix E
CUW37401 - Calaveras Dam Replacement	CN	$ 256,511	$ 823,092	$ 823,092	$ 823,092	$ 743,915	-	★	05/25/12	12/20/19	12/20/19	12/20/19	-	★	See Appendix E
CUWSVI0101 - WSIP Closeout - Sunol Valley	DS		$ 5,990	$ 5,990	$ 5,990	$ 795	-	★		06/30/21	06/30/21	06/30/21	-	★	See Appendix E
Bay Division Region															
CUWBDP0101 - WSIP Closeout - Bay Division	CN		$ 4,399	$ 4,399	$ 4,399	$ 2,293	-	★		06/30/20	06/30/20	06/30/20	-	★	See Appendix E
Peninsula Region															
CUWPWI0101 - WSIP Closeout - Peninsula	DS		$ 13,580	$ 13,580	$ 13,580	$ 2,252	-	★		05/19/21	05/19/21	05/19/21	-	★	See Appendix E
San Francisco Regional Region															
CUW30103 - Regional Groundwater Storage and Recovery	CN	$ 39,233	$ 138,793	$ 138,793	$ 138,793	$ 95,876	-	★	02/27/14	12/30/21	12/30/21	12/30/21	-	★	See Appendix E

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

**** Phase Status Legend**

PL Planning DS Design BA Bid & Award

CN Construction NA Not Applicable

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

+ Cost and Schedule Status

★ Meet Requirements: Forecasted Cost/Schedule is within Current Approved Budget/Schedule.

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

● Exceed Limits: Forecasted Cost is over Current Approved Budget by 10% or more. Or Forecasted Schedule is over Current Approved Schedule by greater than 6 months or 10% or more.

All costs are shown in $1,000s as of 09/22/18

Project Name	Active Phase (**)	2005 Baseline Budget (a)	2018 Approved Budget (b)	Current Approved Budget (c)	Q1/FY18-19 Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f= c - d)	Cost Status (+)	2005 Baseline Completion (g)	2018 Approved Completion (h)	Current Approved Completion (i)	Q1/FY18-19 Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
Support Projects															
CUW36302 - System Security Upgrades	CN		$ 15,201	$ 15,201	$ 15,201	$ 14,290	-	★		09/28/18	09/28/18	12/31/18	3.1 mo. Late	⚠	See Section 6
CUW38804 - Long Term Mitigation Endowment ++	NA		$ 12,000	$ 12,000	$ 12,000	$ 0	-	★		09/30/21	09/30/21	09/30/21	-	★	NA
CUW39401 - Watershed and Environmental Improvement Program	DS	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 4,451	-	★	06/28/13	01/08/21	01/08/21	01/08/21	-	★	See Appendix E

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

∗∗ Phase Status Legend

PL Planning DS Design BA Bid & Award

CN Construction NA Not Applicable

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

+ Cost and Schedule Status

★ Meet Requirements: Forecasted Cost/Schedule is within Current Approved Budget/Schedule.

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

● Exceed Limits: Forecasted Cost is over Current Approved Budget by 10% or more. Or Forecasted Schedule is over Current Approved Schedule by greater than 6 months or 10% or more.

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

6. PROJECTS NOT WITHIN BUDGET AND/OR SCHEDULE

CUW36302 - System Security Upgrades

Project Description: The project includes the identification, planning, design, and construction of all necessary security components associated with WSIP facilities. Phase A design consists of security appurtenances such as conduit routing incorporated into the overall design of projects. This work provides for the security infrastructure and is bid as part of the specific WSIP construction project. Phase B design consists of completion of project security system components which will be purchased, installed, and tested by a Security Integrator specialist.

Region: Support Projects	**Project Status:** Construction	**Environmental Status:** Completed (CatEx)

Project Cost:

Approved		$15.20 M
Forecast*		$15.20 M
Actual		$14.29 M

Project Schedule:

Approved	Jan-06	Sep-18
Forecast*	Jan-06	Dec-18

Project Percent Complete: 99.8%

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

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction+ NTP	Construction+ Final Completion
Current Forecast	03/28/12✓	01/07/06✓ - 08/15/13✓	11/13/06✓ - 05/08/14✓	07/13/07 ✓ - 11/30/18

\+ Date range for the first and last project among the 28 WSIP projects that require security improvements.

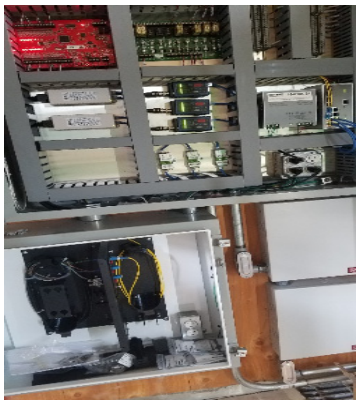
Progress and Status:

The project team submitted close out agenda for the WD2661 contract. The project team also completed construction at New Irvington Tunnel.

For the third As-Needed Security Integration Services Construction Contract, WD-2707, the project team verified the punchlist items for both Harry Tracy Water Treatment Plant and Crystal Springs Dam/San Andreas Reservoir. They are currently working on close out documentation.

Issues and Challenges:

Final contract closeout for WD-2707 is taking longer than anticipated due to protracted negotiations with the contractor. This is expected to be resolved within the next reporting quarter.



Security Panel installed at NIT

7. On-Going Construction

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion*	Q1/FY18-19 Forecasted Construction Final Completion**	Approved Contract Cost +	Q1/FY18-19 Forecasted Cost++	Schedule (Cal. Days)	Cost	
Sunol Valley Region								
CUW37401 - Calaveras Dam Replacement (Contract A)	08/15/11	05/28/19	05/28/19	$ 575,901,346	$ 581,840,217	-	($5,938,871)	96.0%
CUW37401 - Alameda Creek Diversion Dam (Contract B)	04/19/16	12/16/18	12/16/18	$ 34,906,677	$ 35,483,404	-	($576,727)	95.0%
San Francisco Regional Region								
CUW30103 - Regional GW Storage and Recovery (Contract B)	04/06/15	03/31/18	06/28/19	$ 54,039,057	$ 57,771,598	(454)	($3,732,541)	97.9%

Program Total for On-Going Construction	Approved Contract Cost	Q1/FY18-19 Forecasted Cost*	Variance	
			Cost	Percent
	$ 664,847,080	**$ 675,095,219**	**($10,248,139)**	**(1.5%)**

Note:
* Approved Construction Final Completion Date includes approved change orders.
** The Forecasted Construction Final Completion Date includes all approved, pending, and potential change orders and trends.
\+ Approved Contract Cost includes awarded contract amount and approved change orders.
++ The Forecasted Cost includes awarded contract amount and all approved, pending, and potential change orders.

8. PROJECTS IN CLOSE-OUT

Project Title	2005 Baseline Construction Phase Completion	2018 Approved Construction Phase Completion	Current Approved Construction Phase Completion	Actual Construction Phase Completion	2005 Approved Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Forecasted Project Completion	2005 Baseline Construction Phase Budget	2018 Approved Construction Phase Budget	Current Approved Construction Phase Budget	Construction Phase Expenditures To Date
Support Projects												
CUW38802 - Bioregional Habitat Restoration		05/31/18	05/31/18	05/31/18		09/30/21	09/30/21	09/30/21		$ 52,299,498	$ 51,636,156	$ 50,677,754
TOTAL										$ 52,299,498	$ 51,636,156	$ 50,677,754

9. COMPLETED PROJECTS

Project Title	2005 Baseline Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2018 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
San Joaquin Region								
CUW36401 - Lawrence Livermore Water Quality Improvement	11/07/11	07/31/13	07/31/13	07/31/13	$ 4,235,258	$ 4,198,247	$ 4,198,247	$ 4,198,247
CUW37301 - San Joaquin Pipeline System	03/25/14	03/31/16	03/31/16	03/31/16	$ 352,732,000	$ 203,178,014	$ 203,178,015	$ 203,178,015
CUW37302 - Rehabilitation of Existing San Joaquin Pipelines	06/30/14	10/31/14	10/31/14	10/31/14	$ 80,000,000	$ 21,153,622	$ 21,153,622	$ 21,153,622
CUW38401 - Tesla Treatment Facility	07/01/11	01/30/15	01/30/15	01/30/15	$ 101,643,001	$ 113,211,607	$ 113,211,607	$ 113,211,607
Sunol Valley Region								
CUW35501 - Standby Power Facilities - Various Locations	12/06/10	12/22/10	12/22/10	12/22/10	$ 9,949,735	$ 12,950,566	$ 12,950,566	$ 12,950,566
CUW35901 - New Irvington Tunnel	09/17/13	03/31/18	03/31/18	03/31/18	$ 214,650,004	$ 340,406,358	$ 340,406,358	$ 339,797,831
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 - 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	$ 27,039,149
CUW35302 - Seismic Upgrade of BDPL Nos. 3 & 4	10/15/12	07/30/18	07/30/18	07/30/18	$ 66,792,849	$ 73,623,296	$ 73,623,296	$ 70,525,715
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	$ 271,819,951
CUW36802 - BDPL Reliability Upgrade - Pipeline	-	03/31/16	03/31/16	03/31/16	-	$ 216,871,156	$ 216,871,156	$ 216,719,335
CUW36803 - BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2	-	05/28/10	05/28/10	05/28/10	-	$ 3,046,981	$ 3,046,981	$ 3,046,981
CUW38001 - BDPL Nos. 3 & 4 Crossovers	04/24/13	06/30/14	06/30/14	06/30/14	$ 36,616,911	$ 29,910,449	$ 29,910,449	$ 29,910,449
CUW38901 - SFPUC/EBMUD Intertie	02/07/07	03/20/14	03/20/14	03/20/14	$ 8,598,851	$ 9,167,306	$ 9,167,306	$ 9,167,306
CUW39301 - BDPL No. 4 Condition Assessment PCCP Sections	05/01/08	02/06/09	02/06/09	02/06/09	$ 2,000,000	$ 1,937,599	$ 1,937,599	$ 1,937,599
Peninsula Region								
CUW35401 - Lower Crystal Springs Dam Improvements	08/16/11	12/28/12	12/28/12	12/28/12	$ 27,752,222	$ 34,859,040	$ 34,859,040	$ 34,859,040
CUW35601 - New Crystal Springs Bypass Tunnel	10/28/10	08/17/12	08/17/12	08/17/12	$ 83,222,790	$ 81,466,732	$ 81,466,732	$ 81,466,732
CUW35701 - Adit Leak Repair - Crystal Springs/Calaveras	07/03/08	07/31/08	07/31/08	07/31/08	$ 3,748,452	$ 2,787,322	$ 2,787,322	$ 2,787,322
CUW36101 - Pulgas Balancing - Inlet/Outlet Work	05/11/06	05/11/06	05/11/06	05/11/06	$ 1,667,532	$ 1,765,938	$ 1,765,938	$ 1,765,938

Project Title	2005 Baseline Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2018 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
Peninsula Region								
CUW36102 - Pulgas Balancing - Discharge Channel Modifications	08/05/13	07/30/10	07/30/10	07/30/10	$ 8,111,422	$ 2,910,007	$ 2,910,007	$ 2,910,007
CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement	01/29/13	12/28/12	12/28/12	12/28/12	$ 36,712,846	$ 20,238,716	$ 20,238,716	$ 20,238,716
CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility	-	03/20/13	03/20/13	03/20/13	-	$ 5,390,031	$ 5,390,031	$ 5,390,031
CUW36501 - Cross Connection Controls	05/15/09	04/30/09	04/30/09	04/30/09	$ 6,111,779	$ 3,948,944	$ 3,948,944	$ 3,948,944
CUW36601 - HTWTP Short-Term Improvements (Demo Filters)	07/03/06	11/14/06	11/14/06	11/14/06	$ 4,381,375	$ 3,067,903	$ 3,067,903	$ 3,067,903
CUW36603 - HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters	09/08/10	07/28/10	07/28/10	07/28/10	$ 9,741,617	$ 18,604,937	$ 18,604,937	$ 18,604,937
CUW36701 - HTWTP Long-Term Improvements	04/08/14	12/30/16	12/30/16	12/30/16	$ 167,570,000	$ 274,081,969	$ 274,081,969	$ 273,804,405
CUW36702 - Peninsula Pipelines Seismic Upgrade	-	07/06/16	07/06/16	07/06/16	-	$ 38,825,346	$ 38,825,346	$ 38,767,424
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								
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	$ 2,516,444,621	$ 2,516,444,621	$ 2,511,201,891

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APPENDICES

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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 E50U Valve was installed in 2011 as part of the CUW36802 BDPL Reliability Upgrade – Pipeline

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

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

PENINSULA REGION

CUW35401 - Lower Crystal Springs Dam Improvements (Completed)

The project consists of:

• Spillway modifications that include widening the spillway, constructing two bridge piers within the spillway to accommodate rebuilding of a San Mateo County Bridge, removing the existing timber stop-log system, constructing a new weir system within the spillway, installing access cat-walks for operation and maintenance, and eliminating water ponding on top of the dam.

• Parapet wall modifications that include increasing the height of the wall that is located on top of the upstream face of the dam and increasing the height of the approach walls to the spillway.

• Stilling basin modifications at the base of the spillway that include removing the existing basin, constructing a new larger basin, and adding downstream riprap protection at the toe of the basin.

CUW35601 - New Crystal Springs Bypass Tunnel (Completed)

The project consists of:

• A 4,200-foot long tunnel with 8-foot diameter welded steel liner.

• Vertical shafts on each end of the tunnel to accommodate a tunnel boring machine and future maintenance. The southern shaft will include a connection to the existing Crystal Springs Bypass Pipeline; the northern shaft will tie into the southern ends of both Crystal Springs Pipeline No. 2 and Sunset Supply Line.

• New isolation valves and valve vaults.

• Standby power near valve vault G40.

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

The project consists of :

• Crystal Springs Outlet Tower No. 1: repairing leaks inside the tower, blasting and recoating piping and valves, replacing roof, structurally retrofitting the access footbridge, and installing a marine hatch at the tower drain.

• Crystal Springs Outlet Tower No. 2: installing a marine hatch at the tower drain.

• Calaveras Outlet Tower: installing a dewatering pump, replacing a deteriorated valve actuator, and providing ladder fall protection.

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

CUW36101 - Pulgas Balancing - Inlet/Outlet Work (Completed)
The project consists of new inlet and outlet piping designed to direct the path of the water in such a manner as to promote better mixing. The shutdowns associated with construction of these improvements provided an opportunity to perform a condition assessment of the reservoir interior that has been used to help identify work associated with CUW36103 - Pulgas Balancing Reservoir - Structural Rehabilitation and Roof Replacement project. This project was successfully completed in May 2006.

CUW36102 - Pulgas Balancing - Discharge Channel Modifications (Completed)
The project consists of raising the channel walls, repairing concrete cracks and exposed reinforcing steel, strengthening and interconnecting the channel floor sections, and strengthening the wall near the Pulgas Tunnel as needed. The project will restore the Discharge Channel capacity for accommodating flow up to 250 mgd.

CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement (Completed)
The project consists of the seismic retrofit of the walls, installation of a new steel frame roof, and repair of concrete cracks and exposed reinforcing steel. The project scope also includes installing a new ventilation system and sampling ports, replacing utility piping, and upgrading the electrical system.

CUW36104 - Pulgas Balancing - Laguna Creek Sedimentation (Completed)
This project consists of the execution of the Laguna Creek Habitat Management and Revegetation Plan. This is a mitigation measure for the Non-WSIP Pulgas Dechlorination Facility Project, which involves the restoration of the Laguna Creek Sedimentation Basin, a 6-8 acre catchment basin that provides habitat for the San Francisco Garter Snake and the California Red Legged Frog. In coordination with regulatory agencies, a strategy was developed to accomplish this habitat restoration, and to have it measured under the Habitat Reserve Program (HRP). This project was closed in December 2007 and combined with Project CUW38802-Habitat Reserve Program (HRP).

CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility (Completed)
The project consists of various improvements to the dechloramination and pH control facilities that are necessary to address immediate compliance issues. Anticipated improvements include modifications to the flow measurement and control systems, and to the various process control and chemical feed systems.

CUW36501 - Cross Connection Controls (Completed)
The project consists of providing improvements at 304 different sites to address potential cross connections. The work varies from site to site due to specific site conditions. The major work elements typically include: Install air gaps at blow-off locations and at air valves; install backflow prevention devices; reconstruct or raise existing vaults; install new vault covers; replace existing air valves; and/or modify, relocate, or remove existing blow-off facilities.

CUW36601 - HTWTP Short-Term Improvements (Demo Filters) (Completed)
The project consists of retrofitting two filters and performing full-scale performance demonstration testing of the retrofitted filters. The project was successfully completed in November 2006.

CUW36602 - HTWTP Short-Term Improvements - Remaining Filters (Completed)
This project consists of filtration modification to eight of the ten existing filters, replacement of effluent control valves and backwash supply valves, provision for a filter to waste system, installation of new underdrains and media, and seismic retrofit of basin walls. Combined with CUW36603 - HTWTP Short-term Improvements - Coagulation & Flocculation project.

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

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

CUW36701 - HTWTP Long-Term Improvements (Completed)

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

CUW36702 - Peninsula Pipelines Seismic Upgrade (Completed)

The scope of this project includes geotechnical investigations to characterize the Serra Fault in the vicinity of the pipelines and to confirm assumptions about sub-surface conditions along the length of the pipelines (SAPL2 and SAPL3 from HTWTP to San Pedro Valve Lot, SSBPL from HTWTP to Capuchino Valve Lot, and Sunset Supply Pipeline (SSPL) from Capuchino Valve Lot to San Pedro Valve Lot). In addition, hydraulic modeling has been performed to review system/facility requirements to meet system goals. The objectives of the investigations were: 1)to determine the potential fault offset at the Serra Fault crossings and the potential response from the three pipelines to these offsets, and 2) to determine potential for pipeline rupture due to displacement from liquefaction, landslides, and other seismically-triggered hazards along the pipeline alignments. The extensive geotechnical and modeling analyses performed to date have been carefully reviewed to identify specific project recommendations.

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

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

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

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

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

CUW36901 - Capuchino Valve Lot Improvements (Completed)

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

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

CUW37101 - Crystal Springs/San Andreas Transmission Upgrade (Completed)
The project consists of improvements to facilities necessary to transport water from Upper Crystal Springs Reservoir, through the lower Crystal Springs Reservoir to San Andreas Reservoir, and ultimately, to the Harry Tracy Water Treatment Plant (HTWTP) Raw Water Pump Station. Specifically, improvements will be made to the Upper Crystal Springs Dam discharge culverts, the Lower Crystal Springs outlet structures, the Crystal Springs Pump Station (CSPS), the Crystal Springs/San Andreas Pipeline, and the San Andreas outlet structures.

CUW37801 - Crystal Springs Pipeline No. 2 Replacement (Completed)
The project consists of:
• Seismic reliability improvements, which include replacing or relocating a total of 1.7 miles of pipe at 12 locations, sliplining 3.5 miles of pipe, retrofitting pipe bridge pier supports at two creek crossings, providing a new connection at the Crystal Springs Pump Station, and providing a connecting segment with a blind flange for later connection to the New Crystal Springs Bypass Tunnel.
• Facility improvements, which include installing fences and enclosures for exposed facilities, and concealing exposed portions of pipe.
• Upgrading the cathodic protection system along the length of the pipeline.

CUW37901 - San Andreas Pipeline No. 3 Installation (Completed)
The project consists of installation of 4.4 miles of 36-inch-diameter pipe from San Pedro Valve Lot in Daly City to Merced Manor Reservoir in San Francisco. There will be three jack and bore crossings along 19th Avenue and John Daly Boulevard. Work will also include installation of five customer service connections, a new cathodic protection system along the length of the new pipeline, three interconnections to the San Andreas Pipeline No.2, various valves, and a flow meter.

CUW39101 - Baden and San Pedro Valve Lots Improvements (Completed)
This project consists of upgrades to valve vaults, valves, and piping in the Baden Valve Lot and the San Pedro Valve Lot. It also includes the installation of a pressure reducing valve and associated system valving to allow transfer of a portion of the flow from the HTWTP high-pressure zone to the low- pressure zone during emergencies.

CUWPWI0101- WSIP Closeout - Peninsula
• **LCSD Stilling Basin Modifications & Dissipation Structure Riprap** – This sub-project is provided in response to concerns that fish may be "trapped" in the Lower Crystal Springs Dam (LCSD) stilling basin during low flow summer periods, and that high flow discharges from the new LCSD dissipation structure and potential high water levels in Pool 2 may cause erosion of the bank adjacent to the dissipation structure. The dissipation structure includes 60-inch diameter pipes with a maximum flow of 600 cubic feet per second (cfs) each and two 8-inch diameter pipes with maximum flow of 7 cfs each. During flow testing of the dissipation structure, released water could be observed flowing over the dissipation structure, potentially eroding the bank adjacent to the structure. It was also observed that during summer periods, of low flow in the channel downstream of the stilling basin, fish trapped in the basin were dying due to warm water temperatures. The purposes of this sub-project are to hydraulically connect the stilling basin with Pool 2 in order to allow fish to escape the basin in summer, and to add rip-rap behind the dissipation structure to prevent erosion. Specifically, this sub-project consists of:
o A new deeper channel between the dissipation structure and the Pool 2, which would prevent fish from being trapped in the stilling basin,
o Installation of a new SCADA controls to the existing 8-in discharge pipeline and re-routing one line to the stilling basin,
o Installation of additional rip-rap around the dissipation structure,
o Installation of a new 24-inch HDPE pipeline

through an existing abandoned 60-inch pipe directed to the stilling basin
o Coordination and facilitation of access for a piezometer drilling contractor during periods of concurrent work in the stilling basin
o Deletion of landscaping around the new Crystal Springs Pump Station
o Addition of tree, shrub and grass plantings along the creek bank in accordance with the approved re-vegetation plan

• **LCSD Valve H53/ Pipeline Investigation & Fisheries Release Valve** – As stipulated by the US Army Corps of Engineers 404 permit and the associated biological opinion by NOAA's National Marine Fisheries Service (NMFS) covering the SFPUC activities at the Crystal Springs Pump Station (CSPS), the SFPUC is to take measures to protect the threatened Central California Coast (CCC) steelhead present in San Mateo Creek at CSPS site. One measure requires the release of fresh water at a rate of 3 to 17 cubic feet per second (cfs) depending on the season in recorded dry and wet years. This sub-project will utilize modification of an existing pipeline to release the required flows to the LCSD stilling basin feeding San Mateo Creek. Specifically, this sub-project consists of:
o Condition assessment of the existing 60-in diameter pipeline from Valve H-53 to the stilling basin. In addition, valve H-53 will be exposed and visually inspected to determine its condition, requiring excavation and shoring of a pit approximately 20 feet long by 20 feet wide by 20 feet deep.
o Depending on the verified condition, viable alternatives, including abandonment of the option to use H-53 pipeline, will be evaluated.
o The approved option will include a SCADA controlled 12-inch valve installed at the discharge end of the pipeline. Depending on the condition of the pipeline, the approved option may also include repairs to the pipeline lining. Options may also include slip-lining the existing line with a smaller diameter pipeline such as 12 to 24-in diameter flexible polypropylene pipe.
o Use of a temporary pipeline "line stop" and associated shoring upstream of Valve H-53 to allow for potential installation of a permanent blind flange.
o Replacement of leaking plug valves that discharge from an existing concrete vault to the stilling basin with new knife gate valves.
o Installation of new flow control valves, isolation valves and appurtenances for Pool 2.
o Connections to the existing 72-inch pipeline using hot taps.
o Construction of a new concrete walkway from the access road to the existing stairs at the flow dissipation structure adjacent to the stilling basin.

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

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

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

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

• **Harry Tracy Water Treatment Plant (HTWTP) Improvements.** The Harry Tracy Long-Term Improvements Project (CUW36701) was completed in 2014. Since 2014, the following needs were identified to address construction issues and improve operations at the plant to fully meet the LOS goals and objectives:

o Automate the 12-inch gate valve at the High Rate Clarifiers' filter to waste manhole to eliminate the need for Operations to manually operate the valve on a frequent basis

o Modify Sludge Tank No. 1 piping to eliminate cavitation in the washwater pumps

o Upgrade the filters of three (3) emergency generators from passive filters to active filters to increase the effectiveness of the exhaust filtration and to reduce the need for Operations to constantly clean the filters

o Repair leaks in the filter gallery channels where stainless steel angle plates were added to support several concrete walls

o Automate flushing of the sludge transfer pumps and piping to eliminate the need for Operations to manually flush on a frequent basis

o Replace and relocate failed variable frequency drives (VFDs) for the wash water and sludge transfer pumps to address an over-heating issue

o Install double containment for the diesel fuel supply lines for the exterior generator to protect against leaks into the environment

o Provide training and programming modifications to the Raw Water Pump Station switchgear equipment to enable remote SCADA control

o Install vibration control monitoring system on the electrical panels at the Raw Water Pump Station to replace the existing obsolete system

o Evaluate/Assess condition of failed mixers in the equalization basin

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

SAN FRANCISCO REGIONAL REGION

CUW30103 - Regional Groundwater Storage and Recovery

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

CUW35801 - Sunset Reservoir - North Basin (Completed)

This project consists of:

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

CUW37201 - University Mound Reservoir - North Basin (Completed)

This project consists of:

- Seismic rehabilitation of the reservoir walls and roof using seismic joints, shear walls, diagonal bracing, and struts and foundation improvements. A geotechnical investigation was conducted that verified that the reservoir embankments are not subject to seismically induced failure.
- General rehabilitation, which includes repairing deteriorated concrete; replacing the reservoir lining material; replacing inlet/outlet, drain, and overflow piping; replacing outlet and drain valves; and performing landscaping and other miscellaneous site improvements.

SUPPORT PROJECTS

CUW36302 - System Security Upgrades

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

CUW38801 - Programmatic EIR (Completed)

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

and (3) propose mitigation measures.

CUW38802 - Bioregional Habitat Restoration

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

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

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

Under the March 2014 Revised WSIP, some scope for the Bioregional Habitat Restoration project associated with Lower Crystal Springs Dam and long term monitoring and maintenance of the compensation sites was reduced. The remaining wetland development at Upper San Mateo Creek and Boat Ramp and most of the oak woodland compensation for the Lower Crystal Springs Dam Improvement Project has been deferred until the operating elevation of the reservoir has increased, estimated to be around 2020. This work will be completed in the future by SFPUC Water Enterprise.

CUW38803 - Vegetation Restoration of WSIP Construction Sites (Completed)

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

CUW38804 - Long Term Mitigation Endowment

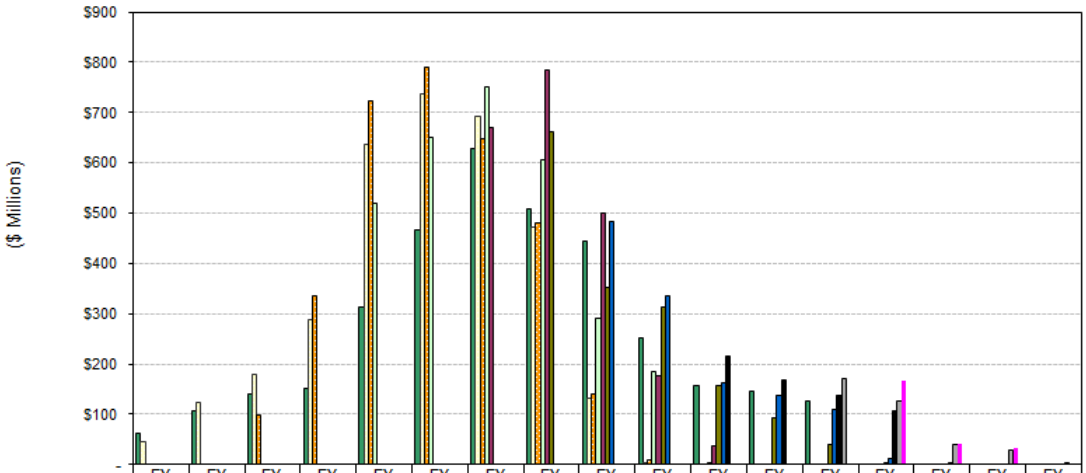
The scope of work and budget for this Long Term Mitigation Endowment was previously included and reported within the WSIP Regional project CUW38802 Bioregional Habitat Restoration; however, the office of the City Controller has established a separate project, specific for this endowment fund, in project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

CUW39401 - Watershed and Environmental Improvement Program

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

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

APPENDIX B. BUDGET AND EXPENDITURE HISTOGRAM*



	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Actual Total Cost	$62	$108	$140	$151	$312	$468	$628	$509	$444	$253	$158	$145	$126				
2005 Approved Budget	$46	$123	$180	$287	$638	$738	$692	$473	$133	$1							
2007 Approved Budget			$99	$335	$724	$790	$649	$481	$140	$10							
2009 Approved Budget					$519	$651	$751	$606	$290	$186	$5						
2011 Approved Budget							$669	$784	$501	$176	$38	$0					
2013 Approved Budget								$662	$352	$314	$156	$94	$41	$4			
2014 Approved Budget									$484	$335	$164	$138	$109	$11			
2016 Approved Budget											$215	$168	$138	$106	$3		
2018 Approved Budget													$171	$126	$41	$30	$2
Current Forecast														$168	$42	$32	$2
Percentage Spent**	136%	88%	142%	45%	60%	72%	94%	77%	92%	76%	73%	86%	74%				

All costs are shown in $ Millions.

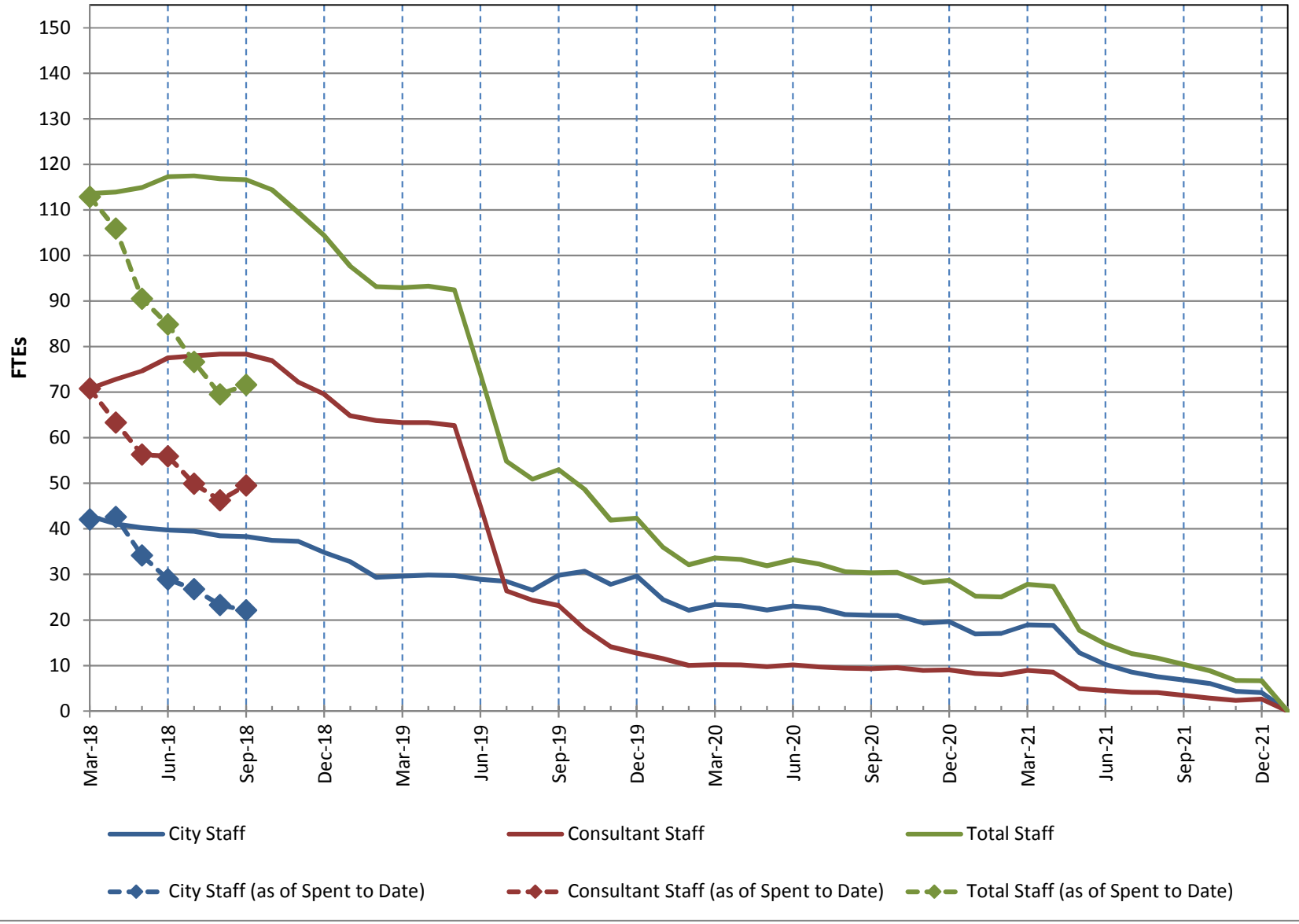
* The histogram does not reflect budget and expenditures prior to FY 2005-2006.

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

Figure B1 Annual Budgeted Spending Plans vs. Actual Expenditures

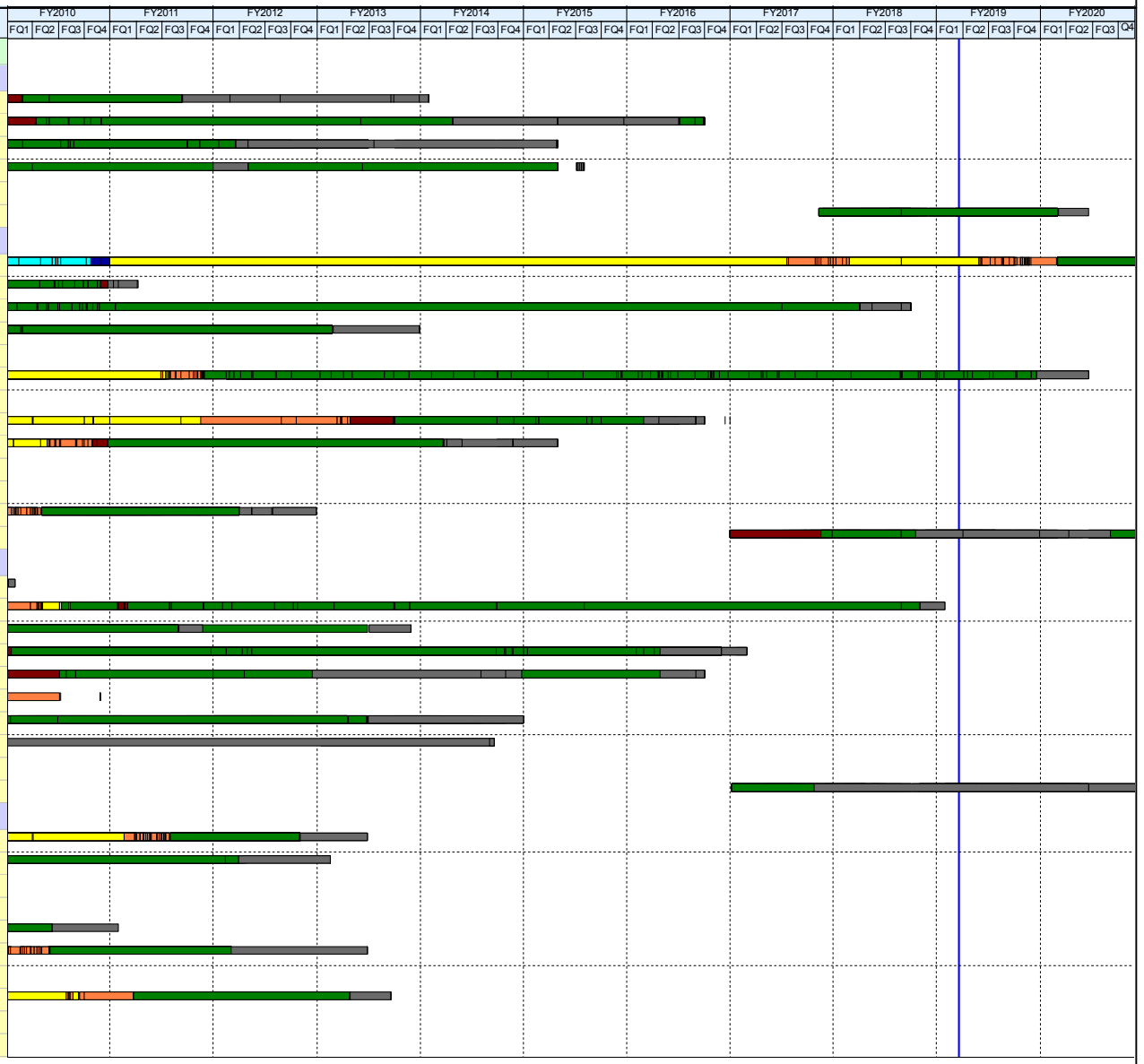
Figure B compares the spending plans associated with the various WSIP Approved Budgets to Actual Expenditures. It shows total annual expenditures from FY05-06 through Q1/FY18-19 and cost projections (Current Forecast) from FY18-19 through program completion in December 2021. Actual annual expenditures have ranged from 45% to 142% of planned expenditures.

Appendix C. WSIP Regional Program
Staffing Plan



APPENDIX D. WSIP Approved Project-Level Schedule

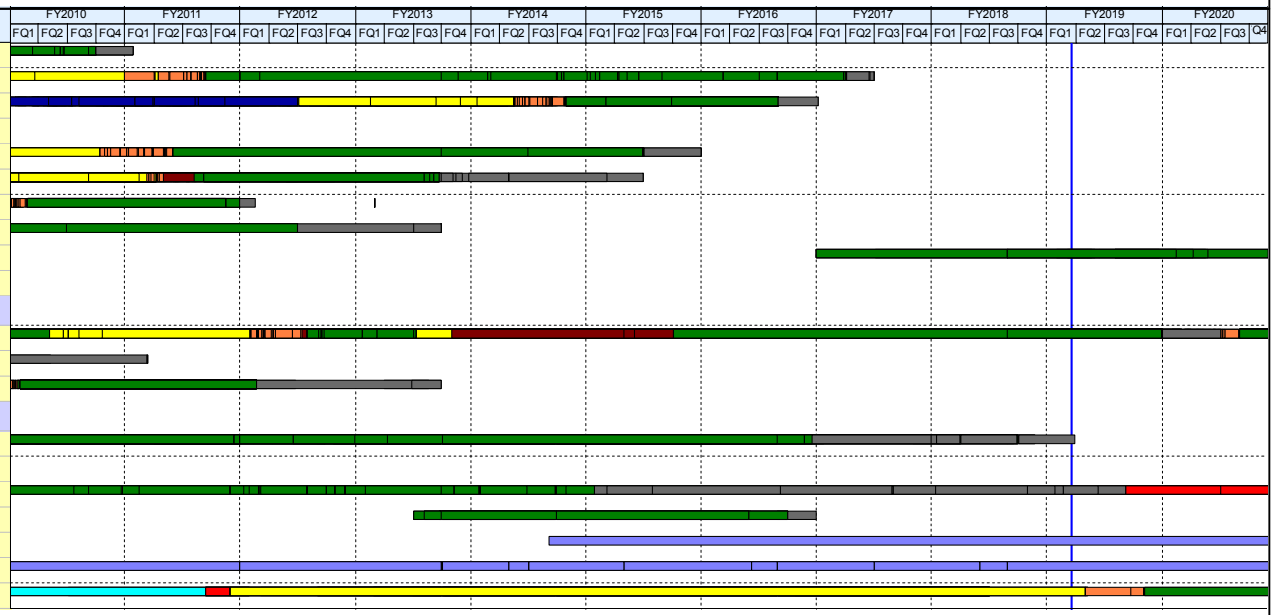
Project Name	Start	Finish
Regional Improvement Projects	31-Mar-00	30-Dec-21
San Joaquin Region	01-Jul-02	20-Dec-19
CUW36401 Lawrence Livermore Water Quality Impr	02-Feb-04	31-Jul-13
CUW37301 San Joaquin Pipeline System	19-Aug-02	31-Mar-16
CUW37302 Rehabilitation of Existing San Joaquin Pi	03-Jul-06	31-Oct-14
CUW38401 Tesla Treatment Facility	01-Jul-02	30-Jan-15
CUW38701 Tesla Portal Disinfection Station	01-Jul-02	29-Jun-07
CUWSJI0101 WSIP Closeout - San Joaquin	20-Jun-16	20-Dec-19
Sunol Valley Region	19-Dec-01	03-Nov-21
CUW35201 Alameda Creek Recapture Project	30-Sep-03	03-Nov-21
CUW35501 Standby Power Facilities - Various Locat	11-Jul-02	22-Dec-10
CUW35901 New Irvington Tunnel	19-Dec-01	31-Mar-18
CUW35902 Alameda Siphon #4	19-Dec-01	28-Jun-13
CUW37001 Pipeline Repair & Readiness Improveme	21-Apr-03	16-Apr-09
CUW37401 Calaveras Dam Replacement	03-Sep-02	20-Dec-19
CUW37402 Calaveras Reservoir Upgrades	19-Nov-03	28-Jul-06
CUW37403 San Antonio Backup Pipeline	17-Dec-03	30-Jun-16
CUW38101 SVWTP Expansion & Treated Water Re	22-Apr-05	31-Oct-14
CUW38102 SVWTP Calaveras Road	01-Feb-07	14-Dec-07
CUW38201 SVWTP Treated Water Reservoir	15-Sep-03	02-Mar-07
CUW38601 San Antonio Pump Station Upgrade	01-Jul-04	29-Jun-12
CUWSVI0101 WSIP Closeout - Sunol Valley	01-Jul-16	30-Jun-21
Bay Division Region	19-Dec-01	30-Jun-20
CUW35301 BDPL Nos. 3 & 4 Crossover/Isolation Va	06-Jan-03	31-Jul-09
CUW35302 Seismic Upgrade of BDPL Nos. 3 & 4	22-Oct-04	30-Jul-18
CUW36301 SCADA System - Phase II	22-Apr-05	28-May-13
CUW36801 BDPL Reliability Upgrade / Tunnel	19-Dec-01	30-Aug-16
CUW36802 BDPL Reliability Upgrade - Pipeline	19-Dec-01	31-Mar-16
CUW36803 BDPL Reliability Upgrade - Relocation o	24-Apr-06	28-May-10
CUW38001 BDPL Nos. 3 & 4 Crossovers	17-Feb-04	30-Jun-14
CUW38901 SFPUC/EBMUD Intertie	24-Jun-02	20-Mar-14
CUW39301 BDPL No. 4 Condition Assessment PCC	04-Aug-06	06-Feb-09
CUWBDP0101 WSIP Closeout - Bay Division	06-Jul-16	30-Jun-20
Peninsula Region	01-Nov-00	19-May-21
CUW35401 Lower Crystal Springs Dam Improvement	01-Nov-00	28-Dec-12
CUW35601 New Crystal Springs Bypass Tunnel	07-Jan-02	17-Aug-12
CUW35701 Adit Leak Repair - Crystal Springs/Calav	01-Apr-05	31-Jul-08
CUW36101 Pulgas Balancing - Inlet/Outlet Work	15-May-02	11-May-06
CUW36102 Pulgas Balancing - Discharge Channel M	01-Apr-05	30-Jul-10
CUW36103 Pulgas Balancing - Structural Rehabilitati	03-Apr-06	28-Dec-12
CUW36104 Pulgas Balancing - Laguna Creek Sedim	31-Mar-06	31-Dec-07
CUW36105 Pulgas Balancing - Modifications of the E	02-Apr-07	20-Mar-13
CUW36501 Cross Connection Controls	01-Jul-03	30-Apr-09
CUW36601 HTWTP Short-Term Improvements (Der	04-Sep-02	14-Nov-06



Planning
Design
Bid & Award
Construction
Program Management
Environmental
Right-of-Way
Construction Management
Closeout

APPENDIX D. WSIP Approved Project-Level Schedule

Project Name	Start	Finish
CUW36603 HTWTP Short-Term Improvements - Co	03-Jul-06	28-Jul-10
CUW36701 HTWTP Long-Term Improvements	01-Jul-03	30-Dec-16
CUW36702 Peninsula Pipelines Seismic Upgrade	01-Jul-09	06-Jul-16
CUW36901 Capuchino Valve Lot Improvements	22-Apr-05	19-Aug-08
CUW37101 Crystal Springs/San Andreas Transmissi	18-Aug-03	30-Jun-15
CUW37801 Crystal Springs Pipeline No. 2 Replacem	15-Jan-04	31-Dec-14
CUW37901 San Andreas Pipeline No. 3 Installation	15-Jan-04	30-Aug-12
CUW39101 Baden and San Pedro Valve Lots Impro	03-Oct-05	29-Mar-13
CUWPWI0101 WSIP Closeout - Peninsula	01-Jul-16	19-May-21
CUW36602 HTWTP Short-Term Improvements - Re	12-Jan-06	22-Feb-08
San Francisco Regional Region	31-Mar-00	30-Dec-21
CUW30103 Regional Groundwater Storage and Rec	01-Jun-03	30-Dec-21
CUW35801 Sunset Reservoir - North Basin	31-Mar-00	10-Sep-10
CUW37201 University Mound Reservoir - North Basin	24-Oct-05	29-Mar-13
Support Projects	13-Apr-04	30-Dec-21
CUW36302 System Security Upgrades	07-Jan-06	28-Sep-18
CUW38801 Programmatic EIR	13-Apr-04	30-Jun-09
CUW38802 Bioregional Habitat Restoration	06-Sep-06	30-Sep-21
CUW38803 Vegetation Restoration of WSIP Constru	02-Jan-13	30-Jun-16
CUW38804 Long Term Mitigation Endowment	05-Mar-14	30-Sep-21
CUW39201 Program Management Project	01-Aug-05	30-Dec-21
CUW39401 Watershed and Environmental Improvem	02-Jan-07	08-Jan-21



Planning
Design
Bid & Award
Construction
Program Management
Environmental
Right-of-Way
Construction Management
Closeout

APPENDIX E. PROJECTS WITHIN BUDGET AND SCHEDULE

CUWSJI0101 - WSIP Closeout - San Joaquin

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

Region: San Joaquin	**Project Status:** Construction	**Environmental Status:** Not Applicable

Project Cost:		**Project Schedule:**	
Approved	$4.38 M	Approved Jun-16	Dec-19
Forecast*	$4.38 M	Forecast* Jun-16	Dec-19
Actual	$0.49 M	Project Percent Complete: 36.1%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	N/A	N/A	Various	08/30/19

Progress and Status:

- The contractor for the Tesla Portal site, Sierra Mountain Construction, has completed JOC49-21. All closeout deliverables were received, and final payment was released.
- For the Solar Panels Project, the design consultant (AECOM) has completed the shadow analysis and power requirements at three different sites. A draft Tech Memo summarizing the results and recommendations was issued to Hetch Hetchy Operations for review.

Issues and Challenges:

None at this time.

Oakdale Portal Site

CUW35201 - Alameda Creek Recapture Project

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

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

Region: Sunol Valley	**Project Status:** Design	**Environmental Status:** Active (EIR)

Project Cost:		**Project Schedule:**	
Approved	$34.00 M	Approved Sep-03	Nov-21
Forecast*	$34.00 M	Forecast* Sep-03	Nov-21
Actual	$12.10 M	Project Percent Complete: 38.1%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	11/27/18	01/07/19	08/30/19	05/04/21

Progress and Status:

The project team continued to work on the updates to the EIR recirculation, including but not limited to responses for comments from California Department of Fish and Wildlife, National Marine Fisheries Service, and others.

Issues and Challenges:

The schedule for re-circulation is unknown at this time. The project schedule will be re-evaluated once the re-circulated draft EIR is published.

Current Condition of Pond F2 Access Road

CUW37401 - Calaveras Dam Replacement

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

Region: Sunol Valley	**Project Status:** Construction	**Environmental Status:** Completed (EIR)

Project Cost:		**Project Schedule:**	
Approved	$823.09 M	Approved Sep-02	Dec-19
Forecast*	$823.09 M	Forecast* Sep-02	Dec-19
Actual	$743.92 M	Project Percent Complete: 90.9%	

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

Key Milestones:	**Environmental Approval**	**Bid+ Advertisement**	**Construction+ NTP**	**Construction+ Final Completion**
Current Forecast	01/27/11✓	(A) 01/31/11✓ (B) 01/04/16✓	(A) 08/15/11✓ (B) 04/19/16✓	(A) 06/19/19 (B) 12/16/18

\+ Project includes multiple construction contracts.
(A) Calaveras Dam Replacement (WD-2551); (B) Alameda Creek Diversion Dam (WD-2729)

Progress and Status:

WD-2551 CDRP: The contractor completed the embankment dam to full height in July 2018, and completed removal of rocks and boulders from Calaveras Creek in August 2018. The contractor will continue to excavate the approach channel, produce and place rip rap materials, and install instrumentation for the dam embankment and foundation during the next reporting period. These activities need to be complete by late October 2018 to prepare for the impoundment of water in Calaveras Reservoir starting in November 2018.

WD-2729 ACDD: The contractor completed installation of fish monitoring equipment, access stairs, and underground utilities. Other ongoing work includes GRIP site no. 2, handrails, fish ladder grating, debris rack, instrumentation and controls, SCADA, and davit and life line safety system for the fish ladder and for the diversion dam.

Ribbon Cutting Photo for the Dam Embankment Media Event

Issues and Challenges:

Due to the lead time to fabricate the davit system for the fish ladder, Contractor is requesting to extend the completion date of the project to complete the work. CM team is currently negotiating with Contractor regarding this request.

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) 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) 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) 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) 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) 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:** Design	**Environmental Status:** Active (Various)

Project Cost:

Approved		$5.99 M
Forecast*		$5.99 M
Actual		$0.79 M

Project Schedule:

Approved	Jul-16	Jun-21
Forecast*	Jul-16	Jun-21

Project Percent Complete: 38.2%

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

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

Progress and Status:

• Alameda Siphon Carrier Water System Modifications. During the reporting period, the project team continued with the design effort for this sub-project.

• Erosion Repair at Pond F3E. The construction work for this subproject will be included with the Turner Dam Spillway Erosion Repair project (a non-WSIP project).

• SVWTP Polymer Feed Facility, Notice to Proceed (NTP) for the As-Needed Engineering Contract to complete CER and design criteria, and to perform full scale testing, was issued to Stantec, and work will begin in the next reporting period.

• NIT Water Quality Equipment Relocation. NTP was issued in July. The Contractor is currently preparing submittals for the project.

• San Antonio Backup Pipeline Carrier Water System Modifications. The Design team completed the design for Phase 1 work in July, and has recently commenced design work for Phase 2. CalState (the JOC Contractor) has also been selected for the Phase 1 work. NTP will be issued to the contractor in the next reporting quarter.

• Miscellaneous Work at AWP, IVP and SABPL. The JOC task order has been closed. There are two other outstanding items that will be completed by SFPUC staff, including installation of several components for the Cathodic Protection system and the evaluation of the vibration for the SABPL discharge valve vault riser.

Issues and Challenges:

None at this time.

CUWBDP0101 - WSIP Closeout - Bay Division

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

Region: Bay Division	**Project Status:** Construction	**Environmental Status:** Not Applicable

Project Cost:

Approved		$4.40 M
Forecast*		$4.40 M
Actual		$2.29 M

Project Schedule:

Approved Jul-16		Jun-20
Forecast* Jul-16		Jun-20

Project Percent Complete: 72.6%

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

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

Progress and Status:

- Ventilation and Sump Pump System Installation – NTP has been issued, and the JOC Contractor started to prepare the RFI and submittals and to obtain Caltran's permit for the work.
- Site Drainage and Pipe Coating Repairs – The Design package has been issued to the JOC Contractor. The Team is waiting for a cost proposal.
- BDPL 1&2 EIR Mitigation – Initial planning work for the project continued during the quarter.
- Bay Tunnel Warranty Inspection - Construction has been completed. The Project Team is in the process of releasing retention to the Contractor.
- Hydro-seeding at Bay Tunnel Project – Completed
- Newark Valve Lot Additional Gravel Placement - Completed
- Corrosion Protection for Valve E50U - Completed

Erosion Across ROW Due to Caltrans Drainage Pipe

Issues and Challenges:

None at this time.

CUWPWI0101 - WSIP Closeout - Peninsula

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

Region: Peninsula	**Project Status:** Design	**Environmental Status:** Not Applicable

Project Cost:		**Project Schedule:**	
Approved	$13.58 M	Approved Jul-16	May-21
Forecast*	$13.58 M	Forecast* Jul-16	May-21
Actual	$2.25 M	Project Percent Complete: 21.6%	

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

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

Progress and Status:

Crystal Springs / San Andreas Items:

1. WD-2822R2 – Crystal Springs Dam Stilling Basin, Dissipation Structure, and H53 Valve – This contract will be rebid in October 2018, and Final Completion is forecasted for September 2020. 2. Lower Crystal Springs Dam Bridge Replacement - joint project with San Mateo County (SMC). The bridge opening is forecasted for late 2018. The SFPUC will share costs with San Mateo County for the new security fencing for the bridge and dam. A JOC will be set up to address a gap between the Lower Crystal Springs Dam north parapet wall and the bridge abutment, with a forecasted start date for construction in early 2019.

Harry Tracy Water Treatment Plant Items:

1. JOC 59-01 – Electrical & Mechanical Piping Modifications. Contractor began construction late this quarter and is scheduled to be completed next quarter 2. JOC-59-17 - Emergency Generators Filters Upgrades. Drawings finalized. The purchase order for filters has been dispatched, and filters will be delivered in November. The JOC contractor received NTP late this quarter and will begin filter replacement work next quarter. 3. Variable Frequency Drive Controllers (VFDs) – Testing of the VFDs was completed and an alternative selected for design to be completed next spring. 4. Vibration Control Panel and Circuit Breakers. Existing conditions were reviewed, and a consultant will be enlisted to complete the design next spring. 5. Equalization Basin Mixers – Engineers reviewed the existing conditions with the mixer vendor and found that the mixer supports and guides were bent out of position. Engineers are working with the vendor for interim and long-term solutions to address the failed mixers. 6. Erosion on CSSA Pipeline – The design was completed; an informal contract was advertised and bid; and bids were received this quarter. The Contractor is anticipated to start the work next quarter.

Issues and Challenges:

The engineer's estimate is higher than the approved budget for WD-2822R2 – Crystal Springs Dam Stilling Basin project, which has not yet been reflected in the current forecast. The budget will be re-evaluated when the bids are received.

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:

Approved		$138.79 M
Forecast*		$138.79 M
Actual		$95.88 M

Project Schedule:

Approved Jun-03		Dec-21
Forecast* Jun-03		Dec-21

Project Percent Complete: 76.0%

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) 08/30/19	(A) 09/07/11✓ (B) 09/22/14✓ (C) 10/01/19	(A) 01/30/12✓ (B) 04/06/15✓ (C) 03/02/20	(A) 09/05/12✓ (B) 06/28/19 (C) 05/29/21

\+ Project includes multiple construction contracts.

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

Progress and Status:

For Contact B, completion of the access modifications at the two well stations located in Daly City have been completed. Retrofit of the existing sodium hydroxide system at five well stations, installation of the remote sampling analyzers for seven wells, and installation of a new sodium hydroxide system at two well stations are still in progress. Re-evaluation of the fluoridation system for all seven wells with treatment facilities is also continuing. The testing of the nine wells will start after the completion of the above work, and after obtaining a conditional Division of Drinking Water permit.

For Phase 2 (associated with Contract C), the JOC contractor completed construction of a test well at Ludeman North in Millbrae. The Ludeman North Test Well Construction and Testing Summary was issued in August 2018 and documents the pumping test and water quality data results. The construction of a test well at Centennial Trail site located in South San Francisco was completed in August 2018. The pumping test and water quality data results will be available in early October. The Technical Memorandum for the pipe routing for the Antoinette Lane Well (South San Francisco Main Area) was issued in September 2018.

Issues and Challenges:

None at this time.

CUW39401 - Watershed and Environmental Improvement Program

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

Region: Support Projects	**Project Status:** Design	**Environmental Status:** Active (TBD)

Project Cost:

Approved		$20.00 M
Forecast*		$20.00 M
Actual		$4.45 M

Project Schedule:

Approved Jan-07		Jan-21
Forecast* Jan-07		Jan-21

Project Percent Complete: 23.7%

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

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	06/06/19	TBD	TBD	TBD

Progress and Status:

Recent contact from several property owners in the Alameda Watershed has raised the prospect of possible strategic property acquisitions for the SFPUC. Below is a list of projects that the CUW39401 funds may be used for:

(1) The fee-title acquisition of several high priority properties in the Alameda watershed. Appraisals for these properties are underway.

(2) Partial funding for the construction of the Southern Skyline Boulevard Ridge Trail Extension (CUW2751801). The design of the Southern Skyline Boulevard Ridge Trail Extension (Bay Area Ridge Trail Extension on the Peninsula Watershed) is nearly complete and environmental review is ongoing, with public review scheduled to begin in the next few months. Project construction is scheduled to commence in late 2019. The majority of the funding will come from the Watershed and Land Management Program (CUW275).

The decision regarding how the remaining WEIP funds will be spent will likely be made in early 2019.

Arroyo Hondo in the Upper Alameda Creek Watershed

Issues and Challenges:

None at this time.

APPENDIX F. LIST OF ACRONYMS

AAR	Alternative Analysis Report
AB	Assembly Bill
ACAMS	Access Control and Alarm Monitoring System
ACDD	Alameda Creek Diversion Dam
ACDT	Alameda Creek Diversion Tunnel
ACWD	Alameda County Water District
AWP	Alameda West Portal
BART	Bay Area Rapid Transit
BAWSCA	Bay Area Water Supply and Conservation Agency
BDPL	Bay Division Pipeline
BHR	Bioregional Habitat Restoration
BO	Biological Opinion
CATEX	Categorical Exemption
CCSF	City and County of San Francisco
CDD	City Distribution Division
CDRP	Calaveras Dam Replacement Project
CEQA	California Environmental Quality Act
CER	Conceptual Engineering Report
CIP	Capital Improvement Program
CM	Construction Management
CMB	Construction Management Bureau
CMD	Contract Monitoring Department
CMD	Contract Monitoring Division
CMIS	Construction Management Information System
CO	Change Order
CPI	Cost Performance Index
CSPS	Crystal Springs Pump Station
CSSA	Crystal Springs/San Andreas
DB	Design, Build
DSOD	Division of Safety of Dams (State of California)
DVSS	Digital Video Surveillance System
EBMUD	East Bay Municipal Utility District
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EV	Earned Value
EVM	Earned Value Management
FY	Fiscal Year
HH	Hetch Hetchy
HTLTIP	Harry Tracy Long Term Improvements Project
HTWTP	Harry Tracy Water Treatment Plant
IVP	Irvington Portal
JOC	Job Order Contract
LCSD	Lower Crystal Springs Dam
LCSDI	Lower Crystal Springs Dam Improvements
LMPS	Lake Merced Pump Station
LOS	Levels of Service
MG	Million Gallons
MGD	Million Gallons per Day
MND	Mitigated Negative Declaration
MOU	Memorandum of Understanding
NEG DEC	Negative Declaration (also shown as ND)
NEPA	National Environmental Policy Act
NIT	New Irvington Tunnel
NMFS	National Marine Fisheries Service (under NOAA)
NOAA	National Oceanic and Atmospheric Agency
NOT	Notice of Termination
NTP	Notice to Proceed
O&M	Operation and Maintenance
PCCP	Pre-stressed Concrete Cylinder Pipe
PCE	Project Controls Engineer
PE	Project Engineer
PEIR	Program Environmental Impact Report
PG&E	Pacific Gas and Electric Company
PPSU	Peninsula Pipeline Seismic Upgrade
QA	Quality Assurance
RFI	Request For Information
ROW	Right-of-Way
SABPL	San Antonio Backup Pipeline
SAPL	San Antonio Pipeline
SAPS	San Antonio Pump Station
SCADA	Supervisory Control and Data Acquisition
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
SVWTP	Sunol Valley Water Treatment Plant
TBD	To be determined
TBM	Tunnel Boring Machine
TWR	Treated Water Reservoir
UM	University Mound
UPS	Uninterruptable Power Supply
UV	Ultra Violet
VFD	Variable Frequency Drive
WEIP	Watershed Environmental Improvement Program
WSIP	Water System Improvement Program

San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission

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DATE: February 5, 2019

TO: Commissioner, Vince Courtney, President
Commissioner, Ann Moller Caen, Vice President
Commissioner, Francesca Vietor
Commissioner, Anson Moran
Commissioner, Ike Kwon

FROM: Harlan L. Kelly, Jr., General Manager 1/31/19 FOR

RE: WSIP Regional Projects Quarterly Report
2nd Quarter / Fiscal Year 2018-2019

Enclosed please find the Water System Improvement Program (WSIP) Regional Projects Quarterly Report for the 2nd Quarter (Q2) of Fiscal Year (FY) 2018-2019. 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, 2018 through December 31, 2018.

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 Q1 FY2018-2019 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".

It should be noted that this report does not include all the expenditures accrued for the work completed from July 1, 2017 through December 31, 2018 due to challenges associated with the migration of the City financial system from FAMIS to PeopleSoft. We are working diligently with the Controller's Office to address these challenges.

STATUS AND PERFORMANCE SUMMARY

Overall, WSIP regional projects are 96.6% complete as of December 31, 2018.

As of the end of the reporting period, planning, environmental, design, and construction activities are 99.7%, 99.4%, 97.3%, and 97.5% 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, 2018)

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	4	8%	$75	2%
Bid & Award	0	0%	$0	0%
Construction	5	10%	$1,016	27%
Close-Out	1	2%	$96	3%
Completed	41	79%	$2,603	68%
Not Applicable[2]	1	2%	$12	0%
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 one project that does not include construction: the Long-Term Mitigation Endowment.

PROGRAM UPDATE

As of the end of the reporting period, five (5) regional projects with a total value of $1,016M are in construction and forty-two (42) projects with a total value of $2,699M are in close-out or have been completed. Forty (40) out of forty-three (43) Regional WSIP projects with specific Level of Service (LOS) goals have achieved their LOS goals to date. Besides the WSIP Closeout Projects, the one Regional project remaining in pre-construction is the Alameda Creek Recapture Project.

As of the end of the reporting period, the forecasted total program cost (regional and local projects) is $4,787.8M, which is the same as the Commission Approved Budget. As of the end of the reporting period, all approved change orders (COs) on active construction contracts total $443.86M, and the current remaining construction contingency is $33.16M. Also, as of the end of the reporting period, all pending and potential COs, and trends total $18.34M. Therefore, if all pending and proposed COs and trends become approved COs, the current forecasted remaining construction contingency is $14.82M.

The current forecasted date to complete the overall WSIP is the same as the current approved date of December 2021.

UPDATE ON PROJECTS IN PRE-CONSTRUCTION

Alameda Creek Recapture

During this quarter, the project team continued to work on updates to the EIR recirculation, including but not limited to meeting with California Department of Fish and Wildlife and developing strategies for responding to comments and revising the hydrology appendix of the EIR . The schedule for re-circulation is unknown at this time. The project schedule will be re-evaluated once the re-circulated draft EIR is published.

WSIP Closeout Projects

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

In the San Joaquin Region, the Tesla Portal slab and drainage improvement work is completed. The project team has reviewed the Solar Photovoltaic (PV) System Evaluation Technical Memorandum (TM) with AECOM, and has determined that additional analyses will need to be performed to complete the TM.

In the Sunol Valley Region, work for the erosion repairs at Pond F3 East has been added to the Turner Dam Spillway Erosion construction contract, which is a non-WSIP project. For the New Irvington Tunnel (NIT) Portal Water Quality Equipment Relocation project, CalState, a JOC Contractor, began construction work. For the SVWTP Polymer Feed Facility (aka Basin 5) full-scale testing, the design criteria report, and the Conceptual Engineering Report (CER) preparation are all ongoing. The JOC for SABPL Water Carrier System Modification Phase 1 has also been issued to the contractor CalState. CalState is waiting for the pipes to be delivered; installation of the pipe will begin in the next quarter. Design for the Alameda Siphon 4 Water Carrier Water System Modification is still on-going.

In the Bay Division Region, CalState is the JOC Contractor for the Ventilation & Sump Pump Installation. CalState completed the sump pump work, and will complete the ventilation work in the next quarter. For the installation of a V-Ditch and BDPL 3 pipe coating work, Power Engineering is to provide a cost proposal.

In the Peninsula Region, the Crystal Springs Dam Stilling Basin, Dissipation Structure, and H53 Valve project will go to the SFPUC Commission for award next quarter. The bridge grand opening for the Lower Crystal Springs Dam (LCSD) Bridge Replacement project, a joint project with San Mateo County (SMC), will take place in January 2019. SFPUC will share costs with San Mateo County for the new security fencing for the bridge and dam. A new JOC will be set up to address the gap between the LCSD north parapet wall and the new bridge abutment; construction is forecast to start in early 2019. An as-needed task order will be initiated in early 2019 to perform a security assessment for the area around the bridge and dam.

Several JOC task orders have been initiated for the Harry Tracy Water Treatment Plant facility: 1) JOC 59-01 – Electrical & Mechanical Piping Modifications. Construction was completed late this quarter. The remaining scope of work for training will be completed following the Emergency Generators Filters Upgrades (JOC 59-17). 2) JOC-59-17 - Filters were delivered and one (1) of the three (3) filters was installed and will be tested early next quarter. The remaining two (2) filters will be installed in the spring following the Hetch Hetchy winter shutdown. 3) Variable Frequency Drive Controllers (VFDs) – Testing of the VFDs was completed and it was found that no additional work on the VFDs is needed. 4) Vibration Control Panel and Circuit Breakers- Further work will not be funded under WSIP [and consequently not reported upon in the WSIP quarterly report]. 5) Equalization Basin Mixers – The vendor/contractor has agreed to replace all mixers, supports and guides at no cost. Engineers are working with the vendor/contractor to confirm the date of replacement. 6) Erosion on CSSA Pipeline – The Contractor began erosion repair work in November and achieved substantial completion during the quarter.

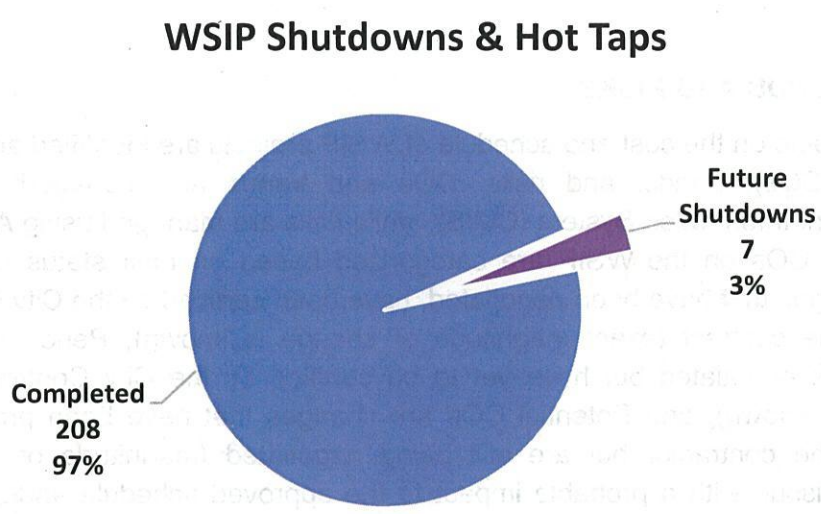
UPDATE ON PROJECTS IN CONSTRUCTION

Steady progress was reported on the ongoing WSIP construction activities. As of the end of December 2018, WSIP regional construction contracts (including active, completed, and future contracts) are 98.9% complete overall, an increase of 0.9% during the quarter.

A review of the construction work hours recorded over the last five (5) years shows continued ramping down of construction activities, with monthly work hours peaking at 206,400 in August 2012, compared to a total of 18,804 work hours recorded in December 2018. The monthly average workhours in the reporting Quarter was 23,269, a significant decrease compared to the 55,196 monthly average workhours for the same period in 2017.

As of the end of December 2018, monitored exposure hours on WSIP regional projects totaled 9.7 million construction person-hours. Since the implementation of the WSIP Safety Approach in April 2009, the total lost time incidence rate is at 0.52, compared to the U.S. Bureau of Labor Statistics (BLS) industry average rate (2016) of 1.7.

The status of the WSIP Shutdowns and Hot Taps remained the same during the period. To date, 208 out of 215 (97%) of the planned shutdowns and hot taps have been completed. Currently, there are no active shutdowns/hot taps and seven (7) future planned shutdowns.



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

Calaveras Dam Replacement

Overall progress on the Calaveras Dam Replacement current construction contract is reported at 96.5% as of the end of the quarter, which is an increase of 0.8% during the period. Dam embankment placement activities completed ahead of schedule. The California Division of Safety of Dams (DSOD) provided certification that the dam may now be used to impound water, a major project milestone.

Regional Groundwater Storage and Recovery

Overall progress on the Regional Groundwater Storage and Recovery construction contract is reported at 97.6% as of the end of the quarter. This value is 0.3% below the value reported during the previous quarter due to the approval of $2M of change orders during the period. The contractual Substantial Completion was achieved as of December 31, 2017. Recent changes to the chemicals to be used for groundwater treatment will require modifications of chemical metering pumps, flowmeter programming, and piping. In addition, the Contractor is addressing miscellaneous punch-list items at all thirteen (13) sites.

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

The Fish Passage Facilities within the Alameda Creek Watershed construction is 95.9% complete, an increase of 1.8% during the Quarter. Testing, start-up, and training staff in the operation of components are in progress.

MAJOR PROGRAM TRENDS AND RISKS

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

WSIP Management submits to the Commission on a quarterly basis a separate report on the status of Change Orders. This section summarizes the major program trends and risks being tracked as of December 31, 2018.

The trends for the WSIP Active Regional construction contracts totaled $12.4M as of the end of the reporting period, an increase of $0.9M during the period. Approximately 50% of the total trends at the end of December 2018 belong to the Fish Passage Facilities Project, 39% to the Calaveras Dam Replacement Project, and 11% to the Regional Groundwater Storage & Recovery Project. The following table lists the trend totals for active projects:

WSIP Active Regional Projects Trend Totals (as of December 31, 2018)

Project	Trends ($ Million)	Percent Completion[1]
Fish Passage Facilities at ACDD	$6.2	96%
Calaveras Dam Replacement	$4.8	96%
Regional Groundwater Storage & Recovery	$1.4	98%

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

The WSIP Risk Management System ranks risks based on a combination of likelihood of occurrence and potential cost impact to the SFPUC. On that basis, and as of December 31, 2018, the Fish Passage Facilities within the Alameda Creek Watershed project has five (5) of the top ten program risks, and the Regional Groundwater Storage and Recovery project has the remaining five (5). The risk profile of the Calaveras Dam Replacement project has decreased to the point that none of its risks rank in the top ten of the WSIP Program. The current highest risk in

the program is from the Fish Passage Facilities within the Alameda Creek Watershed project and concerns the potential claimed costs associated with an accelerated schedule to mitigate for previous schedule impacts. The following table lists the projects with the largest risks.

Top 10 Risks of WSIP Regional Projects (as of December 31, 2018)

Project	No. of Top 10 Risks	Percent Completion[1]
Risk Ranking Based on Likelihood of Occurrence and Potential Cost Impact		
Fish Passage Facilities at ACDD	5	96%
Regional Groundwater Storage & Recovery	5	96%

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

Based on the risks summarized above, the two (2) active construction contracts that carry the greatest potential to impact the Program's overall cost and schedule are the Fish Passage Facilities within the Alameda Creek Watershed, and the Regional Groundwater Storage & Recovery project.

Fish Passage Facilities within the Alameda Creek Watershed

This project is currently reporting on sixty-four (64) active trends that total $6.2M, an increase of $1.1M from the value reported last quarter. The current largest trend addresses the alleged inefficiencies experienced during construction. The second and third largest trends relate to the volume of subterranean water flow beneath the creek for the second and first construction season respectively. The fourth largest trend covers the costs for landslide stabilization followed by the cost for shoring, both upstream and downstream, required due to over-excavation. A new trend was added this period to cover the additional costs to recover schedule.

Other trends address additional shoring depth, alternative fall protection system, the increase in the allowance for the storm-water pollution prevention plan (SWPPP), headwall length increases, cleanout of training wall sediment, the cost of a second season winterization, and several differing site conditions.

The 80% risk confidence level as of the end of December 2018 is estimated at $2.1M which is a decrease of $3.6M from the value reported last quarter. Five (5) of the current top ten (10) risks for the active WSIP construction contracts, based on likelihood of occurrence and potential cost impact, belong to this contract. The current highest risk addresses the potential for contractor claims associated with the accelerated schedule to mitigate for previous schedule impacts. Other high risks include the risk of differing site conditions, the potential for insufficient creek flow to test the system upon substantial completion, the risk of SCADA and instruments not working properly, and the potential of mishandling storm-water runoffs leading to a violation of the construction general permit.

Other risks include the potential that fish ladders and screens will not function as planned, the risk of a naturally occurring wildfire, the possibility of the access road becoming impassable due to heavy rains during the rainy season, the risk of delays resulting from additional late changes, and the potential for regulatory agencies requiring additional mitigation measures due to multiple takes of snakes or salamanders.

Regional Groundwater Storage and Recovery

This project is currently reporting on fourteen (14) active trends that total $1.4M, a decrease of $0.3M during the quarter. The largest trend at the end of the period is for budget for a JOC to build an access road. The second largest trend addresses the rental of generators for temporary power during commissioning. The third highest trend contemplates the addition of seven (7) hot taps to calibrate the flowmeters.

Other relevant trends include costs due to inefficiencies on offsite utilities, extended overhead costs due to delays, potential revisions to the PLC programming, addressing naturally occurring ammonia at the Funeral Home and Linear Park sites, eyewash installation in pump room sinks, additional site restoration, miscellaneous plumbing and chemical changes, and furnishing portable sodium fluoride ventilation. Partially offsetting these trends is a potential credit for an expected surplus in bid item 05: Environmental Mitigation.

The 80% risk confidence level as of the end of the reporting period is estimated at $1.6M which is an increase of $0.2M from the value reported last quarter. Five (5) of the current top ten (10) risks for the active WSIP construction contracts, based on likelihood of occurrence and potential cost impact, belong to this contract. The current largest risk concerns the challenges in meeting water monitoring requirements due to the potential for high levels of ammonia, changes in water quality requirements for Fluoride, and detection of sulfur at Southwood Drive. The second highest risk considers the potential costs from design errors and/or omissions. The third highest risk is in not meeting regulatory and operational requirements for taste and odor and the potential delay to the seven-day start-up and testing activities while these requirements are being met.

Additional risks include the potential for delays in finalizing permanent easements, the risk of project impacts due to turnover of key personnel, schedule delays caused by longer turnaround in submittals and RFIs, and the potential for encountering unforeseen underground utilities.

Calaveras Dam Replacement

As of the end of December 2018, there are seventeen (17) active trends on this contract, totaling $4.8M, an increase of $0.1M during the quarter. The largest trend is related to the potential quantity overrun of zone embankment materials, which was reduced during the quarter due to better quantity verification. The second largest trend is to account for the potential overrun in the Asphalt Concrete (AC) Pavement bid item and for the re-paving of Calaveras Road. The third largest trend is for differing site conditions regarding the existing native soil condition (nutrients). Other high trends include adjustments to the home office overhead rate, left abutment erosion control during construction, the continuation of the bird deterrent program, and access to permanent instrumentation required for long-term operations and maintenance. Additional trends

cover the bid item overrun for foundation cleaning, bathymetric surveying, and adding rock surfacing on the left wall of the approach channel.

None of the current top ten (10) risks for the active WSIP construction contracts, based on likelihood of occurrence and potential cost impact, belong to this contract. The estimated value of the 80% risk confidence level is $0.6M, a decrease of $0.6M from the value reported for the previous quarter.

Currently there are only three (3) remaining open risks on the project. The current largest risk to the project considers the potential for weather delays exceeding contractual agreements. The second highest risk is associated with the potential costs to repair Calaveras Road in case of another weather event causing landslides that would block access to the site. The third remaining risk addresses the potential for either adverse environmental conditions or the presence of protected and endangered species delaying 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 all approved, pending, and potential change orders, as well as all current trends, have been accounted for in each project.

Contract	Final Construction Completion	Current Approved Contingency	Current Approved, Pending, and Potential Change Orders Plus Trends	Remaining Contingency	% Completion
CUW37401 CDRP Construction Contract (WD-2551)	05/28/19	$335.2M	$327.5M	$7.8M	96%
CUW37401 Alameda Creek Diversion Dam Fish Passage Facility (WD-2729)	05/29/19	$13.9M	$13.9M	$0M	96%
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	06/28/19	$16.6M	$16.4M	$0.19M	98%

As can be seen in the table, the Calaveras Dam Replacement construction contract has a remaining construction contingency of $7.8 million. This remaining contingency is available to cover additional change orders during construction that may result from triggering of remaining project risks. As of the end of the reporting period, the 80% risk confidence level was $0.6M; therefore, this construction contract likely has more than sufficient contingency to cover remaining known project risks.

The Fish Passage Facilities at Alameda Creek Diversion Dam is estimated to use all approved contingency for change orders in process and forecasted trends as of the end of the reporting period. Therefore, it is likely that this construction contract may require additional contingency to cover the potential cost of remaining risks, valued at $2.1 million at the 80% risk confidence level. Since this project is a sub-project of the Calaveras Dam Replacement, the remaining unused contingency in the larger contract may become available to cover any additional contingency needs for the smaller contract.

The Regional Groundwater Storage and Recovery current construction contract is estimated to have approximately $0.2 million in remaining contingency after accounting for all change orders in process and forecasted trends. This compares to remaining risks at the 80% risk confidence level of $1.6 million. Therefore, it is possible some additional contingency may be needed for this construction contract. In that eventuality, funding would be available from the remaining Director's Reserve, currently forecast at $3.78 million for the entire WSIP.

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 on a rotation monthly in order to review status of every budget line item at least twice quarterly. As a result of these meetings, staffing adjustments are made in real time to ensure project teams work within the existing budgets, and budget forecasts and resources are adjusted as necessary to help ensure successful completion of every project.

The current staff transition plan for the remainder of WSIP is included on page 42 of the attached WSIP Quarterly Report. As can be seen in the chart, the overall staffing levels in June 2018 were approximately eighty-five (85) full-time equivalents (FTEs), which has decreased to approximately eighty (80) FTEs in December 2018. The decrease is equally attributable to both City and consultant staff ramping down activities as projects complete construction and close out. Actual staffing levels will continue to be tracked monthly against this plan and appropriate staff adjustments made accordingly to ensure staffing levels stay within the remaining available budget.

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

avoidance, schedule management, program CM project audits, monthly and quarterly project review meetings, and lessons learned reports.

CLOSING

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

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

Enclosure

HETCH HETCHY
WATER SYSTEM IMPROVEMENT PROGRAM

QUARTERLY REPORT

Regional Projects
Q2 FY 2018 | 2019
October 2018 — December 2018

Rebuilding Today for a Better Tomorrow

Published: 02/05/2019

Quarterly Report - Q2 FY2018/2019

Water System Improvement Program - Regional Projects

TABLE OF CONTENTS

1. PROGRAM DESCRIPTION

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

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

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

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

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

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

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

* Final Program Completion Date

2. PROGRAM STATUS

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

Figure 2.1 shows the total Current Approved Budget for the regional projects remaining in each phase of the program as of December 31, 2018. The number of projects currently active in each phase is shown in parentheses.

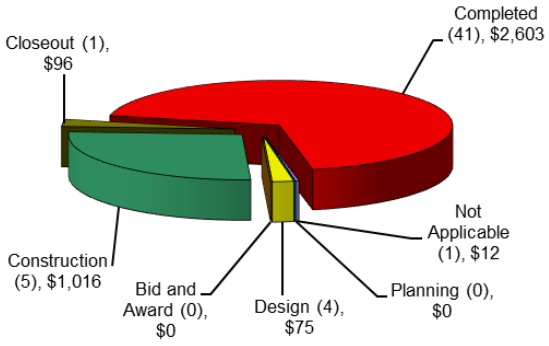


Figure 2.1 Total Current Approved Budget for Projects Active in Each Phase ($Million)

Figure 2.2 shows the number of regional projects in the following stages of the program as of December 31, 2018: Pre-construction, Construction, and Post-construction.

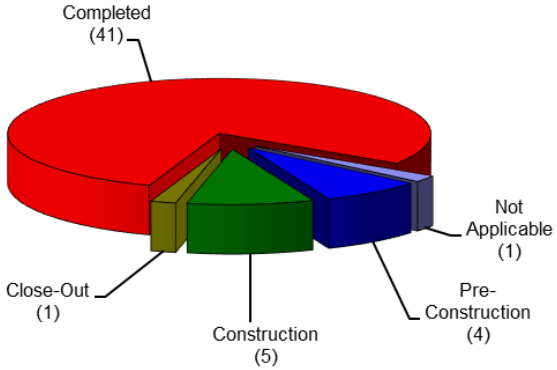


Figure 2.2 Number of Projects in Pre-construction, Construction, and Post-construction

Figure 2.3 summarizes the environmental review and permitting status of the WSIP's 52 regional projects as of December 31, 2018.

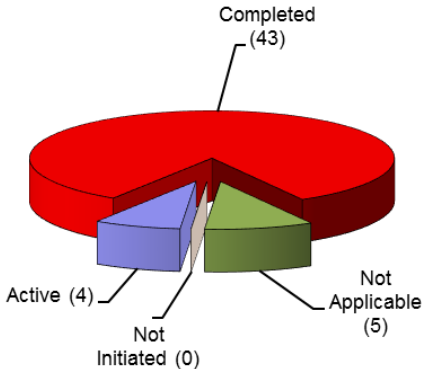


Figure 2.3 Program Environmental and Permitting Status

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 40 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 *(Completed)*	08/31/10	P				08/31/10	100%
CUW37301	San Joaquin Pipeline System *(Completed)* (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; *Completed*)	05/13/11			P		05/13/11	100%
CUW38401	Tesla Treatment Facility *(Completed)* (A) DB116 Tesla Treatment Facility Design-Build Contract (B) HH953 Tesla Portal Protection	(A) 06/24/11 (B) 08/05/13	P	S	S		(A) 06/24/11 (B) 08/05/13	100%
Sunol Valley Projects								
CUW35201	Alameda Creek Recapture	11/30/20				P		0%
CUW35501	Standby Power Facilities - Various Locations *(Completed)* (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 *(Completed)*	09/19/15		S	P		02/27/15	100%
CUW35902	Alameda Siphon #4 *(Completed)*	12/16/11		P	S		12/16/11	100%
CUW37001	Pipeline Repair & Readiness Improvements *(Completed)* (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[2]	(A) 04/12/19 (B) 09/17/18		S	P	S		(A) 96% (B) 96%
CUW37402	Calaveras Reservoir Upgrades *(Completed)*	10/06/05	P				10/06/05	100%
CUW37403	San Antonio Backup Pipeline *(Completed)*	12/31/14			P		12/31/14	100%
CUW38101	SVWTP Expansion & Treated Water Reservoir *(Completed)*	05/17/13	P		P		05/17/13	100%
CUW38601	San Antonio Pump Station Upgrade *(Completed)*	06/30/11			P		06/30/11	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		
Bay Division Projects								
CUW35301	BDPL Nos. 3 & 4 Crossover/Isolation Valves *(Completed)*	11/15/07		P			11/15/07	100%
CUW35302	Seismic Upgrade of BDPL Nos. 3 & 4 *(Completed)*	10/26/15		P			06/20/14	100%
CUW36301	SCADA System - Phase II *(Completed)*	11/29/10			P		11/29/10	100%
CUW36801	BDPL Reliability Upgrade – Tunnel *(Completed)*	05/20/15		P	S		10/15/14	100%
CUW36802	BDPL Reliability Upgrade – Pipeline *(Completed)* (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 *(Completed)*	05/28/10			P		05/28/10	100%
CUW38001	BDPL Nos. 3 & 4 - Crossovers *(Completed)*	08/15/12		P	S		08/15/12	100%
CUW38901	SFPUC/EBMUD Intertie *(Completed)*	09/07/07			P		09/07/07	100%
CUW39301	BDPL No. 4 Condition Assessment PCCP Sections *(Completed)*	02/06/09		P	S		02/06/09	100%
Peninsula Projects								
CUW35401	Lower Crystal Springs Dam Improvements *(Completed)*	11/20/11			P	S	11/20/11	100%
CUW35601	New Crystal Springs Bypass Tunnel *(Completed)*	07/14/11		P	S		07/14/11	100%
CUW35701	Adit Leak Repair - Crystal Springs/Calaveras *(Completed)*	11/30/07			P		11/30/07	100%
CUW36101	Pulgas Balancing - Inlet/Outlet Work *(Completed)*	02/02/06	P		S		02/02/06	100%
CUW36102	Pulgas Balancing - Discharge Channel Modifications *(Completed)*	10/23/09			P		10/23/09	100%
CUW36103	Pulgas Balancing - Structural Rehabilitation & Roof Replacement *(Completed)*	07/26/11	P		S		07/26/11	100%
CUW36105	Pulgas Balancing - Modifications of the Existing Dechloramination Facility *(Completed)*	08/27/12	P		S		08/27/12	100%
CUW36501	Cross Connection Controls *(Completed)*	11/26/08	P				11/26/08	100%
CUW36601	HTWTP Short-Term Improvements - Demo Filters *(Completed)*	01/11/06		P	S		01/11/06	100%
CUW36603	HTWTP Short-Term Improvements - Coagulation & Flocculation/Remaining Filters *(Completed)*	12/21/09		P	S		12/21/09	100%
CUW36701	HTWTP Long -Term Improvements *(Completed)*	09/08/15		P	S		09/08/15	100%
CUW36702	Peninsula Pipelines Seismic Upgrade *(Completed)*	10/30/15		P			10/30/15	100%
CUW36901	Capuchino Valve Lot Improvements *(Completed)*	02/14/08			P		02/14/08	100%
CUW37101	Crystal Springs/San Andreas Transmission Upgrade *(Completed)*	06/30/14		P	S		09/02/14	100%
CUW37801	Crystal Springs Pipeline No. 2 Replacement *(Completed)*	01/31/13		P	S		01/31/13	100%
CUW37901	San Andreas Pipeline No. 3 Installation *(Completed)*	03/29/11		P	S		03/29/11	100%
CUW39101	Baden & San Pedro Valve Lots Improvements *(Completed)*	03/31/11		P	S		03/31/11	100%

Project No.	Project Name / Construction Contract	Actual / Approved Substantial Completion Date	LOS Goals (P =Primary, S =Secondary)				Actual Operational Service Start	Construction Progress Toward LOS Goals
			Water Quality	Seismic Reliability	Delivery Reliability	Water Supply		
San Francisco Regional Projects								
CUW30103	Regional Groundwater Storage and Recovery (A) WD-2600 Test Well Drilling (B) WD-2668 Regional Groundwater Storage and Recovery (Phase 1) (C) Regional Groundwater Storage and Recovery (Phase 2)	(A) 07/23/12 (B) 12/31/17 (C) 02/28/21				P	(A) 07/23/12	(A) 100% (B) 98% (C) 0%
CUW35801	Sunset Reservoir - North Basin *(Completed)*	09/19/08		P	S		09/19/08	100%
CUW37201	University Mound Reservoir - North Basin *(Completed)*	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 The current forecasted substantial completion date for CUW37401 Calaveras Dam Replacement project Contract B is 2/28/19.

3. PROGRAM COST SUMMARY

Table 3.1 provides an overall program-level cost summary of the WSIP Regional Program. It shows the Expenditures to Date; the 2005 Baseline, 2018 Approved, Current Approved and Q2/FY18-19 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 the Regional Program (including construction contingency) are $3,803.1 million. The Current Approved WSIP Budget and Forecasted Cost at completion for the Local Improvement Projects are $331.4 million. Refer to Appendix B for a graphical representation of how the WSIP budget and actual expenditures have changed over time.

Table 3.1 Program Cost Summary

Cost Categories	Expenditures To Date ($ Million) (A)	2005 Baseline Budget ($ Million) (B)	2018 Approved Budget ($ Million) (C)	Current Approved Budget [7] ($ Million) (D)	Q2/FY18-19 Forecasted Costs ($ Million) (E)	Cost Variance ($ Million) (F = D - E)
Regional Improvement Projects	**$2,957**	**$3,181**	**$3,081.4**	**$3,081.4**	**$3,079.8**	**$1.6**
Construction Costs [1]	$1,999	$2,322	**$2,065.9**	$2,065.9	$2,063.2	$2.8
Program Delivery Costs [2]	$932	$758	**$984.8**	$984.8	$985.9	($1.1)
Other Costs [3]	$26	$101	**$30.7**	$30.7	$30.7	-
Support Projects [4]	**$219**	**$33**	**$244.9**	**$244.9**	**$246.3**	**($1.4)**
Construction Contingency for Regional & Support Projects [5]	**$431**	**$193**	**$476.8**	**$476.8**	**$477.0**	**($0.2)**
REGIONAL PROGRAM WITH CONTINGENCY	**$3,607**	**$3,407**	**$3,803.1**	**$3,803.1**	**$3,803.1**	**-**
Local Improvement Projects	$331	**$383**	**$331.4**	**$331.4**	**$331.4**	**-**
Local Water Supply Projects [6][8]	**$113**	**-**	**$281.3**	**$281.3**	**$281.3**	**-**
Finance	**$372**	**$552**	**$372.0**	**$372.0**	**$372.0**	**-**
PROGRAM TOTAL	**$4,422**	**$4,343**	**$4,787.8**	**$4,787.8**	**$4,787.8**	**-**

Notes:

1. **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.
2. **Delivery Costs** include project management, planning, environmental (CEQA, permitting, construction compliance), design, construction management, and engineering support during construction.
3. **Other Costs** include environmental mitigation, art enrichment, security improvements, and real estate expenses.
4. **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.
5. Expenditures to Date for Construction Contingency for Regional and Support projects correspond to the Total Approved Change Orders on those projects. For projects with ongoing or completed construction, the 2018 Approved Budget for construction contingency includes all change orders and trends as identified at the time of the March 2018 Revised WSIP, as well as additional contingency funding allocated to cover the 80% confidence level risks identified at the time of the March 2018 Revised WSIP. For projects in pre-construction, the 2018 Approved Budget for construction contingency includes 10% of the estimated construction base bid.
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 2018 Revised WSIP, plus any additional budget changes approved by the Commission as part of additional contingencies on construction contracts.
8. The WSIP Local Water Supply projects underwent a September 2013 re-baseline. Only the original WSIP portion of the re-baselined costs is reported here. The remaining budget is funded under the Water Enterprise CIP and is managed outside the purview of the WSIP.
9. The original $522M estimate of financing cost was based on a memorandum to the Commission dated November 23, 2005.
10. The financing cost budget of $372M that was included in the March 2018 Revised WSIP includes all financing costs appropriated to date.
11. The actual financing cost is assumed to match the budgeted financing cost. Final reconciliation of all associated financing costs will occur upon WSIP completion.

Table 3.2 provides the current remaining construction contingency. For each region, it shows the 2018 Approved Construction Contingency; the Total Approved Change Orders prior to the reporting quarter; Change Orders Approved during the reporting quarter; Total Approved Change Orders through the reporting quarter; Project Savings Moved to Contingency/ Funds Moved out of Contingency during the Reporting Quarter; the Q2/FY18-19 Forecasted Construction Contingency; and the Remaining Contingency as of the end of the reporting quarter. As of December 31, 2018, the Forecasted Construction Contingency is $477.0 million, and the Current Remaining Contingency is $33.2 million.

The Change Orders Approved in Q2/FY18-19 are shown in Table 3.2. Table 3.3 provides further information at the construction contract level for all subsequent approved change orders.

Table 3.2 Current Remaining Construction Contingency

Region	Q1/FY18-19 Forecasted Construction Contingency [1] ($ Million) (A)	Total Approved Change Orders as of Q1/FY18-19[2,3] ($ Million) (B)	Change Orders Approved in Q2/FY18-19[2] ($ Million) (C)	Total Approved Change Orders as of Q2/FY18-19 ($ Million) (D = B+C)	Project Savings or Director's Reserves (+) Moved to Contingency/ Funds (--) Moved out of Contingency during Q2/FY18-19 [4] ($ Million) (E)	Q2/FY18-19 Forecasted Construction Contingency ($ Million) (F = A + E)	Q2/FY18-19 Remaining Contingency ($ Million) (G = F - D)
San Joaquin Region	$0.22	-	-	-	-	$0.22	$0.22
Sunol Valley Region	$390.81	$361.92	$3.91	$365.83	-	$390.81	$24.98
Bay Division Region	$8.65	$8.16	($0.09)	$8.06	-	$8.65	$0.59
Peninsula Region	$57.82	$56.79	-	$56.79	$0.15	$57.97	$1.18
San Francisco Regional Region	$17.58	$11.06	$1.98	$13.04	-	$17.58	$4.53
Support Projects	$1.80	$0.14	-	$0.14	($0.01)	$1.79	$1.66
Regional Total	**$476.88**	**$434.71**	**$5.80**	**$443.86**	**$0.14**	**$477.02**	**$33.16**

Notes:

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

Table 3.3. Details on Transactions Out of and Into Contingency

Project No. - Contract	Transactions Out of Contingency			Transactions Into Contingency		
	Approved Change Orders ($ Million) (A)	Budget Underrun at Project Completion / Director's Reserve Moved Out of Project ($ Million) (B)	Sub Total ($ Million) (C = A + B)	Savings Due to Low Bid ($ Million) (D)	Budget Overrun at Project Completion / Director's Reserve Moved to Project ($ Million) (E)	Sub Total ($ Million) (F = D + E)
Sunol Valley Region	**$3.91**	**-**	**$3.91**	**-**	**-**	**-**
CUW37401 Calaveras Dam Replacement WD-2551	$3.34	-	$3.34	-	-	-
CUW37401 Calaveras Dam Other Construction WD-2729	$0.57		$0.57	-	-	-
Bay Division Region	**($0.09)**	**-**	**($0.09)**	**-**	**-**	**-**
CUW35302 Seismic Upgrade of BDPL Nos. 3 & 4	($0.09)	-	($0.09)	-	-	-
Peninsula Region	**-**	**-**	**-**	**-**	**$0.15**	**$0.15**
CUWPWI0101 WSIP Closeout - Peninsula	-	-	-	-	$0.15	$0.15
San Francisco Regional	**$1.98**	**-**	**$1.98**	**-**	**-**	**-**
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	$1.98	-	$1.98	-	-	-
Support Projects	**-**	**$0.01**	**$0.01**	**-**	**-**	**-**
CUW36302 System Security Upgrade WD-2661	-	$0.01	$0.01	-	-	-
Regional Total	**$5.80**	**$0.01**	**$5.81**	**-**	**$0.15**	**$0.15**

Table 3.4 Forecasted Remaining Construction Contingency

Region	Q2/FY18-19 Remaining Construction Contingency [1] ($ Million) (A)	Pending Change Orders as of Q2/FY18-19 [2] ($ Million) (B)	Potential Change Orders as of Q2/FY18-19 [3] ($ Million) (C)	Trends as of Q2/FY18-19 [4] ($ Million) D	Q2/FY18-19 Forecasted Remaining Construction Contingency ($ Million) (E =A-B-C-D)
San Joaquin Region	$0.22	-	-	-	$0.22
Sunol Valley Region	$24.98	$1.96	$2.24	$10.99	$9.78
Bay Division Region	$0.59	-	-	-	$0.59
Peninsula Region	$1.18	-	-	-	$1.18
San Francisco Regional Region	$4.53	$0.80	$1.23	$1.38	$1.13
Support Projects	$1.66	($0.26)	-	-	$1.91
Regional Total	**$33.16**	**$2.50**	**$3.47**	**$12.37**	**$14.82**

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/FY18-19, it shows the Remaining Construction Contingency, Pending Change Orders, Potential Change Orders, Trends, and Forecasted Remaining Construction Contingency. As of December 31, 2018, the Total Forecasted Remaining Construction Contingency is $14.8 million. This amount does not include funds that are currently held in Director's Reserve.

The Program Management project includes programmatic activities that span multiple regions and benefit several WSIP projects (Table 3.5). The project provides funding for the following functions and resources: SFPUC Staff assigned to the management of the overall program; consultants supporting SFPUC staff at the program level (program, project and pre-construction management consultant, program construction management consultant, program control consultant); labor relations, including management of the project labor agreement; communication and public outreach; programmatic legal support; real estate acquisitions; program controls, including the tracking and reporting of all WSIP efforts; and program-level construction management activities associated with quality assurance, risk management, the Supplier Quality Surveillance (SQS) Program, operations assistance, safety, and training.

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

Table 3.5 Status of Program Management Project Cost Breakdown

Category	Expenditures To Date ($ Million) (A)	2018 Approved Budget ($ Million) (B)	Current Approved Budget ($ Million) (C)	Q2/FY18-19 Forecasted Cost* ($ Million) (D)	Cost Variance ($ Million) (E = C-D)
Management Support	$37.0	$42.8	$42.8	$44.2	($1.4)
Project Labor Agreement	$3.7	$3.8	$3.8	$3.8	-
Planning and Project Development	$17.9	$18.3	$18.3	$18.3	-
Program Controls	$19.5	$19.8	$19.8	$19.8	-
Program Construction Management	$27.7	$28.0	$28.0	$27.9	-
Program Management Total	**$105.8**	**$112.7**	**$112.7**	**$114.2**	**($1.4)**

The spending pattern for the project is very similar from month to month as the project primarily funds program-level positions occupied by both SFPUC staff and consultants. The Forecasted Total Program Management Cost is $114.1 million, which is $1.4 million over the Current Approved Budget of $112.7 million due to the 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, 2018 Approved, Current Approved, and Q2/FY18-19 Forecasted Schedules for the WSIP Regional Program. Refer to the "Cost and Schedule Status" notes in Section 5 for the criteria associated with the three color-coded Forecast Status levels in Figure 4.1 – Meet Requirements, Need Attention, and Exceed Limits. The Current Approved and Forecasted Schedule completion for the overall WSIP (including Regional and Local Programs) are in December 2021. Refer to Appendix C for a graphical presentation of the WSIP Approved Project-Level Schedule.

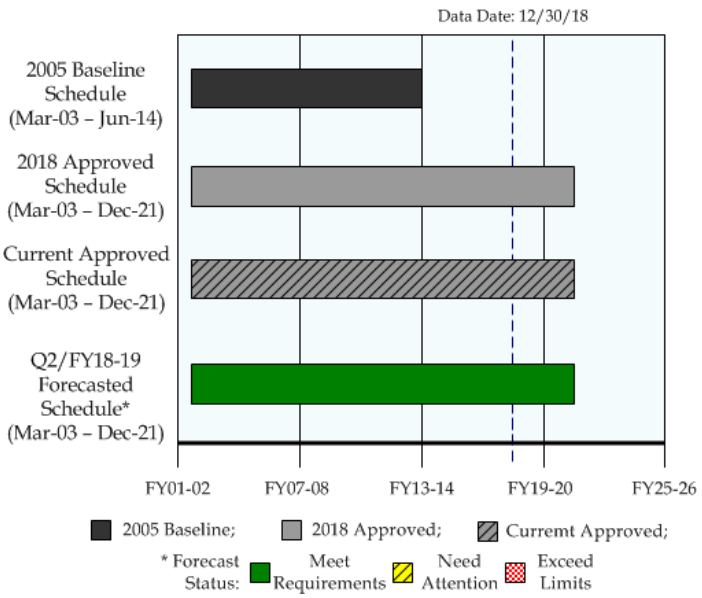


Figure 4.1 Program Schedule Summary

Table 4.1 2018 Approved vs. Q2/FY18-19 Forecasted Schedule Dates

Category	2005 Baseline Start	2018 Approved Start	Current* Approved Start	Actual Start	2005 Baseline Finish	2018 Approved Finish	Current* Approved Finish	Q2/FY18-19 Forecasted Finish	Schedule Variance (Months)
Regional Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/30/14	12/30/21	12/30/21	12/30/21	-
Local** Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/28/13	7/31/18	7/31/18	03/29/19	7.9 (Late)
Overall WSIP	03/01/03	03/01/03	03/01/03	03/01/03✓	06/30/14	12/30/21	12/30/21	12/30/21	-

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

** Excluding Local Water Supply Projects

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5. PROJECT PERFORMANCE SUMMARY*

All costs are shown in $1,000s as of 12/30/18

Project Name	Active Phase (**)	2005 Baseline Budget (a)	2018 Approved Budget (b)	Current Approved Budget (c)	Q2/FY18-19 Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f= c - d)	Cost Status (+)	2005 Baseline Completion (g)	2018 Approved Completion (h)	Current Approved Completion (i)	Q2/FY18-19 Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
San Joaquin Region															
CUWSJI0101 - WSIP Closeout - San Joaquin	CN		$ 4,376	$ 4,376	$ 4,376	$ 551	-	★		12/20/19	12/20/19	12/20/19	-	★	See Appendix E
Sunol Valley Region															
CUW35201 - Alameda Creek Recapture Project	DS	$ 18,809	$ 34,000	$ 34,000	$ 34,000	$ 12,374	-	★	05/25/12	11/03/21	11/03/21	11/03/21	-	★	See Appendix E
CUW37401 - Calaveras Dam Replacement	CN	$ 256,511	$ 823,092	$ 823,092	$ 823,092	$ 755,963	-	★	05/25/12	12/20/19	12/20/19	12/20/19	-	★	See Appendix E
CUWSVI0101 - WSIP Closeout - Sunol Valley	DS		$ 5,990	$ 5,990	$ 5,990	$ 1,038	-	★		06/30/21	06/30/21	06/30/21	-	★	See Appendix E
Bay Division Region															
CUWBDP0101 - WSIP Closeout - Bay Division	CN		$ 4,399	$ 4,399	$ 4,399	$ 2,112	-	★		06/30/20	06/30/20	06/30/20	-	★	See Appendix E
Peninsula Region															
CUWPWI0101 - WSIP Closeout - Peninsula	DS		$ 13,580	$ 13,580	$ 13,580	$ 2,858	-	★		05/19/21	05/19/21	05/19/21	-	★	See Appendix E
San Francisco Regional Region															
CUW30103 - Regional Groundwater Storage and Recovery	CN	$ 39,233	$ 138,793	$ 138,793	$ 138,793	$ 100,022	-	★	02/27/14	12/30/21	12/30/21	12/30/21	-	★	See Appendix E

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

**** Phase Status Legend**

PL Planning DS Design BA Bid & Award

CN Construction NA Not Applicable

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

+ Cost and Schedule Status

★ Meet Requirements: Forecasted Cost/Schedule is within Current Approved Budget/Schedule.

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

● Exceed Limits: Forecasted Cost is over Current Approved Budget by 10% or more. Or Forecasted Schedule is over Current Approved Schedule by greater than 6 months or 10% or more.

All costs are shown in $1,000s as of 12/30/18

Project Name	Active Phase (**)	2005 Baseline Budget (a)	2018 Approved Budget (b)	Current Approved Budget (c)	Q2/FY18-19 Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f= c - d)	Cost Status (+)	2005 Baseline Completion (g)	2018 Approved Completion (h)	Current Approved Completion (i)	Q2/FY18-19 Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
Support Projects															
CUW36302 - System Security Upgrades	CN		$ 15,201	$ 15,201	$ 15,201	$ 14,323	-	★		09/28/18	09/28/18	03/29/19	6.0 mo. Late	●	See Section 6
CUW38804 - Long Term Mitigation Endowment ++	NA		$ 12,000	$ 12,000	$ 12,000	$ 0	-	★		09/30/21	09/30/21	09/30/21	-	★	NA
CUW39401 - Watershed and Environmental Improvement Program	DS	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 4,719	-	★	06/28/13	01/08/21	01/08/21	01/08/21	-	★	See Appendix E

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

**** Phase Status Legend**

PL Planning DS Design BA Bid & Award

CN Construction NA Not Applicable

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

+ Cost and Schedule Status

★ Meet Requirements: Forecasted Cost/Schedule is within Current Approved Budget/Schedule.

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

● Exceed Limits: Forecasted Cost is over Current Approved Budget by 10% or more. Or Forecasted Schedule is over Current Approved Schedule by greater than 6 months or 10% or more.

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

6. PROJECTS NOT WITHIN BUDGET AND/OR SCHEDULE

CUW36302 - System Security Upgrades

Project Description: The project includes the identification, planning, design, and construction of all necessary security components associated with WSIP facilities. Phase A design consists of security appurtenances such as conduit routing incorporated into the overall design of projects. This work provides for the security infrastructure and is bid as part of the specific WSIP construction project. Phase B design consists of completion of project security system components which will be purchased, installed, and tested by a Security Integrator specialist.

Region: Support Projects	**Project Status:** Construction	**Environmental Status:** Completed (CatEx)

Project Cost:

Approved		$15.20 M
Forecast*		$15.20 M
Actual		$14.32 M

Project Schedule:

Approved	Jan-06	Sep-18
Forecast*	Jan-06	Mar-19

Project Percent Complete: 99.6%

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

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction+ NTP	Construction+ Final Completion
Current Forecast	03/28/12✓	01/07/06✓ - 08/15/13✓	11/13/06✓ - 05/08/14✓	07/13/07 ✓ - 03/29/19

\+ Date range for the first and last project among the 28 WSIP projects that require security improvements.

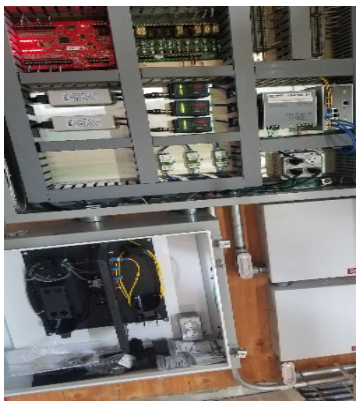
Progress and Status:

The project team received O&Ms and As-Builts for work at New Irvington Tunnel.

For the third As-Needed Security Integration Services Construction Contract, WD-2707, physical construction is complete, however there is disagreement regarding the amount of final billing.

Issues and Challenges:

Due to disagreement on the amount of final billing, the project team is not able to close the contract WD-2707. The project team is working to resolve this issue with the contractor.



Security Panel installed at NIT

7. On-Going Construction

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion*	Q2/FY18-19 Forecasted Construction Final Completion**	Approved Contract Cost +	Q2/FY18-19 Forecasted Cost++	Schedule (Cal. Days)	Cost	
Sunol Valley Region								
CUW37401 - Calaveras Dam Replacement (Contract A)	08/15/11	05/28/19	05/28/19	$ 579,244,136	$ 582,185,867	-	($2,941,731)	96.0%
CUW37401 - Alameda Creek Diversion Dam (Contract B)	04/19/16	12/16/18	05/29/19	$ 35,473,796	$ 36,734,427	(164)	($1,260,631)	96.0%
San Francisco Regional Region								
CUW30103 - Regional GW Storage and Recovery (Contract B)	04/06/15	03/28/19	06/28/19	$ 56,021,526	$ 58,047,538	(92)	($2,026,012)	97.6%

Program Total for On-Going Construction	Approved Contract Cost	Q2/FY18-19 Forecasted Cost*	Variance	
			Cost	Percent
	$ 670,739,458	**$ 676,967,833**	**($6,228,375)**	**(0.9%)**

Note:

* Approved Construction Final Completion Date includes approved change orders.

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

\+ Approved Contract Cost includes awarded contract amount and approved change orders.

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

8. PROJECTS IN CLOSE-OUT

Project Title	2005 Baseline Construction Phase Completion	2018 Approved Construction Phase Completion	Current Approved Construction Phase Completion	Actual Construction Phase Completion	2005 Approved Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Forecasted Project Completion	2005 Baseline Construction Phase Budget	2018 Approved Construction Phase Budget	Current Approved Construction Phase Budget	Construction Phase Expenditures To Date
Support Projects												
CUW38802 - Bioregional Habitat Restoration		05/31/18	05/31/18	05/31/18		09/30/21	09/30/21	09/30/21		$ 52,299,498	$ 51,636,156	$ 50,680,173
TOTAL										$ 52,299,498	$ 51,636,156	$ 50,680,173

9. COMPLETED PROJECTS

Project Title	2005 Baseline Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2018 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
San Joaquin Region								
CUW36401 - Lawrence Livermore Water Quality Improvement`	11/07/11	07/31/13	07/31/13	07/31/13	$ 4,235,258	$ 4,198,247	$ 4,198,247	$ 4,198,247
CUW37301 - San Joaquin Pipeline System	03/25/14	03/31/16	03/31/16	03/31/16	$ 352,732,000	$ 203,178,014	$ 203,178,015	$ 203,178,015
CUW37302 - Rehabilitation of Existing San Joaquin Pipelines	06/30/14	10/31/14	10/31/14	10/31/14	$ 80,000,000	$ 21,153,622	$ 21,153,622	$ 21,153,622
CUW38401 - Tesla Treatment Facility	07/01/11	01/30/15	01/30/15	01/30/15	$ 101,643,001	$ 113,211,607	$ 113,211,607	$ 113,211,607
Sunol Valley Region								
CUW35501 - Standby Power Facilities - Various Locations	12/06/10	12/22/10	12/22/10	12/22/10	$ 9,949,735	$ 12,950,566	$ 12,950,566	$ 12,950,566
CUW35901 - New Irvington Tunnel	09/17/13	03/31/18	03/31/18	03/31/18	$ 214,650,004	$ 340,406,358	$ 340,406,358	$ 339,801,409
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 - 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	$ 27,039,149
CUW35302 - Seismic Upgrade of BDPL Nos. 3 & 4	10/15/12	07/30/18	07/30/18	07/30/18	$ 66,792,849	$ 73,623,296	$ 73,623,296	$ 70,541,315
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	$ 271,821,597
CUW36802 - BDPL Reliability Upgrade - Pipeline	-	03/31/16	03/31/16	03/31/16	-	$ 216,871,156	$ 216,871,156	$ 216,722,172
CUW36803 - BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2	-	05/28/10	05/28/10	05/28/10	-	$ 3,046,981	$ 3,046,981	$ 3,046,981
CUW38001 - BDPL Nos. 3 & 4 Crossovers	04/24/13	06/30/14	06/30/14	06/30/14	$ 36,616,911	$ 29,910,449	$ 29,910,449	$ 29,910,449
CUW38901 - SFPUC/EBMUD Intertie	02/07/07	03/20/14	03/20/14	03/20/14	$ 8,598,851	$ 9,167,306	$ 9,167,306	$ 9,167,306
CUW39301 - BDPL No. 4 Condition Assessment PCCP Sections	05/01/08	02/06/09	02/06/09	02/06/09	$ 2,000,000	$ 1,937,599	$ 1,937,599	$ 1,937,599
Peninsula Region								
CUW35401 - Lower Crystal Springs Dam Improvements	08/16/11	12/28/12	12/28/12	12/28/12	$ 27,752,222	$ 34,859,040	$ 34,859,040	$ 34,859,040
CUW35601 - New Crystal Springs Bypass Tunnel	10/28/10	08/17/12	08/17/12	08/17/12	$ 83,222,790	$ 81,466,732	$ 81,466,732	$ 81,466,732
CUW35701 - Adit Leak Repair - Crystal Springs/Calaveras	07/03/08	07/31/08	07/31/08	07/31/08	$ 3,748,452	$ 2,787,322	$ 2,787,322	$ 2,787,322
CUW36101 - Pulgas Balancing - Inlet/Outlet Work	05/11/06	05/11/06	05/11/06	05/11/06	$ 1,667,532	$ 1,765,938	$ 1,765,938	$ 1,765,938

Project Title	2005 Baseline Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2018 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
Peninsula Region								
CUW36102 - Pulgas Balancing - Discharge Channel Modifications	08/05/13	07/30/10	07/30/10	07/30/10	$ 8,111,422	$ 2,910,007	$ 2,910,007	$ 2,910,007
CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement	01/29/13	12/28/12	12/28/12	12/28/12	$ 36,712,846	$ 20,238,716	$ 20,238,716	$ 20,238,716
CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility	-	03/20/13	03/20/13	03/20/13	-	$ 5,390,031	$ 5,390,031	$ 5,390,031
CUW36501 - Cross Connection Controls	05/15/09	04/30/09	04/30/09	04/30/09	$ 6,111,779	$ 3,948,944	$ 3,948,944	$ 3,948,944
CUW36601 - HTWTP Short-Term Improvements (Demo Filters)	07/03/06	11/14/06	11/14/06	11/14/06	$ 4,381,375	$ 3,067,903	$ 3,067,903	$ 3,067,903
CUW36603 - HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters	09/08/10	07/28/10	07/28/10	07/28/10	$ 9,741,617	$ 18,604,937	$ 18,604,937	$ 18,604,937
CUW36701 - HTWTP Long-Term Improvements	04/08/14	12/30/16	12/30/16	12/30/16	$ 167,570,000	$ 274,081,969	$ 274,081,969	$ 273,804,405
CUW36702 - Peninsula Pipelines Seismic Upgrade	-	07/06/16	07/06/16	07/06/16	-	$ 38,825,346	$ 38,825,346	$ 38,768,527
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								
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	$ 2,516,444,621	$ 2,516,444,621	$ 2,511,226,655

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APPENDICES

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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 E50U Valve was installed in 2011 as part of the CUW36802 BDPL Reliability Upgrade – Pipeline

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

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

PENINSULA REGION

CUW35401 - Lower Crystal Springs Dam Improvements (Completed)

The project consists of:

• Spillway modifications that include widening the spillway, constructing two bridge piers within the spillway to accommodate rebuilding of a San Mateo County Bridge, removing the existing timber stop-log system, constructing a new weir system within the spillway, installing access cat-walks for operation and maintenance, and eliminating water ponding on top of the dam.

• Parapet wall modifications that include increasing the height of the wall that is located on top of the upstream face of the dam and increasing the height of the approach walls to the spillway.

• Stilling basin modifications at the base of the spillway that include removing the existing basin, constructing a new larger basin, and adding downstream riprap protection at the toe of the basin.

CUW35601 - New Crystal Springs Bypass Tunnel (Completed)

The project consists of:

• A 4,200-foot long tunnel with 8-foot diameter welded steel liner.

• Vertical shafts on each end of the tunnel to accommodate a tunnel boring machine and future maintenance. The southern shaft will include a connection to the existing Crystal Springs Bypass Pipeline; the northern shaft will tie into the southern ends of both Crystal Springs Pipeline No. 2 and Sunset Supply Line.

• New isolation valves and valve vaults.

• Standby power near valve vault G40.

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

The project consists of :

• Crystal Springs Outlet Tower No. 1: repairing leaks inside the tower, blasting and recoating piping and valves, replacing roof, structurally retrofitting the access footbridge, and installing a marine hatch at the tower drain.

• Crystal Springs Outlet Tower No. 2: installing a marine hatch at the tower drain.

• Calaveras Outlet Tower: installing a dewatering pump, replacing a deteriorated valve actuator, and providing ladder fall protection.

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

CUW36101 - Pulgas Balancing - Inlet/Outlet Work (Completed)
The project consists of new inlet and outlet piping designed to direct the path of the water in such a manner as to promote better mixing. The shutdowns associated with construction of these improvements provided an opportunity to perform a condition assessment of the reservoir interior that has been used to help identify work associated with CUW36103 - Pulgas Balancing Reservoir - Structural Rehabilitation and Roof Replacement project. This project was successfully completed in May 2006.

CUW36102 - Pulgas Balancing - Discharge Channel Modifications (Completed)
The project consists of raising the channel walls, repairing concrete cracks and exposed reinforcing steel, strengthening and interconnecting the channel floor sections, and strengthening the wall near the Pulgas Tunnel as needed. The project will restore the Discharge Channel capacity for accommodating flow up to 250 mgd.

CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement (Completed)
The project consists of the seismic retrofit of the walls, installation of a new steel frame roof, and repair of concrete cracks and exposed reinforcing steel. The project scope also includes installing a new ventilation system and sampling ports, replacing utility piping, and upgrading the electrical system.

CUW36104 - Pulgas Balancing - Laguna Creek Sedimentation (Completed)
This project consists of the execution of the Laguna Creek Habitat Management and Revegetation Plan. This is a mitigation measure for the Non-WSIP Pulgas Dechlorination Facility Project, which involves the restoration of the Laguna Creek Sedimentation Basin, a 6-8 acre catchment basin that provides habitat for the San Francisco Garter Snake and the California Red Legged Frog. In coordination with regulatory agencies, a strategy was developed to accomplish this habitat restoration, and to have it measured under the Habitat Reserve Program (HRP). This project was closed in December 2007 and combined with Project CUW38802-Habitat Reserve Program (HRP).

CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility (Completed)
The project consists of various improvements to the dechloramination and pH control facilities that are necessary to address immediate compliance issues. Anticipated improvements include modifications to the flow measurement and control systems, and to the various process control and chemical feed systems.

CUW36501 - Cross Connection Controls (Completed)
The project consists of providing improvements at 304 different sites to address potential cross connections. The work varies from site to site due to specific site conditions. The major work elements typically include: Install air gaps at blow-off locations and at air valves; install backflow prevention devices; reconstruct or raise existing vaults; install new vault covers; replace existing air valves; and/or modify, relocate, or remove existing blow-off facilities.

CUW36601 - HTWTP Short-Term Improvements (Demo Filters) (Completed)
The project consists of retrofitting two filters and performing full-scale performance demonstration testing of the retrofitted filters. The project was successfully completed in November 2006.

CUW36602 - HTWTP Short-Term Improvements - Remaining Filters (Completed)
This project consists of filtration modification to eight of the ten existing filters, replacement of effluent control valves and backwash supply valves, provision for a filter to waste system, installation of new underdrains and media, and seismic retrofit of basin walls. Combined with CUW36603 - HTWTP Short-term Improvements - Coagulation & Flocculation project.

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

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

CUW36701 - HTWTP Long-Term Improvements (Completed)

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

CUW36702 - Peninsula Pipelines Seismic Upgrade (Completed)

The scope of this project includes geotechnical investigations to characterize the Serra Fault in the vicinity of the pipelines and to confirm assumptions about sub-surface conditions along the length of the pipelines (SAPL2 and SAPL3 from HTWTP to San Pedro Valve Lot, SSBPL from HTWTP to Capuchino Valve Lot, and Sunset Supply Pipeline (SSPL) from Capuchino Valve Lot to San Pedro Valve Lot). In addition, hydraulic modeling has been performed to review system/facility requirements to meet system goals. The objectives of the investigations were: 1)to determine the potential fault offset at the Serra Fault crossings and the potential response from the three pipelines to these offsets, and 2) to determine potential for pipeline rupture due to displacement from liquefaction, landslides, and other seismically-triggered hazards along the pipeline alignments. The extensive geotechnical and modeling analyses performed to date have been carefully reviewed to identify specific project recommendations.

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

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

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

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

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

CUW36901 - Capuchino Valve Lot Improvements (Completed)

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

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

CUW37101 - Crystal Springs/San Andreas Transmission Upgrade (Completed)
The project consists of improvements to facilities necessary to transport water from Upper Crystal Springs Reservoir, through the lower Crystal Springs Reservoir to San Andreas Reservoir, and ultimately, to the Harry Tracy Water Treatment Plant (HTWTP) Raw Water Pump Station. Specifically, improvements will be made to the Upper Crystal Springs Dam discharge culverts, the Lower Crystal Springs outlet structures, the Crystal Springs Pump Station (CSPS), the Crystal Springs/San Andreas Pipeline, and the San Andreas outlet structures.

CUW37801 - Crystal Springs Pipeline No. 2 Replacement (Completed)
The project consists of:
• Seismic reliability improvements, which include replacing or relocating a total of 1.7 miles of pipe at 12 locations, sliplining 3.5 miles of pipe, retrofitting pipe bridge pier supports at two creek crossings, providing a new connection at the Crystal Springs Pump Station, and providing a connecting segment with a blind flange for later connection to the New Crystal Springs Bypass Tunnel.
• Facility improvements, which include installing fences and enclosures for exposed facilities, and concealing exposed portions of pipe.
• Upgrading the cathodic protection system along the length of the pipeline.

CUW37901 - San Andreas Pipeline No. 3 Installation (Completed)
The project consists of installation of 4.4 miles of 36-inch-diameter pipe from San Pedro Valve Lot in Daly City to Merced Manor Reservoir in San Francisco. There will be three jack and bore crossings along 19th Avenue and John Daly Boulevard. Work will also include installation of five customer service connections, a new cathodic protection system along the length of the new pipeline, three interconnections to the San Andreas Pipeline No.2, various valves, and a flow meter.

CUW39101 - Baden and San Pedro Valve Lots Improvements (Completed)
This project consists of upgrades to valve vaults, valves, and piping in the Baden Valve Lot and the San Pedro Valve Lot. It also includes the installation of a pressure reducing valve and associated system valving to allow transfer of a portion of the flow from the HTWTP high-pressure zone to the low- pressure zone during emergencies.

CUWPWI0101- WSIP Closeout - Peninsula
• **LCSD Stilling Basin Modifications & Dissipation Structure Riprap** – This sub-project is provided in response to concerns that fish may be "trapped" in the Lower Crystal Springs Dam (LCSD) stilling basin during low flow summer periods, and that high flow discharges from the new LCSD dissipation structure and potential high water levels in Pool 2 may cause erosion of the bank adjacent to the dissipation structure. The dissipation structure includes 60-inch diameter pipes with a maximum flow of 600 cubic feet per second (cfs) each and two 8-inch diameter pipes with maximum flow of 7 cfs each. During flow testing of the dissipation structure, released water could be observed flowing over the dissipation structure, potentially eroding the bank adjacent to the structure. It was also observed that during summer periods, of low flow in the channel downstream of the stilling basin, fish trapped in the basin were dying due to warm water temperatures. The purposes of this sub-project are to hydraulically connect the stilling basin with Pool 2 in order to allow fish to escape the basin in summer, and to add rip-rap behind the dissipation structure to prevent erosion. Specifically, this sub-project consists of:
o A new deeper channel between the dissipation structure and the Pool 2, which would prevent fish from being trapped in the stilling basin,
o Installation of a new SCADA controls to the existing 8-in discharge pipeline and re-routing one line to the stilling basin,
o Installation of additional rip-rap around the dissipation structure,
o Installation of a new 24-inch HDPE pipeline

through an existing abandoned 60-inch pipe directed to the stilling basin
o Coordination and facilitation of access for a piezometer drilling contractor during periods of concurrent work in the stilling basin
o Deletion of landscaping around the new Crystal Springs Pump Station
o Addition of tree, shrub and grass plantings along the creek bank in accordance with the approved re-vegetation plan

• **LCSD Valve H53/ Pipeline Investigation & Fisheries Release Valve** – As stipulated by the US Army Corps of Engineers 404 permit and the associated biological opinion by NOAA's National Marine Fisheries Service (NMFS) covering the SFPUC activities at the Crystal Springs Pump Station (CSPS), the SFPUC is to take measures to protect the threatened Central California Coast (CCC) steelhead present in San Mateo Creek at CSPS site. One measure requires the release of fresh water at a rate of 3 to 17 cubic feet per second (cfs) depending on the season in recorded dry and wet years. This sub-project will utilize modification of an existing pipeline to release the required flows to the LCSD stilling basin feeding San Mateo Creek. Specifically, this sub-project consists of:
o Condition assessment of the existing 60-in diameter pipeline from Valve H-53 to the stilling basin. In addition, valve H-53 will be exposed and visually inspected to determine its condition, requiring excavation and shoring of a pit approximately 20 feet long by 20 feet wide by 20 feet deep.
o Depending on the verified condition, viable alternatives, including abandonment of the option to use H-53 pipeline, will be evaluated.
o The approved option will include a SCADA controlled 12-inch valve installed at the discharge end of the pipeline. Depending on the condition of the pipeline, the approved option may also include repairs to the pipeline lining. Options may also include slip-lining the existing line with a smaller diameter pipeline such as 12 to 24-in diameter flexible polypropylene pipe.
o Use of a temporary pipeline "line stop" and associated shoring upstream of Valve H-53 to allow for potential installation of a permanent blind flange.
o Replacement of leaking plug valves that discharge from an existing concrete vault to the stilling basin with new knife gate valves.
o Installation of new flow control valves, isolation valves and appurtenances for Pool 2.
o Connections to the existing 72-inch pipeline using hot taps.
o Construction of a new concrete walkway from the access road to the existing stairs at the flow dissipation structure adjacent to the stilling basin.

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

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

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

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

• **Harry Tracy Water Treatment Plant (HTWTP) Improvements.** The Harry Tracy Long-Term Improvements Project (CUW36701) was completed in 2014. Since 2014, the following needs were identified to address construction issues and improve operations at the plant to fully meet the LOS goals and objectives:

o Automate the 12-inch gate valve at the High Rate Clarifiers' filter to waste manhole to eliminate the need for Operations to manually operate the valve on a frequent basis

o Modify Sludge Tank No. 1 piping to eliminate cavitation in the washwater pumps

o Upgrade the filters of three (3) emergency generators from passive filters to active filters to increase the effectiveness of the exhaust filtration and to reduce the need for Operations to constantly clean the filters

o Repair leaks in the filter gallery channels where stainless steel angle plates were added to support several concrete walls

o Automate flushing of the sludge transfer pumps and piping to eliminate the need for Operations to manually flush on a frequent basis

o Replace and relocate failed variable frequency drives (VFDs) for the wash water and sludge transfer pumps to address an over-heating issue

o Install double containment for the diesel fuel supply lines for the exterior generator to protect against leaks into the environment

o Provide training and programming modifications to the Raw Water Pump Station switchgear equipment to enable remote SCADA control

o Install vibration control monitoring system on the electrical panels at the Raw Water Pump Station to replace the existing obsolete system

o Evaluate/Assess condition of failed mixers in the equalization basin

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

SAN FRANCISCO REGIONAL REGION

CUW30103 - Regional Groundwater Storage and Recovery

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

CUW35801 - Sunset Reservoir - North Basin (Completed)

This project consists of:

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

CUW37201 - University Mound Reservoir - North Basin (Completed)

This project consists of:

- Seismic rehabilitation of the reservoir walls and roof using seismic joints, shear walls, diagonal bracing, and struts and foundation improvements. A geotechnical investigation was conducted that verified that the reservoir embankments are not subject to seismically induced failure.
- General rehabilitation, which includes repairing deteriorated concrete; replacing the reservoir lining material; replacing inlet/outlet, drain, and overflow piping; replacing outlet and drain valves; and performing landscaping and other miscellaneous site improvements.

SUPPORT PROJECTS

CUW36302 - System Security Upgrades

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

CUW38801 - Programmatic EIR (Completed)

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

and (3) propose mitigation measures.

CUW38802 - Bioregional Habitat Restoration
The Bioregional Habitat Restoration project was created to provide a coordinated and consolidated approach to compensate for habitat impacts that may result from implementation of the WSIP projects in the San Joaquin, Sunol Valley, Bay Division, and Peninsula Regions of the SFPUC Regional Water System. The previously approved scope of the Bioregional Habitat Restoration project included projects to preserve, enhance, restore, or create approximately 2,350 acres of tidal marsh, vernal pools, white alder riparian forest, sycamore alluvial woodland, arroyo willow riparian habitat, oak woodland and savannah, sage scrub habitat, serpentine grasslands, coastal live oak woodland, annual grasslands, and oak riparian forest.
The project includes design, environmental permitting, construction, construction management, maintenance and performance monitoring during a 3-year plant establishment period.
The wide variety of the types of impacts from WSIP projects resulted in the need for development of 18 compensation sites on SFPUC property and for contracting with 7 property owners to secure compensation on property outside the Alameda and Peninsula watersheds. There are 7 compensation sites on SFPUC property in the Alameda watershed with an average size of 250 acres, demonstrating a significant commitment to the continued protection of species habitat. Although the average size of the 11 Peninsula compensation sites is 15 acres, the projects have been strategically placed to best benefit the San Francisco garter snake and the fountain thistle. The increase in habitat compensation addresses mitigation for the fountain thistle and for changes in the Calaveras Dam Replacement Project.
Under the March 2014 Revised WSIP, some scope for the Bioregional Habitat Restoration project associated with Lower Crystal Springs Dam and long term monitoring and maintenance of the compensation sites was reduced. The remaining wetland development at Upper San Mateo Creek and Boat Ramp and most of the oak woodland compensation for the Lower Crystal Springs Dam Improvement Project has been deferred until the operating elevation of the reservoir has increased, estimated to be around 2020. This work will be completed in the future by SFPUC Water Enterprise.

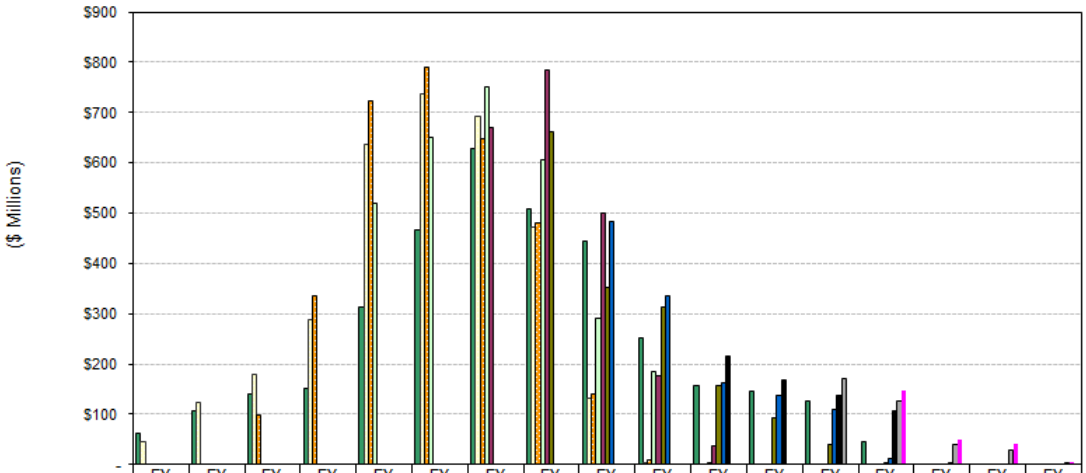
CUW38803 - Vegetation Restoration of WSIP Construction Sites (Completed)
The Vegetation Restoration of WSIP Construction Sites is a WSIP project that received Commission approval on October 9, 2012. This project is required to comply with the CEQA and resource agency permit requirements to restore and re-vegetate habitat areas temporarily impacted by construction at the various WSIP sites to preconstruction condition.

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

CUW39401 - Watershed and Environmental Improvement Program
The Watershed and Environmental Improvement Program (WEIP) includes the comprehensive identification and protection of critical watershed lands and ecosystem restoration needs within the hydrologic boundaries of the Alameda Creek, Peninsula (San Mateo and Pilarcitos Creeks) and Tuolumne River watersheds, and prioritizes the protection and/or restoration of these lands. Projects under this program will protect source water quality, native species, and their habitat as well as identifying critical watershed lands for

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

APPENDIX B. BUDGET AND EXPENDITURE HISTOGRAM*



	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Actual Total Cost	$62	$108	$140	$151	$312	$468	$628	$509	$444	$253	$158	$145	$126	$45			
2005 Approved Budget	$46	$123	$180	$287	$638	$738	$692	$473	$133	$1							
2007 Approved Budget			$99	$335	$724	$790	$649	$481	$140	$10							
2009 Approved Budget					$519	$651	$751	$606	$290	$186	$5						
2011 Approved Budget							$669	$784	$501	$176	$38	$0					
2013 Approved Budget								$662	$352	$314	$156	$94	$41	$4			
2014 Approved Budget									$484	$335	$164	$138	$109	$11			
2016 Approved Budget											$215	$168	$138	$106	$3		
2018 Approved Budget													$171	$126	$41	$30	$2
Current Forecast														$148	$51	$42	$4
Percentage Spent**	136%	88%	142%	45%	60%	72%	94%	77%	92%	76%	73%	86%	74%	36%			

All costs are shown in $ Millions.

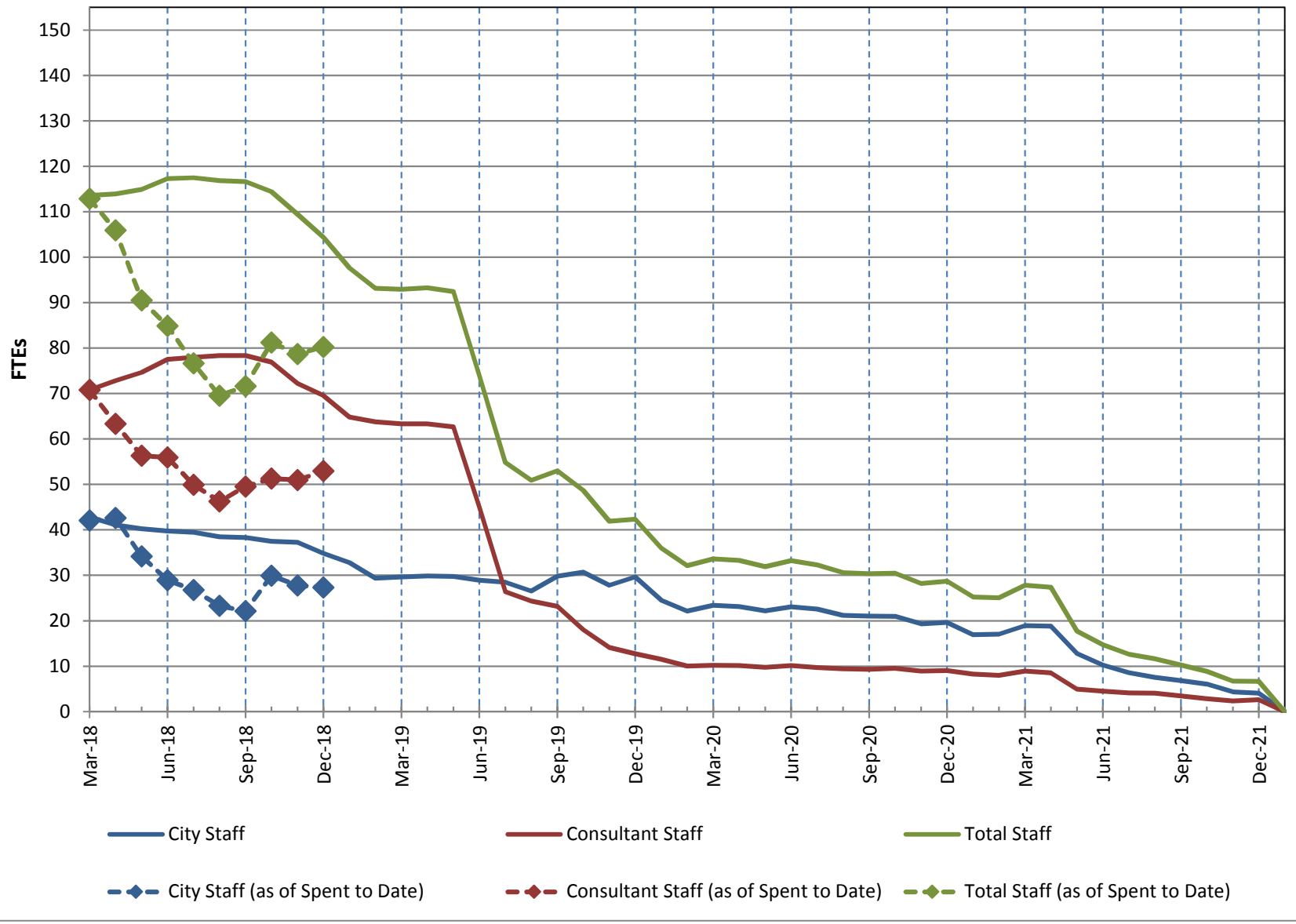
* The histogram does not reflect budget and expenditures prior to FY 2005-2006.

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

Figure B1 Annual Budgeted Spending Plans vs. Actual Expenditures

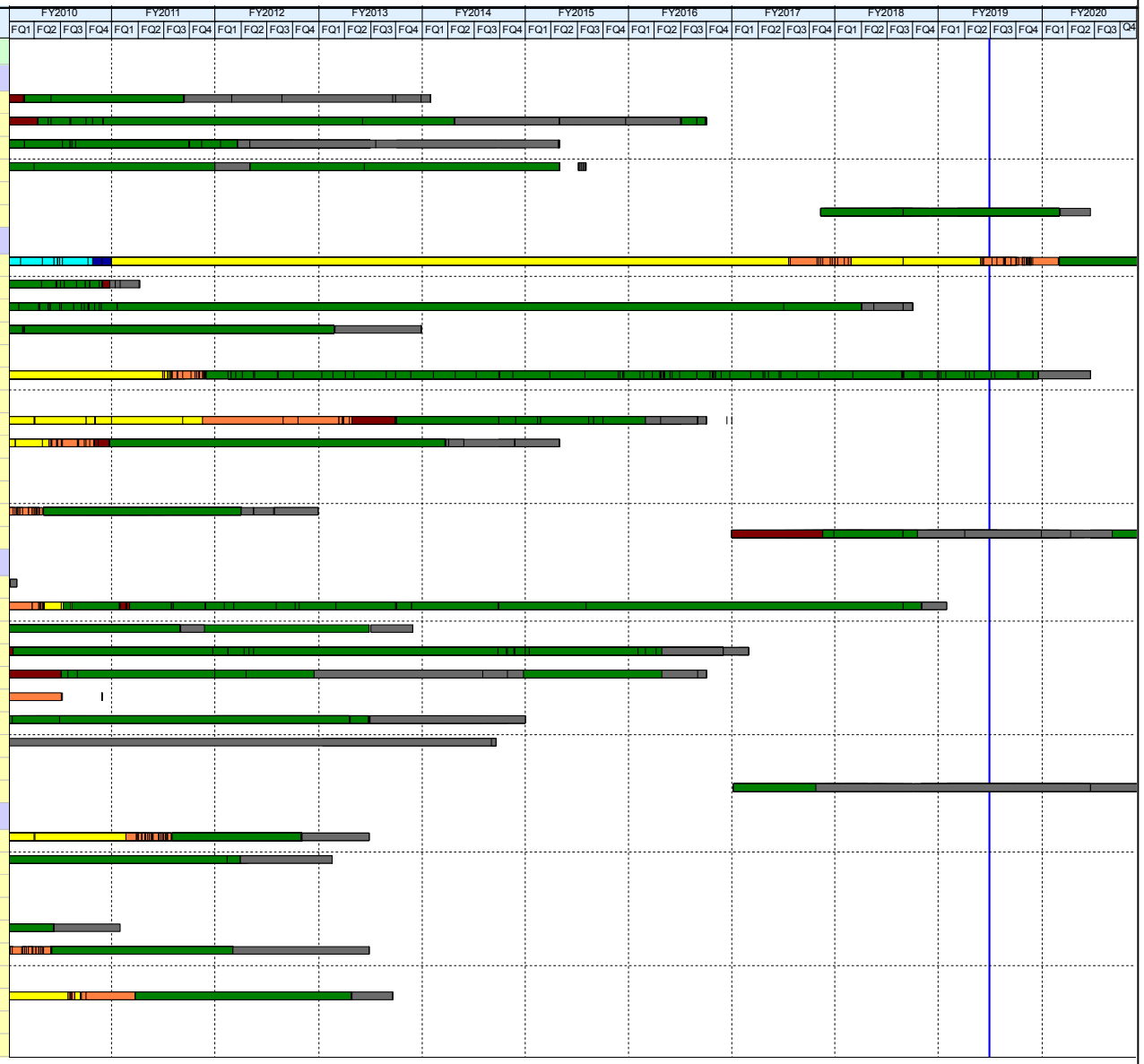
Figure B compares the spending plans associated with the various WSIP Approved Budgets to Actual Expenditures. It shows total annual expenditures from FY05-06 through Q2/FY18-19 and cost projections (Current Forecast) from FY18-19 through program completion in December 2021. Actual annual expenditures have ranged from 45% to 142% of planned expenditures.

Appendix C. WSIP Regional Program
Staffing Plan



APPENDIX D. WSIP Approved Project-Level Schedule

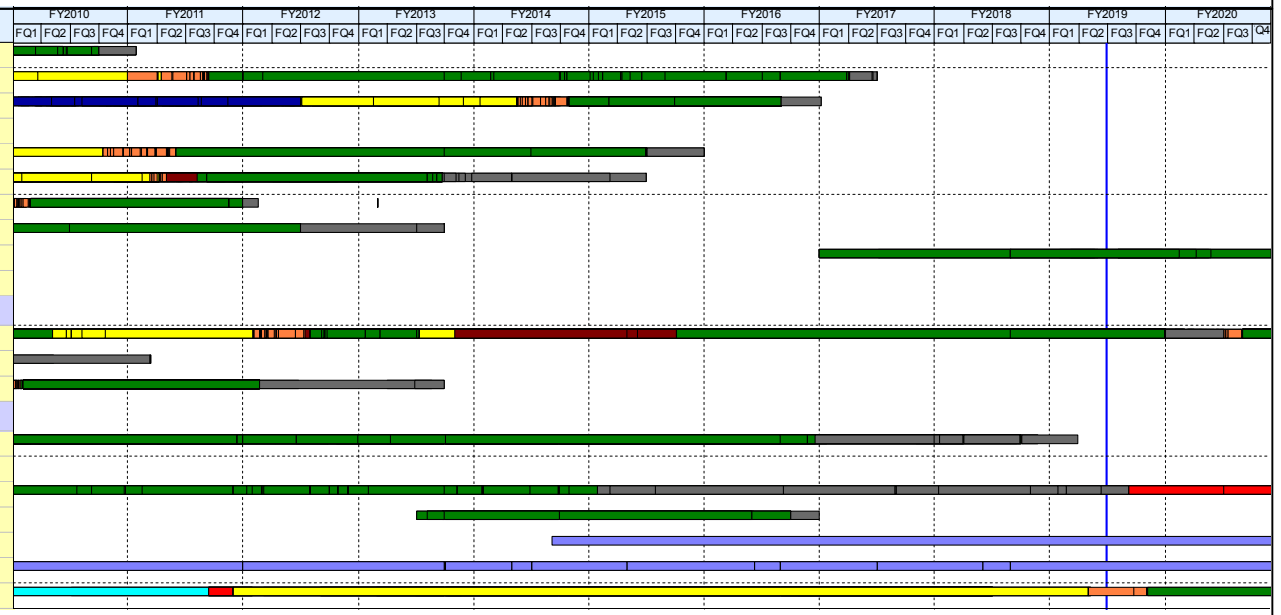
Project Name	Start	Finish
Regional Improvement Projects	31-Mar-00	30-Dec-21
San Joaquin Region	01-Jul-02	20-Dec-19
CUW36401 Lawrence Livermore Water Quality Impr	02-Feb-04	31-Jul-13
CUW37301 San Joaquin Pipeline System	19-Aug-02	31-Mar-16
CUW37302 Rehabilitation of Existing San Joaquin Pi	03-Jul-06	31-Oct-14
CUW38401 Tesla Treatment Facility	01-Jul-02	30-Jan-15
CUW38701 Tesla Portal Disinfection Station	01-Jul-02	29-Jun-07
CUWSJI0101 WSIP Closeout - San Joaquin	20-Jun-16	20-Dec-19
Sunol Valley Region	19-Dec-01	03-Nov-21
CUW35201 Alameda Creek Recapture Project	30-Sep-03	03-Nov-21
CUW35501 Standby Power Facilities - Various Locat	11-Jul-02	22-Dec-10
CUW35901 New Irvington Tunnel	19-Dec-01	31-Mar-18
CUW35902 Alameda Siphon #4	19-Dec-01	28-Jun-13
CUW37001 Pipeline Repair & Readiness Improveme	21-Apr-03	16-Apr-09
CUW37401 Calaveras Dam Replacement	03-Sep-02	20-Dec-19
CUW37402 Calaveras Reservoir Upgrades	19-Nov-03	28-Jul-06
CUW37403 San Antonio Backup Pipeline	17-Dec-03	30-Jun-16
CUW38101 SVWTP Expansion & Treated Water Re	22-Apr-05	31-Oct-14
CUW38102 SVWTP Calaveras Road	01-Feb-07	14-Dec-07
CUW38201 SVWTP Treated Water Reservoir	15-Sep-03	02-Mar-07
CUW38601 San Antonio Pump Station Upgrade	01-Jul-04	29-Jun-12
CUWSVI0101 WSIP Closeout - Sunol Valley	01-Jul-16	30-Jun-21
Bay Division Region	19-Dec-01	30-Jun-20
CUW35301 BDPL Nos. 3 & 4 Crossover/Isolation Va	06-Jan-03	31-Jul-09
CUW35302 Seismic Upgrade of BDPL Nos. 3 & 4	22-Oct-04	30-Jul-18
CUW36301 SCADA System - Phase II	22-Apr-05	28-May-13
CUW36801 BDPL Reliability Upgrade / Tunnel	19-Dec-01	30-Aug-16
CUW36802 BDPL Reliability Upgrade - Pipeline	19-Dec-01	31-Mar-16
CUW36803 BDPL Reliability Upgrade - Relocation o	24-Apr-06	28-May-10
CUW38001 BDPL Nos. 3 & 4 Crossovers	17-Feb-04	30-Jun-14
CUW38901 SFPUC/EBMUD Intertie	24-Jun-02	20-Mar-14
CUW39301 BDPL No. 4 Condition Assessment PCC	04-Aug-06	06-Feb-09
CUWBDP0101 WSIP Closeout - Bay Division	06-Jul-16	30-Jun-20
Peninsula Region	01-Nov-00	19-May-21
CUW35401 Lower Crystal Springs Dam Improvement	01-Nov-00	28-Dec-12
CUW35601 New Crystal Springs Bypass Tunnel	07-Jan-02	17-Aug-12
CUW35701 Adit Leak Repair - Crystal Springs/Calav	01-Apr-05	31-Jul-08
CUW36101 Pulgas Balancing - Inlet/Outlet Work	15-May-02	11-May-06
CUW36102 Pulgas Balancing - Discharge Channel M	01-Apr-05	30-Jul-10
CUW36103 Pulgas Balancing - Structural Rehabilitati	03-Apr-06	28-Dec-12
CUW36104 Pulgas Balancing - Laguna Creek Sedim	31-Mar-06	31-Dec-07
CUW36105 Pulgas Balancing - Modifications of the E	02-Apr-07	20-Mar-13
CUW36501 Cross Connection Controls	01-Jul-03	30-Apr-09
CUW36601 HTWTP Short-Term Improvements (Der	04-Sep-02	14-Nov-06



Planning
Design
Bid & Award
Construction
Program Management
Environmental
Right-of-Way
Construction Management
Closeout

APPENDIX D. WSIP Approved Project-Level Schedule

Project Name	Start	Finish
CUW36603 HTWTP Short-Term Improvements - Co	03-Jul-06	28-Jul-10
CUW36701 HTWTP Long-Term Improvements	01-Jul-03	30-Dec-16
CUW36702 Peninsula Pipelines Seismic Upgrade	01-Jul-09	06-Jul-16
CUW36901 Capuchino Valve Lot Improvements	22-Apr-05	19-Aug-08
CUW37101 Crystal Springs/San Andreas Transmissi	18-Aug-03	30-Jun-15
CUW37801 Crystal Springs Pipeline No. 2 Replacem	15-Jan-04	31-Dec-14
CUW37901 San Andreas Pipeline No. 3 Installation	15-Jan-04	30-Aug-12
CUW39101 Baden and San Pedro Valve Lots Impro	03-Oct-05	29-Mar-13
CUWPWI0101 WSIP Closeout - Peninsula	01-Jul-16	19-May-21
CUW36602 HTWTP Short-Term Improvements - Re	12-Jan-06	22-Feb-08
San Francisco Regional Region	31-Mar-00	30-Dec-21
CUW30103 Regional Groundwater Storage and Rec	01-Jun-03	30-Dec-21
CUW35801 Sunset Reservoir - North Basin	31-Mar-00	10-Sep-10
CUW37201 University Mound Reservoir - North Basin	24-Oct-05	29-Mar-13
Support Projects	13-Apr-04	30-Dec-21
CUW36302 System Security Upgrades	07-Jan-06	28-Sep-18
CUW38801 Programmatic EIR	13-Apr-04	30-Jun-09
CUW38802 Bioregional Habitat Restoration	06-Sep-06	30-Sep-21
CUW38803 Vegetation Restoration of WSIP Constru	02-Jan-13	30-Jun-16
CUW38804 Long Term Mitigation Endowment	05-Mar-14	30-Sep-21
CUW39201 Program Management Project	01-Aug-05	30-Dec-21
CUW39401 Watershed and Environmental Improvem	02-Jan-07	08-Jan-21



Planning
Design
Bid & Award
Construction
Program Management
Environmental
Right-of-Way
Construction Management
Closeout

APPENDIX E. PROJECTS WITHIN BUDGET AND SCHEDULE

CUWSJI0101 - WSIP Closeout - San Joaquin

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

Region: San Joaquin	**Project Status:** Construction	**Environmental Status:** Not Applicable

Project Cost:		**Project Schedule:**	
Approved	$4.38 M	Approved Jun-16	Dec-19
Forecast*	$4.38 M	Forecast* Jun-16	Dec-19
Actual	$0.55 M	Project Percent Complete: 36.5%	

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

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

Progress and Status:

• JOC49-21 Tesla Portal. Completed on 9/30/2018.

• For the Solar Panels Project, during this reporting period the design consultant (AECOM) has been completing the design criteria document and the final technical memorandum to provide recommendations on work that needs to be performed at the three different sites. Design will be initiated once the documents are completed and reviewed by HHWP. Scheduled Subproject Completion will be on 12/20/2020.

Issues and Challenges:

None at this time.

Oakdale Portal Site

CUW35201 - Alameda Creek Recapture Project

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

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

Region: Sunol Valley	**Project Status:** Design	**Environmental Status:** Active (EIR)

Project Cost:		**Project Schedule:**	
Approved	$34.00 M	Approved Sep-03	Nov-21
Forecast*	$34.00 M	Forecast* Sep-03	Nov-21
Actual	$12.37 M	Project Percent Complete: 38.6%	

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

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

Progress and Status:

The project team continued to work on the updates to the EIR recirculation, including but not limited to meeting with California Department of Fish and Wildlife and developing responses to comments and revising the hydrology appendix of the EIR.

Issues and Challenges:

The schedule for re-circulation is unknown at this time. The project schedule will be re-evaluated once the re-circulated draft EIR is published.

Current Condition of Pond F2 Access Road

CUW37401 - Calaveras Dam Replacement

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

Region: Sunol Valley	**Project Status:** Construction	**Environmental Status:** Completed (EIR)

Project Cost:

Approved		$823.09 M
Forecast*		$823.09 M
Actual		$755.96 M

Project Schedule:

Approved	Sep-02	Dec-19
Forecast*	Sep-02	Dec-19

Project Percent Complete: 93.5%

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

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction+ NTP	Construction+ Final Completion
Current Forecast	01/27/11✓	(A) 01/31/11✓ (B) 01/04/16✓	(A) 08/15/11✓ (B) 04/19/16✓	(A) 06/19/19 (B) 05/29/19

\+ Project includes multiple construction contracts.
(A) Calaveras Dam Replacement (WD-2551); (B) Alameda Creek Diversion Dam (WD-2729)

Progress and Status:

WD-2551 CDRP: The contractor completed the excavation of the approach channel, placement of the rip rap materials, and the installation of instrumentation for the dam embankment and foundation. As of November 2018, Calaveras Reservoir was ready for the impoundment of water. Activities that were underway this quarter and will continue in the next quarter include SCADA, road paving and restoration of the site.

WD-2729 ACDD: The contractor completed installation of erosion control measures for GRIP site no. 2 and handrails, fish ladder grating, and debris rake at the diversion dam. A major milestone accomplished during the reporting period is the completion of the 5-day dry startup testing. Ongoing work includes instrumentation and controls/SCADA and davit and life line safety system for the fish ladder and the diversion dam. The project team anticipates reaching substantial completion by the end of next quarter.

Completion of the Approach Channel

Issues and Challenges:

For WD-2729, due to the lead time to fabricate the davit system for the fish ladder and some other change order work, the contractor has requested an extension of the completion date of the project. The CM team is currently negotiating with the Contractor on the time extension.

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:** Design	**Environmental Status:** Active (Various)

Project Cost:		**Project Schedule:**	
Approved	$5.99 M	Approved Jul-16	Jun-21
Forecast*	$5.99 M	Forecast* Jul-16	Jun-21
Actual	$1.04 M	Project Percent Complete: 49.5%	

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

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

Progress and Status:

(1) JOC-60-14 - Project team completed Technical Memorandum to provide recommendations to address the issues which they have submitted to WSTD for concurrence. Scheduled subproject completion (SSC) on 1/30/2020. (2) JOC-59-20 - This subproject is now part of Turner Dam Spillway Erosion Repair project (a non-WSIP project). Contract WD-2855 was advertised on 11/9/2018; and bids were received on 12/13/2018. SSC on 6/30/2020. (3) SVWTP Polymer Feed Facility - Stantec completed full scale testing, and will prepare conceptual design for the system. Design RFP will be issued in the next reporting period and will be included as part of the SVWTP Ozone and Phase 3 design RFP (non-WSIP project). SSC as part of the WSIP closeout on 6/30/2021. (4) JOC-54-02 - Miscellaneous work at AWP, IVP and SABPL was completed on 6/30/18. The first outstanding item, for the installation of several components for the Cathodic Protection system, has been issued as a Supplemental Task Order under the JOC 60-23. The issue relating to the vibration for the SABPL discharge valve vault riser will continue to be evaluated by SFPUC staff under JOC 60-23. (5) JOC-60-20 - CalState, JOC Contractor, completed the installation of handrails in the water quality vault, new floorings inside the B-10 building, and an eye wash station. Water quality equipment will be moved in during the next reporting period. SSC on 6/27/2019. (6) JOC-60-23 - The Project Team issued a purchase order for CalState, the JOC Contractor, to procure the 6-inch TR Xtreme Pipe for the Phase 1 work. Construction of the Phase 1 work will be completed in the next reporting period. The design team started design work for Phase 2 and will continue that work in the next reporting period. SSC on 3/6/2020.

Issues and Challenges:

None at this time.

CUWBDP0101 - WSIP Closeout - Bay Division

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

Region: Bay Division	**Project Status:** Construction	**Environmental Status:** Not Applicable

Project Cost:		**Project Schedule:**	
Approved	$4.40 M	Approved Jul-16	Jun-20
Forecast*	$4.40 M	Forecast* Jul-16	Jun-20
Actual	$2.11 M	Project Percent Complete: 79.3%	

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

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

Progress and Status:

• Ventilation and Sump Pump System Installation – During the reporting period, CalState, JOC Contractor, prepared the RFI and submittals and obtained Caltran's permit for the work. Contractor has also completed installation of the sump pump and drain in BDPL4 vault. Other on-going work includes electrical work, installation of a ventilation fan at BDPL3 vault, and installation of equipment pads at both BDPL3 & 4 vaults. Scheduled Subproject Completion will be on 10/29/2019.

• Site Drainage and Pipe Coating Repairs – The design package has been revised and updated for the JOC Contractor to provide a cost proposal. Scheduled Subproject Completion will be on 3/16/2020.

• BDPL 1&2 EIR Mitigation – Initial planning work for the project continued during the quarter. Scheduled Subproject Completion will be on 6/30/2019.

• Bay Tunnel Warranty Inspection – Construction has been completed. Project team is working on the Bay Tunnel Dossier Report and As-Built for Bay Division Pipeline 5. Scheduled Subproject Completion will be on 2/06/2020.

• Hydro-seeding at Bay Tunnel Project – Completed on 10/20/2017.

• Newark Valve Lot Additional Gravel Placement – Completed on 10/20/2017.

Erosion Across ROW Due to Caltrans Drainage Pipe

• Corrosion Protection for Valve E50U – Completed on 10/20/2017.

Issues and Challenges:

None at this time.

CUWPWI0101 - WSIP Closeout - Peninsula

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

Region: Peninsula	**Project Status:** Design	**Environmental Status:** Not Applicable

Project Cost:

Approved		$13.58 M
Forecast*		$13.58 M
Actual		$2.86 M

Project Schedule:

Approved Jul-16		May-21
Forecast* Feb-16		May-21

Project Percent Complete: 33.9%

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

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

Progress and Status:

Crystal Springs / San Andreas Items: (1). WD-2822R2 - Crystal Springs Dam Stilling Basin, Dissipation Structure, and H53 Valve – This contract was rebid in October 2018, and Final Completion is forecasted for September 2020. Scheduled subproject completion (SSC) on 5/19/21. (2). Lower Crystal Springs Dam Bridge Replacement - joint project with San Mateo County (SMC). The bridge opening is forecasted for January 2019. The SFPUC will share costs with San Mateo County for the new security fencing for the bridge and dam. (2.1) A JOC North Parapet Wall Gap Repair will be set up to address a gap between the Lower Crystal Springs Dam north parapet wall and the bridge abutment, with a forecasted start date for gap repair construction in April 2019. SSC on 3/1/20. (2.2) To close out the MOA with San Mateo County, a new task order LCSD Security Assessment is being set up for a security assessment near the dam/bridge. SSC on 12/31/19.

Harry Tracy Water Treatment Plant Items: (1). JOC 59-01 Electrical & Mechanical Piping Modifications - The contractor completed construction work late this quarter. Remaining training scope to follow the emergency generator filters upgrades (JOC 59-17). SSC on 12/31/19. (2). JOC-59-17 Emergency Generators Filters Upgrades - Filters were delivered, and the contractor has begun replacement of one of the three filters. The one filter was installed at the end of the reporting quarter and tested/started-up early next quarter. The remaining filters will be replaced in the spring, following the Hetchy winter shutdown. SSC on 10/31/19. (3). Variable Frequency Drive Controllers (VFDs) - No issues were found with the VFDs (SSC was in December 2018); but automatic flushing of the pipe and sludge transfer pump manifold will be provided. Design has begun as a non-WSIP project. (4). Vibration Control Panel and Circuit Breakers - The consultant received NTP during this quarter and has begun reviewing site and background information. (This is not part of WSIP Closeout). (5). Equalization Basin Mixers - The vendor has provided a temporary repair to the twisted guide supports and has indicated that they will replace all mixers. Working with vendor to confirm date for replacement of mixers. SSC on December 2019. (6). Erosion on CSSA Pipeline - Work has achieved Substantial Completion 12/4/2018 and is in closeout. SSC on 4/30/19.

Issues and Challenges:

Bids received for WD-2822R2 - Crystal Springs Dam Stilling Basin project is higher than the approved budget. The overall budget for the WSIP Peninsula Closeout project will be re-evaluated prior to the next quarter.

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*	$138.79 M	Forecast* Jun-03	Dec-21
Actual	$100.02 M	Project Percent Complete: 76.3%	

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

Key Milestones:	**Environmental Approval**	**Bid+ Advertisement**	**Construction+ NTP**	**Construction+ Final Completion**
Current Forecast	(A) 09/07/09✓ (B) 08/07/14✓ (C) 09/30/19	(A) 09/07/11✓ (B) 09/22/14✓ (C) 02/03/20	(A) 01/30/12✓ (B) 04/06/15✓ (C) 05/01/20	(A) 09/05/12✓ (B) 06/28/19 (C) 07/31/21

\+ Project includes multiple construction contracts.

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

Progress and Status:

For Contact B, installation of piping to seven well stations, revision to the caustic soda programming at three well stations, and disinfection of all wells and sample lines that will be operated by SFPUC have been completed. Caustic soda programming at the remaining four well stations and installation of sight glasses for the caustic soda tanks, storm drain bypass, and backflow preventers are all still in progress. Functional testing of the components of the chemical system is ongoing.

For Phase 2 (associated with Contract C), the proposed 3rd test well at Ludeman South will not be performed under a JOC due to the quote received from the contractor being above the $600K threshold. Therefore, the installation of the test well needs to be performed under a regular bid-build contract. Preparation of the contract specifications is in progress. The survey and geotechnical investigation and preparation of the Conceptual Engineering Report for the SSF Main Well Station are also in progress.

Issues and Challenges:

Recent changes to the chemicals used for groundwater treatment required revisions to the engineering, operational, and maintenance reports in order to acquire a conditional Division of Drinking Water permit. Several major items required to implement the changes include modification of chemical metering pumps, flowmeter programming, and piping. These changes have resulted in additional cost and also delay of the 7-day testing, which will be reflected in the next quarterly report.

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:** Design	**Environmental Status:** Active (TBD)

Project Cost:

Approved		$20.00 M
Forecast*		$20.00 M
Actual		$4.72 M

Project Schedule:

Approved	Jan-07	Jan-21
Forecast*	Jan-07	Jan-21

Project Percent Complete: 25.4%

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

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	06/06/19	TBD	TBD	TBD

Progress and Status:

The appraisals for three high priority properties in the Alameda watershed have been completed. One property is under contract, and we anticipate that the acquisition will go to the Commission for approval in March 2019. We are in discussions with the property owners for the two other properties and should know by February 2019 if these acquisitions will go forward.

Issues and Challenges:

None at this time.

Alameda Creek Watershed

APPENDIX F. LIST OF ACRONYMS

AAR	Alternative Analysis Report
ACAMS	Access Control and Alarm Monitoring System
ACDD	Alameda Creek Diversion Dam
ACDT	Alameda Creek Diversion Tunnel
AWP	Alameda West Portal
BART	Bay Area Rapid Transit
BAWSCA	Bay Area Water Supply and Conservation Agency
BDPL	Bay Division Pipeline
BHR	Bioregional Habitat Restoration
CATEX	Categorical Exemption
CCSF	City and County of San Francisco
CDD	City Distribution Division
CDRP	Calaveras Dam Replacement Project
CEQA	California Environmental Quality Act
CER	Conceptual Engineering Report
CIP	Capital Improvement Program
CM	Construction Management
CMB	Construction Management Bureau
CMIS	Construction Management Information System
CO	Change Order
CPI	Cost Performance Index
CSPS	Crystal Springs Pump Station
CSSA	Crystal Springs/San Andreas
DB	Design, Build
DSOD	Division of Safety of Dams (State of California)
DVSS	Digital Video Surveillance System
EBMUD	East Bay Municipal Utility District
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EV	Earned Value
EVM	Earned Value Management
FY	Fiscal Year
HH	Hetch Hetchy
HHWP	Hetch Hetchy Water and Power
HTWTP	Harry Tracy Water Treatment Plant
IVP	Irvington Portal
JOC	Job Order Contract
LCSD	Lower Crystal Springs Dam
LCSDI	Lower Crystal Springs Dam Improvements
LOS	Levels of Service
MG	Million Gallons
MGD	Million Gallons per Day
MND	Mitigated Negative Declaration
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
N/A	Not Applicable
NEG DEC	Negative Declaration (also shown as ND)
NEPA	National Environmental Policy Act
NIT	New Irvington Tunnel
NMFS	National Marine Fisheries Service (under NOAA)
NOAA	National Oceanic and Atmospheric Agency
NTP	Notice to Proceed
O&M	Operation and Maintenance
PCCP	Pre-stressed Concrete Cylinder Pipe
PEIR	Program Environmental Impact Report
PG&E	Pacific Gas and Electric Company
RFI	Request For Information
ROW	Right-of-Way
SABPL	San Antonio Backup Pipeline
SAPL	San Antonio Pipeline
SAPS	San Antonio Pump Station
SCADA	Supervisory Control and Data Acquisition
SCC	Scheduled Subproject Completion
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
SVWTP	Sunol Valley Water Treatment Plant
TBD	To be determined
TBM	Tunnel Boring Machine
TWR	Treated Water Reservoir
UM	University Mound
UPS	Uninterruptable Power Supply
UV	Ultra Violet
VFD	Variable Frequency Drive

WEIP	Watershed Environmental Improvement Program
WSIP	Water System Improvement Program

San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission

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DATE: May 7, 2019

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

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

RE: WSIP Regional Projects Quarterly Report
3rd Quarter / Fiscal Year 2018-2019

Enclosed please find the Water System Improvement Program (WSIP) Regional Projects Quarterly Report for the 3rd Quarter (Q3) of Fiscal Year (FY) 2018-2019. The primary intent of the report is to provide the San Francisco Public Utilities Commission ("Commission"), stakeholders, and the public with a status summary of the program's regional projects for the period of January 1, 2019 through March 31, 2019.

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

STATUS AND PERFORMANCE SUMMARY

Overall, WSIP regional projects are 97.1% complete as of March 31, 2019.

As of the end of the reporting period, planning, environmental, design, and construction activities are 99.8%, 99.7%, 97.5%, and 98.1% complete, respectively. The following table shows the number of WSIP Regional projects and the total approved value of these projects that are active in various project phases.

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

Project Phase	No. of Projects	Percent by No. of Projects	Total Project Value ($M)[1]	Percent by Project Value
Planning	0	0%	$0	0%
Design	4	8%	$75	2%
Bid & Award	0	0%	$0	0%
Construction	5	10%	$1,016	27%
Close-Out	1	2%	$96	3%
Completed	41	79%	$2,603	68%
Not Applicable[2]	1	2%	$12	0%
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 one project that does not include construction: Long-Term Mitigation Endowment.

PROGRAM UPDATE

As of the end of the reporting period, five (5) regional projects with a total value of $1,016M are in construction and forty-two (42) projects with a total value of $2,699M are in close-out or have been completed. Forty (40) out of forty-three (43) Regional WSIP projects with specific Level of Service (LOS) goals have achieved their LOS goals to date. Besides the WSIP Closeout Projects, the one Regional project remaining in pre-construction is the Alameda Creek Recapture Project.

As of the end of the reporting period, the forecasted total program cost (regional and local projects) is $4,787.8M, which is the same as the current Commission Approved Budget. As of the end of the reporting period, all approved change orders (COs) on active construction contracts total $435.32M, and the current remaining construction contingency is $26.53M. Also, as of the end of the reporting period, all pending and potential COs, and trends total $16.54M. Therefore, if all pending and proposed COs and trends become approved COs, the current forecasted remaining construction contingency is $9.99M.

The current forecasted date to complete the overall WSIP is the same as the current approved date of December 2021.

UPDATE ON PROJECTS IN PRE-CONSTRUCTION

Alameda Creek Recapture

During this quarter, the project team continued to work on updates to the Administrative Draft EIR. The schedule for re-circulation is unknown at this time. The project schedule will be re-evaluated once the updated EIR is published and re-circulated.

WSIP Closeout Projects

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

In the San Joaquin Region, the Tesla Portal slab and drainage improvement work is complete. For the Solar Panel work, AECOM has completed the additional analysis to prepare the final draft Solar Photovoltaic (PV) System Evaluation Technical Memorandum (TM). Comments were also received from HHWP operations. Design will begin in the next reporting quarter.

In the Sunol Valley Region, work for the erosion repairs at Pond F3 East has been added to the Turner Dam Spillway Erosion construction contract which is a non-WSIP project that was awarded in March 2019. For the New Irvington Tunnel (NIT) Portal Water Quality Equipment Relocation project, CalState, the Job Order Contract (JOC) contractor, has completed relocating all the Water Quality Equipment at Irvington Portal. For the Sunol Valley Water Treatment Plant (SVWTP) Polymer Feed Facility (aka Basin 5), work on the Conceptual Engineering Report (CER) and the RFP for design is ongoing. CalState has also started work for the SABPL Water Carrier System Modification Phase 1; the pipes have been delivered and installation is on-going. The team planning for the Alameda Siphon 4 Water Carrier Water System Modification concluded that no additional work will be required as part of closeout.

In the Bay Division Region, CalState is also the JOC contractor for the Ventilation & Sump Pump Installation. CalState completed the sump pump work and ventilation work. Electrical work will be completed in the next quarter. For the installation of a V-Ditch and BDPL 3 pipe coating work, Power Engineering, another JOC contractor, is to provide a cost proposal.

In the Peninsula Region, the Crystal Springs Dam Stilling Basin, Dissipation Structure, and H53 Valve project will have an NTP on April 8, 2019. The bridge grand opening for the Lower Crystal Springs Dam (LCSD) Bridge Replacement project, a joint project with San Mateo County (SMC), took place on January 11, 2019. SFPUC will share costs with San Mateo County for the new security fencing for the bridge and dam. A new JOC is being set up to address the gap between the LCSD north parapet wall and the new bridge abutment; construction is forecast to start in mid-2019. An as-needed task order will be initiated in the next quarter to perform a security assessment for the area around the bridge and dam. The SFPUC is working with the County to repair the drainage channels atop the south side of LCSD.

Several JOC task orders have been initiated for the Harry Tracy Water Treatment Plant (HTWTP) facility, with status as follows: 1) JOC 59-01 – Electrical & Mechanical Piping Modifications. The remaining training scope of work will be completed following the Emergency Generators Filters Upgrades (JOC 59-17). 2) JOC-59-17 – One of the three filters was successfully tested and commissioned. Work to replace the remaining two filters began late this quarter. 3) Equalization Basin Mixers – Engineers are working with the vendor/contractor to confirm the date of

replacement. 4) Erosion repairs for Crystal Springs - San Andreas (CSSA) Pipeline – The construction contract was approved by the Commission for closeout in April 2019.

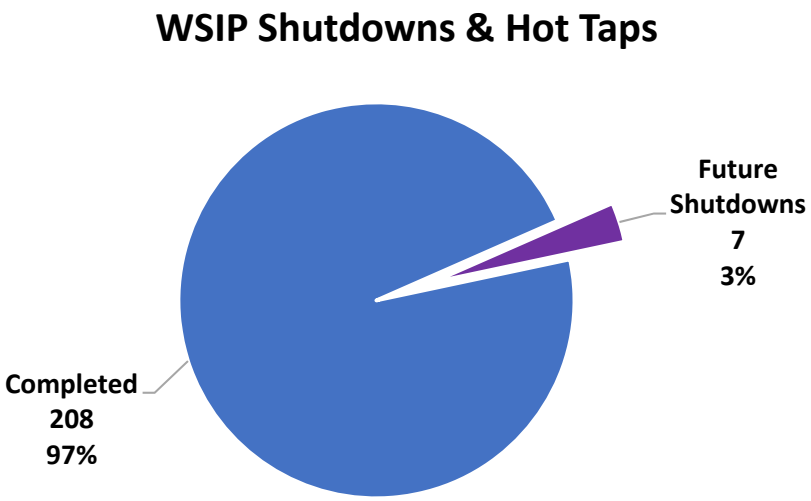
UPDATE ON PROJECTS IN CONSTRUCTION

Steady progress was reported on the ongoing WSIP construction activities. As of the end of March 2019, WSIP regional construction contracts (including active, completed, and future contracts) are 99.3% complete overall, an increase of 0.4% during the quarter.

A review of the construction work hours recorded over the last five (5) years shows continued ramping down of construction activities, with monthly work hours peaking at 206,400 in August 2012, compared to a total of 14,153 work hours recorded in March 2019. The monthly average workhours in the reporting Quarter was 16,808.

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

The status of the WSIP Shutdowns and Hot Taps remained the same during the period. To date, 208 out of 215 (97%) of the planned shutdowns and hot taps have been completed. Currently, there are no active shutdowns/hot taps and seven (7) future planned shutdowns.



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

Calaveras Dam Replacement

Overall progress on the Calaveras Dam Replacement Project is reported at 99% as of the end of the quarter, which is an increase of 2.5% during this period. The contractor completed the installation of dam instrumentation and permanent power as well as the restoration of most disposal sites and staging areas. After initial reservoir fill started in Fall 2018, the first reservoir hold point was reached on February 19 and was completed on March 1. During this hold point #1, the reservoir elevation was kept at approximately 724 ft. Activities that were underway this quarter and will continue in the next quarter include Automated Data Acquisition System (ADAS), Supervisory Control and Data Acquisition (SCADA), road paving, and final restoration of the site.

Regional Groundwater Storage and Recovery

Overall progress on the Phase 1 Regional Groundwater Storage and Recovery construction contract (Contract B) is reported at 98.2% as of the end of the quarter. This value is 0.6% above the value reported during the previous quarter. The contractual Substantial Completion was achieved as of December 31, 2017. Recent changes to the chemicals to be used for groundwater treatment will require modifications of chemical metering pumps, flowmeter programming, and piping. In addition, the contractor is working on other change order work related to transmission line flowmeters, access modification, chemical injection, and other miscellaneous items.

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

The Fish Passage Facilities within the Alameda Creek Watershed construction is 97.5% complete, an increase of 1.6% during the Quarter. The project reached substantial completion on February 15, 2019. Testing and startup of the facility has been completed. Most of the staff training is complete. Punch List work is in progress.

MAJOR PROGRAM TRENDS AND RISKS

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

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

The trends for the WSIP Active Regional construction contracts totaled $13.0M as of the end of the reporting period, an increase of $0.6M during the period. Approximately 43% of the total trends at the end of March 2019 belong to the Fish Passage Facilities Project, 28% to the Calaveras Dam Replacement Project, and 28% to the Regional Groundwater Storage & Recovery Project. The following table lists the trend totals for active projects:

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

Project	Trends ($ Million)	Percent Completion[1]
Fish Passage Facilities at ACDD	$5.6	98%
Calaveras Dam Replacement	$3.7	99%
Regional Groundwater Storage & Recovery (Contract B)	$3.7	98%

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

The WSIP Risk Management System ranks risks based on a combination of likelihood of occurrence and potential cost impact to the SFPUC. On that basis, and as of March 31, 2019, the Regional Groundwater Storage and Recovery project has six (6) of the top ten program risks, and the Fish Passage Facilities within the Alameda Creek Watershed project has the remaining four (4). All the PUC risks for Calaveras Dam Replacement project have expired. The current highest risk in the program is from the Fish Passage Facilities within the Alameda Creek Watershed project and concerns the potential claimed costs associated with an accelerated schedule to mitigate for previous schedule impacts. The following table lists the projects with the largest risks.

Top 10 Risks of WSIP Regional Projects (as of March 31, 2019)

Project	No. of Top 10 Risks	Percent Completion[1]
Risk Ranking Based on Likelihood of Occurrence and Potential Cost Impact		
Regional Groundwater Storage & Recovery (Contract B)	6	98%
Fish Passage Facilities at ACDD	4	98%

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

Based on the risks summarized above, the two (2) active construction contracts that carry the greatest potential to impact the Program's overall cost and schedule are the Fish Passage Facilities within the Alameda Creek Watershed and the Regional Groundwater Storage & Recovery projects.

Fish Passage Facilities within the Alameda Creek Watershed

This project is currently reporting on sixty-six (66) active trends that total $5.6M, a decrease of $0.6M from the value reported last quarter. The current largest trend addresses the alleged inefficiencies experienced during construction. The second and third largest trends relate to the volume of subterranean water flow beneath the creek for the second and first construction season respectively. The fourth largest trend covers the costs for landslide stabilization followed by the cost for shoring, both upstream and downstream, required due to over-excavation. A new trend was added this period to cover installation challenges to the hydro-auger sub-contractor due to non-cohesive soil, boulders encountered, and high groundwater level.

Other trends address additional costs to recover schedule and for additional shoring depth, an alternative fall protection system, the increase in the allowance for the storm-water pollution prevention plan (SWPPP), headwall length increases, the cleanout of training wall sediment, the cost of a second season winterization, and several differing site conditions.

The 80% risk confidence level as of the end of March 2019 is estimated at $3.0 M which is an increase of $0.9M from the value reported last quarter. Six (6) of the current top ten (10) risks for the active WSIP construction contracts, based on likelihood of occurrence and potential cost impact, belong to this contract. The current highest risk addresses the potential for contractor claims associated with the accelerated schedule imposed to mitigate for previous schedule impacts. Other high risks include the risk of differing site conditions, the risk of SCADA and instruments not working properly, the potential for insufficient creek flow to test the system upon substantial completion, and the potential of mishandling storm-water runoffs and consequent violation of the construction general permit.

Other risks include the potential that fish ladders and screens will not function as planned, the risk of delays resulting from additional late changes, and the potential for regulatory agencies requiring additional mitigation measures due to multiple takes of snakes or salamanders.

Regional Groundwater Storage and Recovery

This project is currently reporting on twenty-one (21) active trends that total $3.7M, an increase of $2.3M during the quarter. The largest trend at the end of the period is for the repairs and/or replacement of the flowmeter (new trend). The second largest trend addresses the budget for a JOC to build an access road. The third highest trend contemplates the addition of seven hot taps to calibrate the flowmeters. High value new trends include costs for startup testing; for changing use of aqueous NH3 to use of liquid ammonium sulfate; for purchase of PG&E power for the Lake Merced Golf Club, Treasure Island, and Funeral Home sampling stations; for costs of new injection quill, water quality supplies, and equipment; costs for commissioning; and costs for additional disinfection and support.

Other relevant trends include miscellaneous plumbing and chemical changes, rental of generators for temporary power during commissioning, potential revisions to the Programmable Logic Control (PLC) programming, addressing naturally occurring ammonia at the Funeral Home and Linear Park sites, and eyewash station installation in pump room sinks.

The 80% risk confidence level as of the end of the reporting period is estimated at $1.9M which is an increase of $0.3M from the value reported last quarter. Five (5) of the current top ten (10) risks

for the active WSIP construction contracts, based on likelihood of occurrence and potential cost impact, belong to this contract. The current largest risk concerns the challenges in meeting water monitoring requirements due to the potential for high levels of ammonia, changes in water quality requirements for Fluoride, and detection of sulfur at Southwood Drive. The second highest risk considers the potential costs from design errors and/or omissions. The third highest risk is in not meeting regulatory and operational requirements for taste and odor and the potential delay to the seven-day start-up and testing activities while these requirements are being met.

Additional risks include the potential for delays in finalizing permanent easements, the risk of project impacts due to turnover of key personnel, schedule delays caused by longer turnaround in submittals and RFIs, and the potential for encountering unforeseen underground utilities.

Calaveras Dam Replacement

As of the end of March 2019, there are nineteen (19) active trends on this contract, totaling $3.7M, a decrease of $1.1M during the quarter. The largest trend is to account for the potential overrun in the Asphalt Concrete (AC) Pavement bid item for the re-paving of Calaveras Road.

The second largest trend is regarding the potential for adjustments to the home office overhead rate. The third largest trend is related to the potential quantity overrun of zone embankment materials. Other high cost trends include permanent instrumentation for long-term operations and maintenance, construction of a bridge approach (new trend), overrun for foundation cleaning, and differing site conditions regarding the existing native soil condition (nutrients) for purposes of completing site restoration. Other new trends include external systems communication and coordination.

This contract has no remaining risks as they have all been eliminated through not transpiring. The 80% risk confidence level for last quarter was $0.6M; the change between quarters is therefore a decrease of $0.6M.

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 all approved, pending, and potential change orders, as well as all current trends, have been provided for.

Contract	Final Construction Completion	Current Approved Contingency	Current Approved, Pending, and Potential Change Orders Plus Trends	Remaining Contingency	% Completion
CUW37401 CDRP Construction Contract (WD-2551)	6/19/19	$319.4M	$314.9M	$4.5M	99%
CUW37401 Alameda Creek Diversion Dam Fish Passage Facility (WD-2729)	5/29/19	$13.3M	$13.3M	$0M	97%
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	3/6/20	$19.3M	$19.3M	$0M	98%

As can be seen in the table, the Calaveras Dam Replacement construction contract has remaining construction contingency of $4.5 million.

The Fish Passage Facilities at Alameda Creek Diversion Dam is currently estimated to have used all approved contingency, for change orders in process and forecasted trends, as of the end of the reporting period. Therefore, it is likely that this construction contract may require additional contingency to cover the potential cost of remaining risks, valued at $3.0 million at the 80% risk confidence level. Since this project is a sub-project of the Calaveras Dam Replacement, the remaining unused contingency in the larger contract may be made available to cover any additional contingency needs for the smaller contract.

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

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

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

The current staff transition plan for the remainder of WSIP is included on page 44 of the attached WSIP Quarterly Report. As can be seen in the chart on that page, the overall staffing levels in June 2018 were approximately 85 full-time equivalents (FTEs), which has decreased to approximately 72 FTEs in March 2019. The decrease is equally attributable to both City and consultant staff ramping down activities as projects complete construction and close out. Actual staffing levels will continue to be tracked monthly against this plan and appropriate staff adjustments made accordingly to ensure staffing levels stay within the remaining available budget.

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

CLOSING

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

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

Enclosure

HETCH HETCHY
WATER SYSTEM IMPROVEMENT PROGRAM

QUARTERLY REPORT

Regional Projects
Q3 FY 2018 | 2019
January 2019 — March 2019

Rebuilding Today for a Better Tomorrow

Published: 05/07/2019

Quarterly Report - Q3 FY2018/2019

Water System Improvement Program - Regional Projects

TABLE OF CONTENTS

1. PROGRAM DESCRIPTION

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

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

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

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

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

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

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

* Final Program Completion Date

2. PROGRAM STATUS

This third (3rd) Quarterly Report for Fiscal Year (FY) 2018-2019 presents the progress made on the WSIP regional projects between January 1, 2019 and March 31, 2019. The program's schedule and budget were last approved by the San Francisco Public Utilities Commission (SFPUC or Commission) on April 10, 2018. The progress made on the local projects of the WSIP is presented in a separate quarterly report.

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

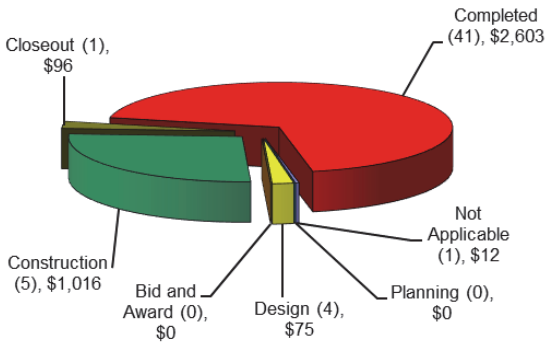


Figure 2.1 Total Current Approved Budget for Projects Active in Each Phase ($Million)

Figure 2.2 shows the number of regional projects in the following stages of the program as of March 31, 2019: Pre-construction, Construction, and Post-construction.

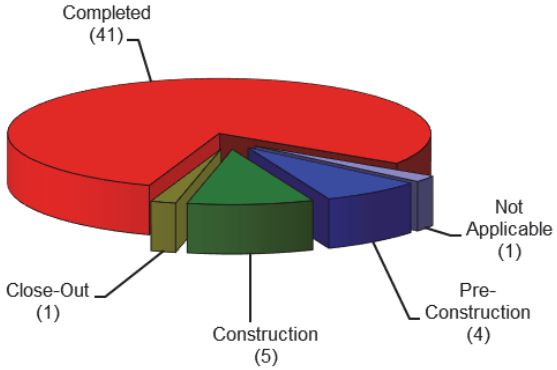


Figure 2.2 Number of Projects in Pre-construction, Construction, and Post-construction

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

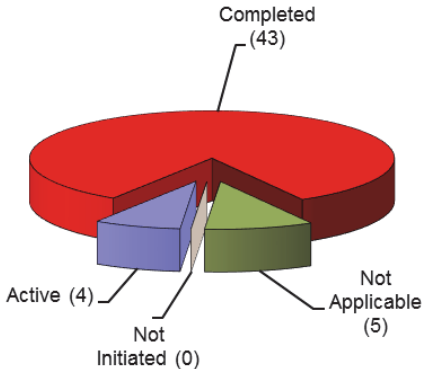


Figure 2.3 Program Environmental and Permitting Status

2.1 Progress Towards Meeting Level of Service (LOS) Goals

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

Table 2.1 lists the projects with their individual Primary (P) and Secondary (S) contributions towards LOS goals, and indicates which projects have met their respective LOS goals. As can be seen in Table 2.1, the actual operational service start dates indicate that 40 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 *(Completed)*	08/31/10	P				08/31/10	100%
CUW37301	San Joaquin Pipeline System *(Completed)* (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; *Completed*)	05/13/11			P		05/13/11	100%
CUW38401	Tesla Treatment Facility *(Completed)* (A) DB116 Tesla Treatment Facility Design-Build Contract (B) HH953 Tesla Portal Protection	(A) 06/24/11 (B) 08/05/13	P	S	S		(A) 06/24/11 (B) 08/05/13	100%
Sunol Valley Projects								
CUW35201	Alameda Creek Recapture	11/30/20				P		0%
CUW35501	Standby Power Facilities - Various Locations *(Completed)* (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 *(Completed)*	09/19/15		S	P		02/27/15	100%
CUW35902	Alameda Siphon #4 *(Completed)*	12/16/11		P	S		12/16/11	100%
CUW37001	Pipeline Repair & Readiness Improvements *(Completed)* (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[2]	(A) 04/12/19 (B) 02/15/19		S	P	S		(A) 99% (B) 97%
CUW37402	Calaveras Reservoir Upgrades *(Completed)*	10/06/05	P				10/06/05	100%
CUW37403	San Antonio Backup Pipeline *(Completed)*	12/31/14			P		12/31/14	100%
CUW38101	SVWTP Expansion & Treated Water Reservoir *(Completed)*	05/17/13	P		P		05/17/13	100%
CUW38601	San Antonio Pump Station Upgrade *(Completed)*	06/30/11			P		06/30/11	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		
Bay Division Projects								
CUW35301	BDPL Nos. 3 & 4 Crossover/Isolation Valves *(Completed)*	11/15/07		P			11/15/07	100%
CUW35302	Seismic Upgrade of BDPL Nos. 3 & 4 *(Completed)*	10/26/15		P			06/20/14	100%
CUW36301	SCADA System - Phase II *(Completed)*	11/29/10			P		11/29/10	100%
CUW36801	BDPL Reliability Upgrade – Tunnel *(Completed)*	05/20/15		P	S		10/15/14	100%
CUW36802	BDPL Reliability Upgrade – Pipeline *(Completed)* (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 *(Completed)*	05/28/10			P		05/28/10	100%
CUW38001	BDPL Nos. 3 & 4 - Crossovers *(Completed)*	08/15/12		P	S		08/15/12	100%
CUW38901	SFPUC/EBMUD Intertie *(Completed)*	09/07/07			P		09/07/07	100%
CUW39301	BDPL No. 4 Condition Assessment PCCP Sections *(Completed)*	02/06/09		P	S		02/06/09	100%
Peninsula Projects								
CUW35401	Lower Crystal Springs Dam Improvements *(Completed)*	11/20/11			P	S	11/20/11	100%
CUW35601	New Crystal Springs Bypass Tunnel *(Completed)*	07/14/11		P	S		07/14/11	100%
CUW35701	Adit Leak Repair - Crystal Springs/Calaveras *(Completed)*	11/30/07			P		11/30/07	100%
CUW36101	Pulgas Balancing - Inlet/Outlet Work *(Completed)*	02/02/06	P		S		02/02/06	100%
CUW36102	Pulgas Balancing - Discharge Channel Modifications *(Completed)*	10/23/09			P		10/23/09	100%
CUW36103	Pulgas Balancing - Structural Rehabilitation & Roof Replacement *(Completed)*	07/26/11	P		S		07/26/11	100%
CUW36105	Pulgas Balancing - Modifications of the Existing Dechloramination Facility *(Completed)*	08/27/12	P		S		08/27/12	100%
CUW36501	Cross Connection Controls *(Completed)*	11/26/08	P				11/26/08	100%
CUW36601	HTWTP Short-Term Improvements - Demo Filters *(Completed)*	01/11/06		P	S		01/11/06	100%
CUW36603	HTWTP Short-Term Improvements - Coagulation & Flocculation/Remaining Filters *(Completed)*	12/21/09		P	S		12/21/09	100%
CUW36701	HTWTP Long -Term Improvements *(Completed)*	09/08/15		P	S		09/08/15	100%
CUW36702	Peninsula Pipelines Seismic Upgrade *(Completed)*	10/30/15		P			10/30/15	100%
CUW36901	Capuchino Valve Lot Improvements *(Completed)*	02/14/08			P		02/14/08	100%
CUW37101	Crystal Springs/San Andreas Transmission Upgrade *(Completed)*	06/30/14		P	S		09/02/14	100%
CUW37801	Crystal Springs Pipeline No. 2 Replacement *(Completed)*	01/31/13		P	S		01/31/13	100%
CUW37901	San Andreas Pipeline No. 3 Installation *(Completed)*	03/29/11		P	S		03/29/11	100%
CUW39101	Baden & San Pedro Valve Lots Improvements *(Completed)*	03/31/11		P	S		03/31/11	100%

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

Notes:

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

3. PROGRAM COST SUMMARY

Table 3.1 provides an overall program-level cost summary of the WSIP Regional Program. It shows the Expenditures to Date; the 2005 Baseline, 2018 Approved, Current Approved and Q3/FY18-19 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 the Regional Program (including construction contingency) are the same at $3,803.1 million. The Current Approved WSIP Budget and Forecasted Cost at completion for the Local Improvement Projects are the same at $331.4 million. Refer to Appendix B for a graphical representation of how the WSIP budget and actual expenditures have changed over time.

Table 3.1 Program Cost Summary

Cost Categories	Expenditures To Date ($ Million) (A)	2005 Baseline Budget ($ Million) (B)	2018 Approved Budget ($ Million) (C)	Current Approved Budget [7] ($ Million) (D)	Q3/FY18-19 Forecasted Costs ($ Million) (E)	Cost Variance ($ Million) (F = D - E)
Regional Improvement Projects	**$2,973**	**$3,181**	**$3,081.4**	**$3,081.4**	**$3,096.1**	**($14.7)**
Construction Costs [1]	$2,010	$2,322	**$2,065.9**	$2,065.9	$2,064.2	$1.8
Program Delivery Costs [2]	$938	$758	**$984.8**	$984.8	$984.5	$0.2
Other Costs [3]	$26	$101	**$30.7**	$30.7	$47.3	($16.7)
Support Projects [4]	**$219**	**$33**	**$244.9**	**$244.9**	**$245.2**	**($0.3)**
Construction Contingency for Regional & Support Projects [5]	**$431**	**$193**	**$476.8**	**$476.8**	**$461.8**	**$15.0**
REGIONAL PROGRAM WITH CONTINGENCY	**$3,623**	**$3,407**	**$3,803.1**	**$3,803.1**	**$3,803.1**	**-**
Local Improvement Projects	$331	**$383**	**$331.4**	**$331.4**	**$331.4**	**-**
Local Water Supply Projects [6][8]	**$138**	**-**	**$281.3**	**$281.3**	**$281.3**	**-**
Finance	**$372**	**$552**	**$372.0**	**$372.0**	**$372.0**	**-**
PROGRAM TOTAL	**$4,465**	**$4,343**	**$4,787.8**	**$4,787.8**	**$4,787.8**	**-**

Notes:

1. **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.
2. **Delivery Costs** include project management, planning, environmental (CEQA, permitting, construction compliance), design, construction management, and engineering support during construction.
3. **Other Costs** include environmental mitigation, art enrichment, security improvements, and real estate expenses.
4. **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.
5. Expenditures to Date for Construction Contingency for Regional and Support projects correspond to the Total Approved Change Orders on those projects. For projects with ongoing or completed construction, the 2018 Approved Budget for construction contingency includes all change orders and trends as identified at the time of the March 2018 Revised WSIP, as well as additional contingency funding allocated to cover the 80% confidence level risks identified at the time of the March 2018 Revised WSIP. For projects in pre-construction, the 2018 Approved Budget for construction contingency includes 10% of the estimated construction base bid.
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 2018 Revised WSIP, plus any additional budget changes approved by the Commission as part of additional contingencies on construction contracts.
8. The WSIP Local Water Supply projects underwent a September 2013 re-baseline. Only the original WSIP portion of the re-baselined costs is reported here. The remaining budget is funded under the Water Enterprise CIP and is managed outside the purview of the WSIP.
9. The original $522M estimate of financing cost was based on a memorandum to the Commission dated November 23, 2005.
10. The financing cost budget of $372M that was included in the March 2018 Revised WSIP includes all financing costs appropriated to date.
11. The actual financing cost is assumed to match the budgeted financing cost. Final reconciliation of all associated financing costs will occur upon WSIP completion.

Table 3.2 provides the current remaining construction contingency. For each region, it shows the 2018 Approved Construction Contingency; the Total Approved Change Orders prior to the reporting quarter; Change Orders Approved during the reporting quarter; Total Approved Change Orders through the reporting quarter; Project Savings Moved to Contingency/ Funds Moved out of Contingency during the Reporting Quarter; the Q3/FY18-19 Forecasted Construction Contingency; and the Remaining Contingency as of the end of the reporting quarter. As of March 31, 2019, the Forecasted Construction Contingency is $461.8 million, and the Current Remaining Contingency is $26.5 million.

The Change Orders Approved in Q3/FY18-19 are shown in Table 3.2. Table 3.3 provides further information at the construction contract level for all approved change orders during the reporting quarter.

Table 3.2 Current Remaining Construction Contingency

Region	Q2/FY18-19 Forecasted Construction Contingency [1] ($ Million) (A)	Total Approved Change Orders as of Q2/FY18-19[2,3] ($ Million) (B)	Change Orders Approved in Q3/FY18-19[2] ($ Million) (C)	Total Approved Change Orders as of Q3/FY18-19 ($ Million) (D = B+C)	Project Savings or Director's Reserves (+) Moved to Contingency/ Funds (--) Moved out of Contingency during Q3/FY18-19 [4] ($ Million) (E)	Q3/FY18-19 Forecasted Construction Contingency ($ Million) (F = A + E)	Q3/FY18-19 Remaining Contingency ($ Million) (G = F - D)
San Joaquin Region	$0.22	-	-	-	-	$0.22	$0.22
Sunol Valley Region	$390.81	$365.83	($9.33)	$356.50	($16.64)	$374.17	$17.67
Bay Division Region	$8.65	$8.06	-	$8.06	-	$8.65	$0.59
Peninsula Region	$57.97	$56.79	-	$56.79	($0.63)	$57.34	$0.55
San Francisco Regional Region	$17.58	$13.04	$0.79	$13.83	$2.68	$20.25	$6.42
Support Projects	$1.79	$0.14	-	$0.14	($0.58)	$1.21	$1.07
Regional Total	**$477.02**	**$443.86**	**($8.55)**	**$435.32**	**($15.18)**	**$461.84**	**$26.53**

Notes:

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

Table 3.3. Details on Transactions Out of and Into Contingency

Project No. - Contract	Transactions Out of Contingency			Transactions Into Contingency		
	Approved Change Orders ($ Million) (A)	Budget Underrun at Project Completion / Director's Reserve Moved Out of Project ($ Million) (B)	Sub Total ($ Million) (C = A + B)	Savings Due to Low Bid ($ Million) (D)	Budget Overrun at Project Completion / Director's Reserve Moved to Project ($ Million) (E)	Sub Total ($ Million) (F = D + E)
Sunol Valley Region	**($9.33)**	**$16.64**	**$7.31**	**-**	**-**	**-**
CUW37401 Calaveras Dam Replacement WD-2551	($10.38)	$16.50	$6.12	-	-	-
CUW37401 Calaveras Dam Other Construction WD-2729	$1.04		$1.04	-	-	-
CUWSVI0101 WSIP Closeout - Sunol Valley	-	$0.14	$0.14	-	-	-
Peninsula Region	**-**	**$0.63**	**$0.63**	**-**	**-**	**-**
CUWPWI0101 WSIP Closeout - Peninsula	-	$0.63	$0.63	-	-	-
San Francisco Regional	**$0.79**	**-**	**$0.79**	**-**	**$2.68**	**$2.68**
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	$0.79	-	$0.79	-	$2.68	$2.68
Support Projects	**-**	**$0.58**	**$0.58**	**-**	**-**	**-**
CUW36302 System Security Upgrade WD-2707	-	$0.28	$0.28	-	-	-
CUW39401 Watershed Environmental Improvement Program	-	$0.30	$0.30			
Regional Total	**($8.55)**	**$17.85**	**$9.31**	**-**	**$2.68**	**$2.68**

Table 3.4 Forecasted Remaining Construction Contingency

Region	Q3/FY18-19 Remaining Construction Contingency [1] ($ Million) (A)	Pending Change Orders as of Q3/FY18-19 [2] ($ Million) (B)	Potential Change Orders as of Q3/FY18-19 [3] ($ Million) (C)	Trends as of Q3/FY18-19 [4] ($ Million) D	Q3/FY18-19 Forecasted Remaining Construction Contingency ($ Million) (E =A-B-C-D)
San Joaquin Region	$0.22	-	-	-	$0.22
Sunol Valley Region	$17.67	-	$1.95	$9.37	$6.35
Bay Division Region	$0.59	-	-	-	$0.59
Peninsula Region	$0.55	-	-	-	$0.55
San Francisco Regional Region	$6.42	$0.41	$1.34	$3.73	$0.94
Support Projects	$1.07	($0.26)	-	-	$1.33
Regional Total	**$26.53**	**$0.15**	**$3.29**	**$13.10**	**$9.99**

Notes:

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

Table 3.4 provides the forecasted remaining construction contingency. For each region as of Q3/FY18-19, it shows the Remaining Construction Contingency, Pending Change Orders, Potential Change Orders, Trends, and Forecasted Remaining Construction Contingency. As of March 31, 2019, the Total Forecasted Remaining Construction Contingency is $10.0 million. This amount does not include funds that are currently held in Director's Reserve.

The Program Management project includes programmatic activities that span multiple regions and benefit several WSIP projects (Table 3.5). The project provides funding for the following functions and resources: SFPUC Staff assigned to the management of the overall program; consultants supporting SFPUC staff at the program level (program, project and pre-construction management consultant, program construction management consultant, program control consultant); labor relations, including management of the project labor agreement; communication and public outreach; programmatic legal support; real estate acquisitions; program controls, including the tracking and reporting of all WSIP efforts; and program-level construction management activities associated with quality assurance, risk management, the Supplier Quality Surveillance (SQS) Program, operations assistance, safety, and training.

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

Table 3.5 Status of Program Management Project Cost Breakdown

Category	Expenditures To Date ($ Million) (A)	2018 Approved Budget ($ Million) (B)	Current Approved Budget ($ Million) (C)	Q3/FY18-19 Forecasted Cost* ($ Million) (D)	Cost Variance ($ Million) (E = C-D)
Management Support	$36.3	$42.8	$42.8	$42.8	-
Project Labor Agreement	$3.5	$3.8	$3.8	$3.8	-
Planning and Project Development	$17.9	$18.3	$18.3	$18.3	-
Program Controls	$18.9	$19.8	$19.8	$19.8	-
Program Construction Management	$27.3	$28.0	$28.0	$28.0	-
Program Management Total	**$103.9**	**$112.7**	**$112.7**	**$112.7**	**-**

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

4. PROGRAM SCHEDULE SUMMARY

Figure 4.1 and Table 4.1 compare the 2005 Baseline, 2018 Approved, Current Approved, and Q3/FY18-19 Forecasted Schedules for the WSIP Regional Program. Refer to the "Cost and Schedule Status" notes in Section 5 for the criteria associated with the three color-coded Forecast Status levels in Figure 4.1 – Meet Requirements, Need Attention, and Exceed Limits. The Current Approved and Forecasted Schedule completion for the overall WSIP (including Regional and Local Programs) are in December 2021. Refer to Appendix C for a graphical presentation of the WSIP Approved Project-Level Schedule.

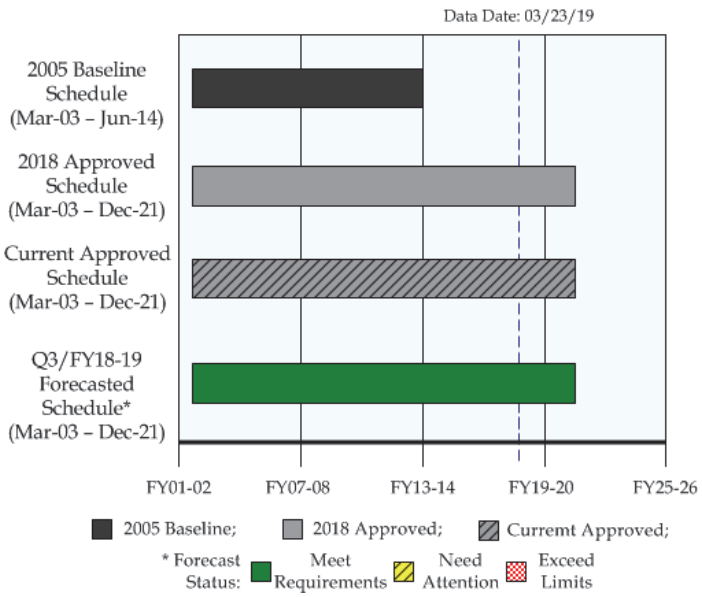


Table 4.1 2018 Approved vs. Q3/FY18-19 Forecasted Schedule Dates

Category	2005 Baseline Start	2018 Approved Start	Current* Approved Start	Actual Start	2005 Baseline Finish	2018 Approved Finish	Current* Approved Finish	Q3/FY18-19 Forecasted Finish	Schedule Variance (Months)
Regional Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/30/14	12/30/21	12/30/21	12/30/21	-
Local** Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/28/13	7/31/18	7/31/18	07/29/19	11.9 (Late)
Overall WSIP	03/01/03	03/01/03	03/01/03	03/01/03✓	06/30/14	12/30/21	12/30/21	12/30/21	-

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

** Excluding Local Water Supply Projects

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5. PROJECT PERFORMANCE SUMMARY*

All costs are shown in $1,000s as of 03/23/19

Project Name	Active Phase (**)	2005 Baseline Budget (a)	2018 Approved Budget (b)	Current Approved Budget (c)	Q3/FY18-19 Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f= c - d)	Cost Status (+)	2005 Baseline Completion (g)	2018 Approved Completion (h)	Current Approved Completion (i)	Q3/FY18-19 Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
San Joaquin Region															
CUWSJI0101 - WSIP Closeout - San Joaquin	CN		$ 4,376	$ 4,376	$ 3,876	$ 575	$ 500	★		12/20/19	12/20/19	12/18/20	12.0 mo. Late	●	See Section 6
Sunol Valley Region															
CUW35201 - Alameda Creek Recapture Project	DS	$ 18,809	$ 34,000	$ 34,000	$ 34,000	$ 12,542	-	★	05/25/12	11/03/21	11/03/21	11/03/21	-	★	See Appendix E
CUW37401 - Calaveras Dam Replacement	CN	$ 256,511	$ 823,092	$ 823,092	$ 820,294	$ 766,821	$ 2,798	★	05/25/12	12/20/19	12/20/19	12/20/19	-	★	See Appendix E
CUWSVI0101 - WSIP Closeout - Sunol Valley	DS		$ 5,990	$ 5,990	$ 5,990	$ 1,277	-	★		06/30/21	06/30/21	06/30/21	-	★	See Appendix E
Bay Division Region															
CUWBDP0101 - WSIP Closeout - Bay Division	CN		$ 4,399	$ 4,399	$ 3,799	$ 1,745	$ 600	★		06/30/20	06/30/20	06/30/20	-	★	See Appendix E
Peninsula Region															
CUWPWI0101 - WSIP Closeout - Peninsula	DS		$ 13,580	$ 13,580	$ 13,580	$ 4,951	-	★		05/19/21	05/19/21	05/19/21	-	★	See Appendix E
San Francisco Regional Region															
CUW30103 - Regional Groundwater Storage and Recovery	CN	$ 39,233	$ 138,793	$ 138,793	$ 146,073	$ 102,822	($7,280)	⚠	02/27/14	12/30/21	12/30/21	12/30/21	-	★	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.

All costs are shown in $1,000s as of 03/23/19

Project Name	Active Phase (**)	2005 Baseline Budget (a)	2018 Approved Budget (b)	Current Approved Budget (c)	Q3/FY18-19 Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f= c - d)	Cost Status (+)	2005 Baseline Completion (g)	2018 Approved Completion (h)	Current Approved Completion (i)	Q3/FY18-19 Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
Support Projects															
CUW36302 - System Security Upgrades	CN		$ 15,201	$ 15,201	$ 14,701	$ 14,380	$ 500	★		09/28/18	09/28/18	04/09/19	6.3 mo. Late	●	See Section 6
CUW38804 - Long Term Mitigation Endowment ++	NA		$ 12,000	$ 12,000	$ 12,000	$ 0	-	★		09/30/21	09/30/21	09/30/21	-	★	NA
CUW39401 - Watershed and Environmental Improvement Program	DS	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 4,993	-	★	06/28/13	01/08/21	01/08/21	01/08/21	-	★	See Appendix E

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

**** Phase Status Legend**

PL Planning DS Design BA Bid & Award

CN Construction NA Not Applicable

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

+ Cost and Schedule Status

★ Meet Requirements: Forecasted Cost/Schedule is within Current Approved Budget/Schedule.

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

● Exceed Limits: Forecasted Cost is over Current Approved Budget by 10% or more. Or Forecasted Schedule is over Current Approved Schedule by greater than 6 months or 10% or more.

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

6. PROJECTS NOT WITHIN BUDGET AND/OR SCHEDULE

CUWSJI0101 - WSIP Closeout - San Joaquin

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

Region: San Joaquin	**Project Status:** Construction	**Environmental Status:** Not Applicable

Project Cost:		**Project Schedule:**	
Approved	$4.38 M	Approved Jun-16	Dec-19
Forecast*	$3.88 M	Forecast* Jun-16	Dec-20
Actual	$0.58 M	Project Percent Complete: 37.1%	

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

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

Progress and Status:

• JOC 49-21 Tesla Portal. Completed on 9/30/2018.

• Solar Panels Project. During this reporting period the design consultant (AECOM) has issued the final planning level Technical Memorandum to upgrade the solar facilities. The Memorandum provided conceptual recommendations on work that needs to be performed at the three different sites. Design will be initiated once HHWP completes their review of the Memorandum, which is expected to be in April 2019. Scheduled Subproject Completion will be on 12/20/2020.

Issues and Challenges:

The Planning Phase for the Solar Panels Sub-Project took longer than originally planned in order to establish and gain internal agreement with HHWP for the appropriate remedial actions. Therefore, the forecast completion date has been extended by one year.

Oakdale Valve House No. 4 Solar Facilities

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:

Approved		$138.79 M
Forecast*		$146.07 M
Actual		$102.82 M

Project Schedule:

Approved Jun-03		Dec-21
Forecast* Jun-03		Dec-21

Project Percent Complete: 75.4%

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) 09/30/19	(A) 09/07/11✓ (B) 09/22/14✓ (C) 02/03/20	(A) 01/30/12✓ (B) 04/06/15✓ (C) 05/01/20	(A) 09/05/12✓ (B) 03/06/20 (C) 07/31/21

\+ Project includes multiple construction contracts.

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

Progress and Status:

For Contact B, a new caustic soda system was built at two well sites and the existing caustic soda system at five well sites was modified. Division of Drinking Water conditional approvals for operation have been received for well sites at Colma BART, Serra Bowl, Colma Blvd, Serramonte Blvd, and Hickey Blvd. Functional testing of the components of the chemical system is ongoing.

For Phase 2 (associated with Contract C), the geotechnical investigation at the SSF Main Well Station has been completed. Site reconnaissance at the existing nine well stations and treatment facilities occurred in March 2019 to investigate the carryover work from Contract B. The final draft Conceptual Engineering Report for the SSF Main Well Station is expected to be issued in late April 2019.

Issues and Challenges:

The variances between the Approved and Forecasted cost and schedule for Phase 1 (Contract B) are due to the modifications to the chemical system for groundwater treatment, the retrofit of existing transmission line flowmeters, and other changes to programming, access, and treatment testing. A switch from using aqueous ammonia to liquid ammonium sulfate was recently issued as a change order to the contract. Modifications to piping connections, pressure relief valves, sight glass, and programming, as well as other changes, will start construction in the next quarter. Further monitoring and calibration are needed to acquire more accurate and consistent readings on the transmission line flowmeters. These changes have resulted in delaying the 7-day testing.

The project team is currently evaluating potential costs and schedule impacts for Phase 2 work, and these will be included in a future quarterly report as appropriate.

CUW36302 - System Security Upgrades

Project Description: The project includes the identification, planning, design, and construction of all necessary security components associated with WSIP facilities. Phase A design consists of security appurtenances such as conduit routing incorporated into the overall design of projects. This work provides for the security infrastructure and is bid as part of the specific WSIP construction project. Phase B design consists of completion of project security system components which will be purchased, installed, and tested by a Security Integrator specialist.

Region: Support Projects	**Project Status:** Construction	**Environmental Status:** Completed (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$15.20 M	Approved Jan-06	Sep-18
Forecast*	$14.70 M	Forecast* Jan-06	Apr-19
Actual	$14.38 M	Project Percent Complete: 99.6%	

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

Key Milestones:	**Environmental Approval**	**Bid+ Advertisement**	**Construction+ NTP**	**Construction+ Final Completion**
Current Forecast	03/28/12✓	01/07/06✓ - 08/15/13✓	11/13/06✓ - 05/08/14✓	07/13/07 ✓ - 04/09/19

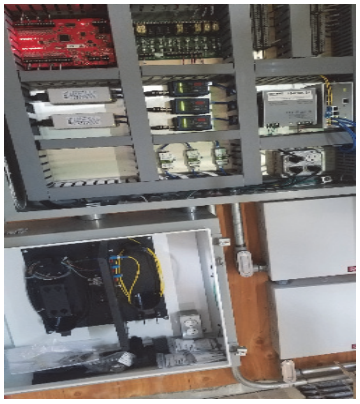
+ Date range for the first and last project among the 28 WSIP projects that require security improvements.

Progress and Status:

The project team issued and submitted a request and staff report for a resolution closing out WD-2707, to be heard and acted upon at the Commission Meeting on April 9, 2019.

Issues and Challenges:

None at this time.



Security Panel installed at NIT

7. On-Going Construction

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion*	Q3/FY18-19 Forecasted Construction Final Completion**	Approved Contract Cost +	Q3/FY18-19 Forecasted Cost++	Schedule (Cal. Days)	Cost	
Sunol Valley Region								
CUW37401 - Calaveras Dam Replacement (Contract A)	08/15/11	05/28/19	05/28/19	$ 568,867,326	$ 570,805,273	-	($1,937,947)	99.0%
CUW37401 - Alameda Creek Diversion Dam (Contract B)	04/19/16	12/16/18	09/30/19	$ 36,515,904	$ 36,530,904	(288)	($15,000)	97.0%
San Francisco Regional Region								
CUW30103 - Regional GW Storage and Recovery (Contract B)	04/06/15	03/28/19	03/06/20	$ 56,810,301	$ 58,556,338	(344)	($1,746,037)	98.2%

Program Total for On-Going Construction	Approved Contract Cost	Q3/FY18-19 Forecasted Cost*	Variance	
			Cost	Percent
	$ 662,193,531	**$ 665,892,515**	**($3,698,985)**	**(0.6%)**

Note:
* Approved Construction Final Completion Date includes approved change orders.
** The Forecasted Construction Final Completion Date includes all approved, pending, and potential change orders and trends.
\+ Approved Contract Cost includes awarded contract amount and approved change orders.
++ The Forecasted Cost includes awarded contract amount and all approved, pending, and potential change orders.

8. PROJECTS IN CLOSE-OUT

Project Title	2005 Baseline Construction Phase Completion	2018 Approved Construction Phase Completion	Current Approved Construction Phase Completion	Actual Construction Phase Completion	2005 Approved Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Forecasted Project Completion	2005 Baseline Construction Phase Budget	2018 Approved Construction Phase Budget	Current Approved Construction Phase Budget	Construction Phase Expenditures To Date
Support Projects												
CUW38802 - Bioregional Habitat Restoration		05/31/18	05/31/18	05/31/18		09/30/21	09/30/21	09/30/21		$ 52,299,498	$ 51,636,156	$ 50,634,434
TOTAL										$ 52,299,498	$ 51,636,156	$ 50,634,434

9. COMPLETED PROJECTS

Project Title	2005 Baseline Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2018 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
San Joaquin Region								
CUW36401 - Lawrence Livermore Water Quality Improvement	11/07/11	07/31/13	07/31/13	07/31/13	$ 4,235,258	$ 4,198,247	$ 4,198,247	$ 4,198,247
CUW37301 - San Joaquin Pipeline System	03/25/14	03/31/16	03/31/16	03/31/16	$ 352,732,000	$ 203,178,014	$ 203,178,015	$ 203,178,015
CUW37302 - Rehabilitation of Existing San Joaquin Pipelines	06/30/14	10/31/14	10/31/14	10/31/14	$ 80,000,000	$ 21,153,622	$ 21,153,622	$ 21,153,622
CUW38401 - Tesla Treatment Facility	07/01/11	01/30/15	01/30/15	01/30/15	$ 101,643,001	$ 113,211,607	$ 113,211,607	$ 113,211,819
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	$ 339,892,942
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	$ 53,595,635
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	$ 27,039,149
CUW35302 - Seismic Upgrade of BDPL Nos. 3 & 4	10/15/12	07/30/18	07/30/18	07/30/18	$ 66,792,849	$ 73,623,296	$ 73,623,296	$ 70,541,198
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	$ 271,823,743
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	$ 29,912,267
CUW38901 - SFPUC/EBMUD Intertie	02/07/07	03/20/14	03/20/14	03/20/14	$ 8,598,851	$ 9,167,306	$ 9,167,306	$ 9,167,306
CUW39301 - BDPL No. 4 Condition Assessment PCCP Sections	05/01/08	02/06/09	02/06/09	02/06/09	$ 2,000,000	$ 1,937,599	$ 1,937,599	$ 1,937,599
Peninsula Region								
CUW35401 - Lower Crystal Springs Dam Improvements	08/16/11	12/28/12	12/28/12	12/28/12	$ 27,752,222	$ 34,859,040	$ 34,859,040	$ 34,860,132
CUW35601 - New Crystal Springs Bypass Tunnel	10/28/10	08/17/12	08/17/12	08/17/12	$ 83,222,790	$ 81,466,732	$ 81,466,732	$ 81,466,732
CUW35701 - Adit Leak Repair - Crystal Springs/Calaveras	07/03/08	07/31/08	07/31/08	07/31/08	$ 3,748,452	$ 2,787,322	$ 2,787,322	$ 2,787,322
CUW36101 - Pulgas Balancing - Inlet/Outlet Work	05/11/06	05/11/06	05/11/06	05/11/06	$ 1,667,532	$ 1,765,938	$ 1,765,938	$ 1,765,938

Project Title	2005 Baseline Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2018 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
Peninsula Region								
CUW36102 - Pulgas Balancing - Discharge Channel Modifications	08/05/13	07/30/10	07/30/10	07/30/10	$ 8,111,422	$ 2,910,007	$ 2,910,007	$ 2,910,007
CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement	01/29/13	12/28/12	12/28/12	12/28/12	$ 36,712,846	$ 20,238,716	$ 20,238,716	$ 20,238,716
CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility	-	03/20/13	03/20/13	03/20/13	-	$ 5,390,031	$ 5,390,031	$ 5,390,031
CUW36501 - Cross Connection Controls	05/15/09	04/30/09	04/30/09	04/30/09	$ 6,111,779	$ 3,948,944	$ 3,948,944	$ 3,948,944
CUW36601 - HTWTP Short-Term Improvements (Demo Filters)	07/03/06	11/14/06	11/14/06	11/14/06	$ 4,381,375	$ 3,067,903	$ 3,067,903	$ 3,067,903
CUW36603 - HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters	09/08/10	07/28/10	07/28/10	07/28/10	$ 9,741,617	$ 18,604,937	$ 18,604,937	$ 18,604,937
CUW36701 - HTWTP Long-Term Improvements	04/08/14	12/30/16	12/30/16	12/30/16	$ 167,570,000	$ 274,081,969	$ 274,081,969	$ 273,833,162
CUW36702 - Peninsula Pipelines Seismic Upgrade	-	07/06/16	07/06/16	07/06/16	-	$ 38,825,346	$ 38,825,346	$ 38,773,174
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								
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	$ 2,516,444,621	$ 2,516,444,621	$ 2,511,357,694

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APPENDICES

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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 E50U Valve was installed in 2011 as part of the CUW36802 BDPL Reliability Upgrade – Pipeline

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

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

PENINSULA REGION

CUW35401 - Lower Crystal Springs Dam Improvements (Completed)

The project consists of:

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

CUW35601 - New Crystal Springs Bypass Tunnel (Completed)

The project consists of:

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

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

The project consists of :

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

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

CUW36101 - Pulgas Balancing - Inlet/Outlet Work (Completed)
The project consists of new inlet and outlet piping designed to direct the path of the water in such a manner as to promote better mixing. The shutdowns associated with construction of these improvements provided an opportunity to perform a condition assessment of the reservoir interior that has been used to help identify work associated with CUW36103 - Pulgas Balancing Reservoir - Structural Rehabilitation and Roof Replacement project. This project was successfully completed in May 2006.

CUW36102 - Pulgas Balancing - Discharge Channel Modifications (Completed)
The project consists of raising the channel walls, repairing concrete cracks and exposed reinforcing steel, strengthening and interconnecting the channel floor sections, and strengthening the wall near the Pulgas Tunnel as needed. The project will restore the Discharge Channel capacity for accommodating flow up to 250 mgd.

CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement (Completed)
The project consists of the seismic retrofit of the walls, installation of a new steel frame roof, and repair of concrete cracks and exposed reinforcing steel. The project scope also includes installing a new ventilation system and sampling ports, replacing utility piping, and upgrading the electrical system.

CUW36104 - Pulgas Balancing - Laguna Creek Sedimentation (Completed)
This project consists of the execution of the Laguna Creek Habitat Management and Revegetation Plan. This is a mitigation measure for the Non-WSIP Pulgas Dechlorination Facility Project, which involves the restoration of the Laguna Creek Sedimentation Basin, a 6-8 acre catchment basin that provides habitat for the San Francisco Garter Snake and the California Red Legged Frog. In coordination with regulatory agencies, a strategy was developed to accomplish this habitat restoration, and to have it measured under the Habitat Reserve Program (HRP). This project was closed in December 2007 and combined with Project CUW38802-Habitat Reserve Program (HRP).

CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility (Completed)
The project consists of various improvements to the dechloramination and pH control facilities that are necessary to address immediate compliance issues. Anticipated improvements include modifications to the flow measurement and control systems, and to the various process control and chemical feed systems.

CUW36501 - Cross Connection Controls (Completed)
The project consists of providing improvements at 304 different sites to address potential cross connections. The work varies from site to site due to specific site conditions. The major work elements typically include: Install air gaps at blow-off locations and at air valves; install backflow prevention devices; reconstruct or raise existing vaults; install new vault covers; replace existing air valves; and/or modify, relocate, or remove existing blow-off facilities.

CUW36601 - HTWTP Short-Term Improvements (Demo Filters) (Completed)
The project consists of retrofitting two filters and performing full-scale performance demonstration testing of the retrofitted filters. The project was successfully completed in November 2006.

CUW36602 - HTWTP Short-Term Improvements - Remaining Filters (Completed)
This project consists of filtration modification to eight of the ten existing filters, replacement of effluent control valves and backwash supply valves, provision for a filter to waste system, installation of new underdrains and media, and seismic retrofit of basin walls. Combined with CUW36603 - HTWTP Short-term Improvements - Coagulation & Flocculation project.

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

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

CUW36701 - HTWTP Long-Term Improvements (Completed)

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

CUW36702 - Peninsula Pipelines Seismic Upgrade (Completed)

The scope of this project includes geotechnical investigations to characterize the Serra Fault in the vicinity of the pipelines and to confirm assumptions about sub-surface conditions along the length of the pipelines (SAPL2 and SAPL3 from HTWTP to San Pedro Valve Lot, SSBPL from HTWTP to Capuchino Valve Lot, and Sunset Supply Pipeline (SSPL) from Capuchino Valve Lot to San Pedro Valve Lot). In addition, hydraulic modeling has been performed to review system/facility requirements to meet system goals. The objectives of the investigations were: 1)to determine the potential fault offset at the Serra Fault crossings and the potential response from the three pipelines to these offsets, and 2) to determine potential for pipeline rupture due to displacement from liquefaction, landslides, and other seismically-triggered hazards along the pipeline alignments. The extensive geotechnical and modeling analyses performed to date have been carefully reviewed to identify specific project recommendations.

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

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

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

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

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

CUW36901 - Capuchino Valve Lot Improvements (Completed)

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

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

CUW37101 - Crystal Springs/San Andreas Transmission Upgrade (Completed)
The project consists of improvements to facilities necessary to transport water from Upper Crystal Springs Reservoir, through the lower Crystal Springs Reservoir to San Andreas Reservoir, and ultimately, to the Harry Tracy Water Treatment Plant (HTWTP) Raw Water Pump Station. Specifically, improvements will be made to the Upper Crystal Springs Dam discharge culverts, the Lower Crystal Springs outlet structures, the Crystal Springs Pump Station (CSPS), the Crystal Springs/San Andreas Pipeline, and the San Andreas outlet structures.

CUW37801 - Crystal Springs Pipeline No. 2 Replacement (Completed)
The project consists of:
• Seismic reliability improvements, which include replacing or relocating a total of 1.7 miles of pipe at 12 locations, sliplining 3.5 miles of pipe, retrofitting pipe bridge pier supports at two creek crossings, providing a new connection at the Crystal Springs Pump Station, and providing a connecting segment with a blind flange for later connection to the New Crystal Springs Bypass Tunnel.
• Facility improvements, which include installing fences and enclosures for exposed facilities, and concealing exposed portions of pipe.
• Upgrading the cathodic protection system along the length of the pipeline.

CUW37901 - San Andreas Pipeline No. 3 Installation (Completed)
The project consists of installation of 4.4 miles of 36-inch-diameter pipe from San Pedro Valve Lot in Daly City to Merced Manor Reservoir in San Francisco. There will be three jack and bore crossings along 19th Avenue and John Daly Boulevard. Work will also include installation of five customer service connections, a new cathodic protection system along the length of the new pipeline, three interconnections to the San Andreas Pipeline No.2, various valves, and a flow meter.

CUW39101 - Baden and San Pedro Valve Lots Improvements (Completed)
This project consists of upgrades to valve vaults, valves, and piping in the Baden Valve Lot and the San Pedro Valve Lot. It also includes the installation of a pressure reducing valve and associated system valving to allow transfer of a portion of the flow from the HTWTP high-pressure zone to the low- pressure zone during emergencies.

CUWPWI0101- WSIP Closeout - Peninsula
• **LCSD Stilling Basin Modifications & Dissipation Structure Riprap** – This sub-project is provided in response to concerns that fish may be "trapped" in the Lower Crystal Springs Dam (LCSD) stilling basin during low flow summer periods, and that high flow discharges from the new LCSD dissipation structure and potential high water levels in Pool 2 may cause erosion of the bank adjacent to the dissipation structure. The dissipation structure includes 60-inch diameter pipes with a maximum flow of 600 cubic feet per second (cfs) each and two 8-inch diameter pipes with maximum flow of 7 cfs each. During flow testing of the dissipation structure, released water could be observed flowing over the dissipation structure, potentially eroding the bank adjacent to the structure. It was also observed that during summer periods, of low flow in the channel downstream of the stilling basin, fish trapped in the basin were dying due to warm water temperatures. The purposes of this sub-project are to hydraulically connect the stilling basin with Pool 2 in order to allow fish to escape the basin in summer, and to add rip-rap behind the dissipation structure to prevent erosion. Specifically, this sub-project consists of:
o A new deeper channel between the dissipation structure and the Pool 2, which would prevent fish from being trapped in the stilling basin,
o Installation of a new SCADA controls to the existing 8-in discharge pipeline and re-routing one line to the stilling basin,
o Installation of additional rip-rap around the dissipation structure,
o Installation of a new 24-inch HDPE pipeline

through an existing abandoned 60-inch pipe directed to the stilling basin
o Coordination and facilitation of access for a piezometer drilling contractor during periods of concurrent work in the stilling basin
o Deletion of landscaping around the new Crystal Springs Pump Station
o Addition of tree, shrub and grass plantings along the creek bank in accordance with the approved re-vegetation plan

• **LCSD Valve H53/ Pipeline Investigation & Fisheries Release Valve** – As stipulated by the US Army Corps of Engineers 404 permit and the associated biological opinion by NOAA's National Marine Fisheries Service (NMFS) covering the SFPUC activities at the Crystal Springs Pump Station (CSPS), the SFPUC is to take measures to protect the threatened Central California Coast (CCC) steelhead present in San Mateo Creek at CSPS site. One measure requires the release of fresh water at a rate of 3 to 17 cubic feet per second (cfs) depending on the season in recorded dry and wet years. This sub-project will utilize modification of an existing pipeline to release the required flows to the LCSD stilling basin feeding San Mateo Creek. Specifically, this sub-project consists of:
o Condition assessment of the existing 60-in diameter pipeline from Valve H-53 to the stilling basin. In addition, valve H-53 will be exposed and visually inspected to determine its condition, requiring excavation and shoring of a pit approximately 20 feet long by 20 feet wide by 20 feet deep.
o Depending on the verified condition, viable alternatives, including abandonment of the option to use H-53 pipeline, will be evaluated.
o The approved option will include a SCADA controlled 12-inch valve installed at the discharge end of the pipeline. Depending on the condition of the pipeline, the approved option may also include repairs to the pipeline lining. Options may also include slip-lining the existing line with a smaller diameter pipeline such as 12 to 24-in diameter flexible polypropylene pipe.
o Use of a temporary pipeline "line stop" and associated shoring upstream of Valve H-53 to allow for potential installation of a permanent blind flange.
o Replacement of leaking plug valves that discharge from an existing concrete vault to the stilling basin with new knife gate valves.
o Installation of new flow control valves, isolation valves and appurtenances for Pool 2.
o Connections to the existing 72-inch pipeline using hot taps.
o Construction of a new concrete walkway from the access road to the existing stairs at the flow dissipation structure adjacent to the stilling basin.

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

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

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

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

• **Harry Tracy Water Treatment Plant (HTWTP) Improvements.** The Harry Tracy Long-Term Improvements Project (CUW36701) was completed in 2014. Since 2014, the following needs were identified to address construction issues and improve operations at the plant to fully meet the LOS goals and objectives:

o Automate the 12-inch gate valve at the High Rate Clarifiers' filter to waste manhole to eliminate the need for Operations to manually operate the valve on a frequent basis

o Modify Sludge Tank No. 1 piping to eliminate cavitation in the washwater pumps

o Upgrade the filters of three (3) emergency generators from passive filters to active filters to increase the effectiveness of the exhaust filtration and to reduce the need for Operations to constantly clean the filters

o Repair leaks in the filter gallery channels where stainless steel angle plates were added to support several concrete walls

o Automate flushing of the sludge transfer pumps and piping to eliminate the need for Operations to manually flush on a frequent basis

o Replace and relocate failed variable frequency drives (VFDs) for the wash water and sludge transfer pumps to address an over-heating issue

o Install double containment for the diesel fuel supply lines for the exterior generator to protect against leaks into the environment

o Provide training and programming modifications to the Raw Water Pump Station switchgear equipment to enable remote SCADA control

o Install vibration control monitoring system on the electrical panels at the Raw Water Pump Station to replace the existing obsolete system

o Evaluate/Assess condition of failed mixers in the equalization basin

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

SAN FRANCISCO REGIONAL REGION

CUW30103 - Regional Groundwater Storage and Recovery

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

CUW35801 - Sunset Reservoir - North Basin (Completed)

This project consists of:

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

CUW37201 - University Mound Reservoir - North Basin (Completed)

This project consists of:

- Seismic rehabilitation of the reservoir walls and roof using seismic joints, shear walls, diagonal bracing, and struts and foundation improvements. A geotechnical investigation was conducted that verified that the reservoir embankments are not subject to seismically induced failure.
- General rehabilitation, which includes repairing deteriorated concrete; replacing the reservoir lining material; replacing inlet/outlet, drain, and overflow piping; replacing outlet and drain valves; and performing landscaping and other miscellaneous site improvements.

SUPPORT PROJECTS

CUW36302 - System Security Upgrades

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

CUW38801 - Programmatic EIR (Completed)

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

and (3) propose mitigation measures.

CUW38802 - Bioregional Habitat Restoration
The Bioregional Habitat Restoration project was created to provide a coordinated and consolidated approach to compensate for habitat impacts that may result from implementation of the WSIP projects in the San Joaquin, Sunol Valley, Bay Division, and Peninsula Regions of the SFPUC Regional Water System. The previously approved scope of the Bioregional Habitat Restoration project included projects to preserve, enhance, restore, or create approximately 2,350 acres of tidal marsh, vernal pools, white alder riparian forest, sycamore alluvial woodland, arroyo willow riparian habitat, oak woodland and savannah, sage scrub habitat, serpentine grasslands, coastal live oak woodland, annual grasslands, and oak riparian forest.
The project includes design, environmental permitting, construction, construction management, maintenance and performance monitoring during a 3-year plant establishment period.
The wide variety of the types of impacts from WSIP projects resulted in the need for development of 18 compensation sites on SFPUC property and for contracting with 7 property owners to secure compensation on property outside the Alameda and Peninsula watersheds. There are 7 compensation sites on SFPUC property in the Alameda watershed with an average size of 250 acres, demonstrating a significant commitment to the continued protection of species habitat. Although the average size of the 11 Peninsula compensation sites is 15 acres, the projects have been strategically placed to best benefit the San Francisco garter snake and the fountain thistle. The increase in habitat compensation addresses mitigation for the fountain thistle and for changes in the Calaveras Dam Replacement Project.
Under the March 2014 Revised WSIP, some scope for the Bioregional Habitat Restoration project associated with Lower Crystal Springs Dam and long term monitoring and maintenance of the compensation sites was reduced. The remaining wetland development at Upper San Mateo Creek and Boat Ramp and most of the oak woodland compensation for the Lower Crystal Springs Dam Improvement Project has been deferred until the operating elevation of the reservoir has increased, estimated to be around 2020. This work will be completed in the future by SFPUC Water Enterprise.

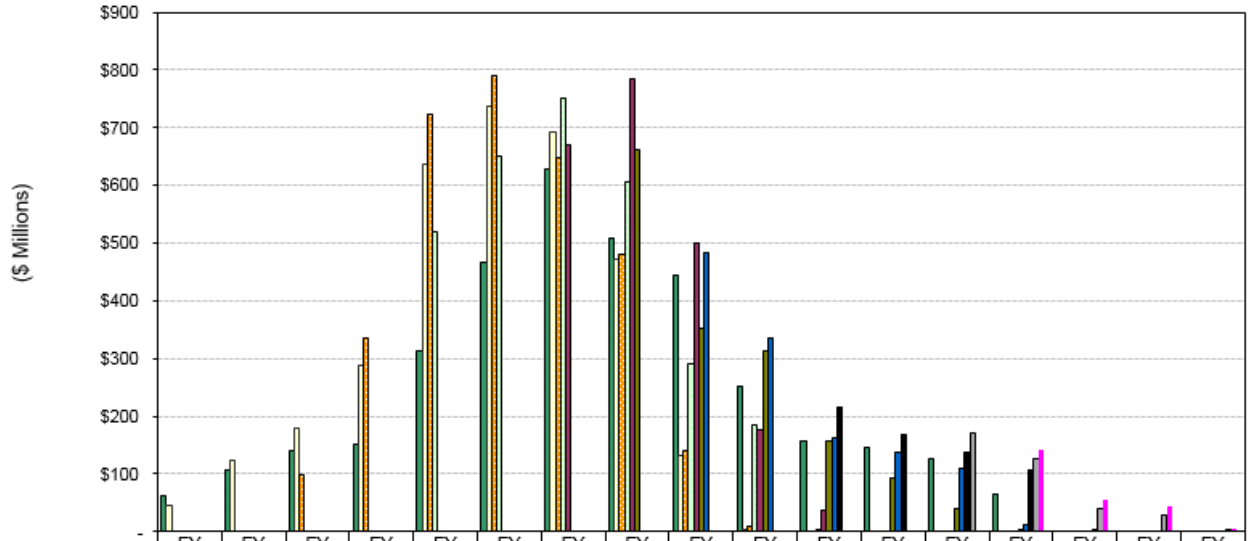
CUW38803 - Vegetation Restoration of WSIP Construction Sites (Completed)
The Vegetation Restoration of WSIP Construction Sites is a WSIP project that received Commission approval on October 9, 2012. This project is required to comply with the CEQA and resource agency permit requirements to restore and re-vegetate habitat areas temporarily impacted by construction at the various WSIP sites to preconstruction condition.

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

CUW39401 - Watershed and Environmental Improvement Program
The Watershed and Environmental Improvement Program (WEIP) includes the comprehensive identification and protection of critical watershed lands and ecosystem restoration needs within the hydrologic boundaries of the Alameda Creek, Peninsula (San Mateo and Pilarcitos Creeks) and Tuolumne River watersheds, and prioritizes the protection and/or restoration of these lands. Projects under this program will protect source water quality, native species, and their habitat as well as identifying critical watershed lands for

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

APPENDIX B. BUDGET AND EXPENDITURE HISTOGRAM*



	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Actual Total Cost	$62	$108	$140	$151	$312	$468	$628	$509	$444	$253	$158	$145	$126	$64			
2005 Approved Budget	$46	$123	$180	$287	$638	$738	$692	$473	$133	$1							
2007 Approved Budget			$99	$335	$724	$790	$649	$481	$140	$10							
2009 Approved Budget					$519	$651	$751	$606	$290	$186	$5						
2011 Approved Budget							$669	$784	$501	$176	$38	$0					
2013 Approved Budget								$662	$352	$314	$156	$94	$41	$4			
2014 Approved Budget									$484	$335	$164	$138	$109	$11			
2016 Approved Budget											$215	$168	$138	$106	$3		
2018 Approved Budget													$171	$126	$41	$30	$2
Current Forecast														$141	$55	$44	$4
Percentage Spent**	136%	88%	142%	45%	60%	72%	94%	77%	92%	76%	73%	86%	74%	51%			

All costs are shown in $ Millions.

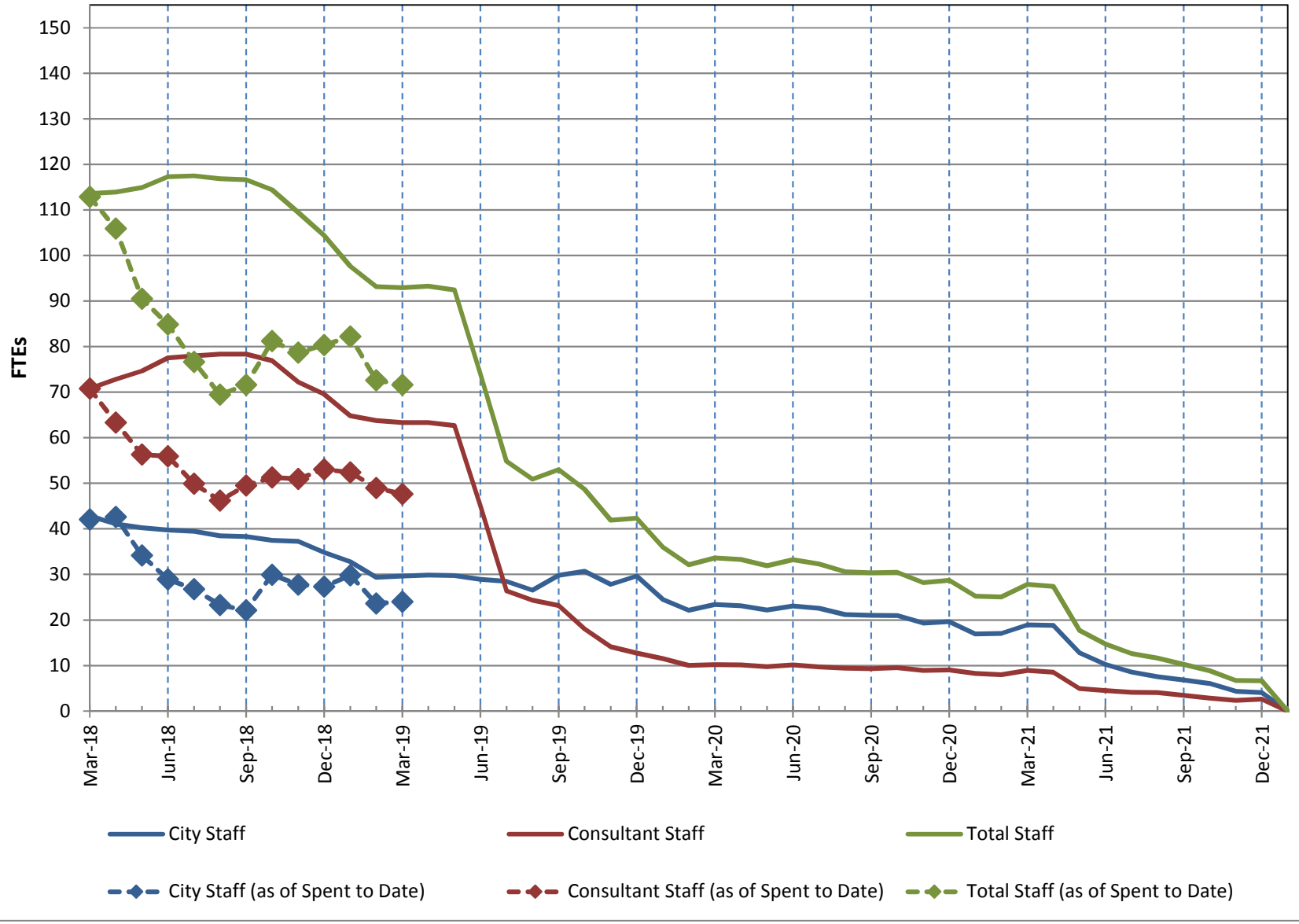
* The histogram does not reflect budget and expenditures prior to FY 2005-2006.

** 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

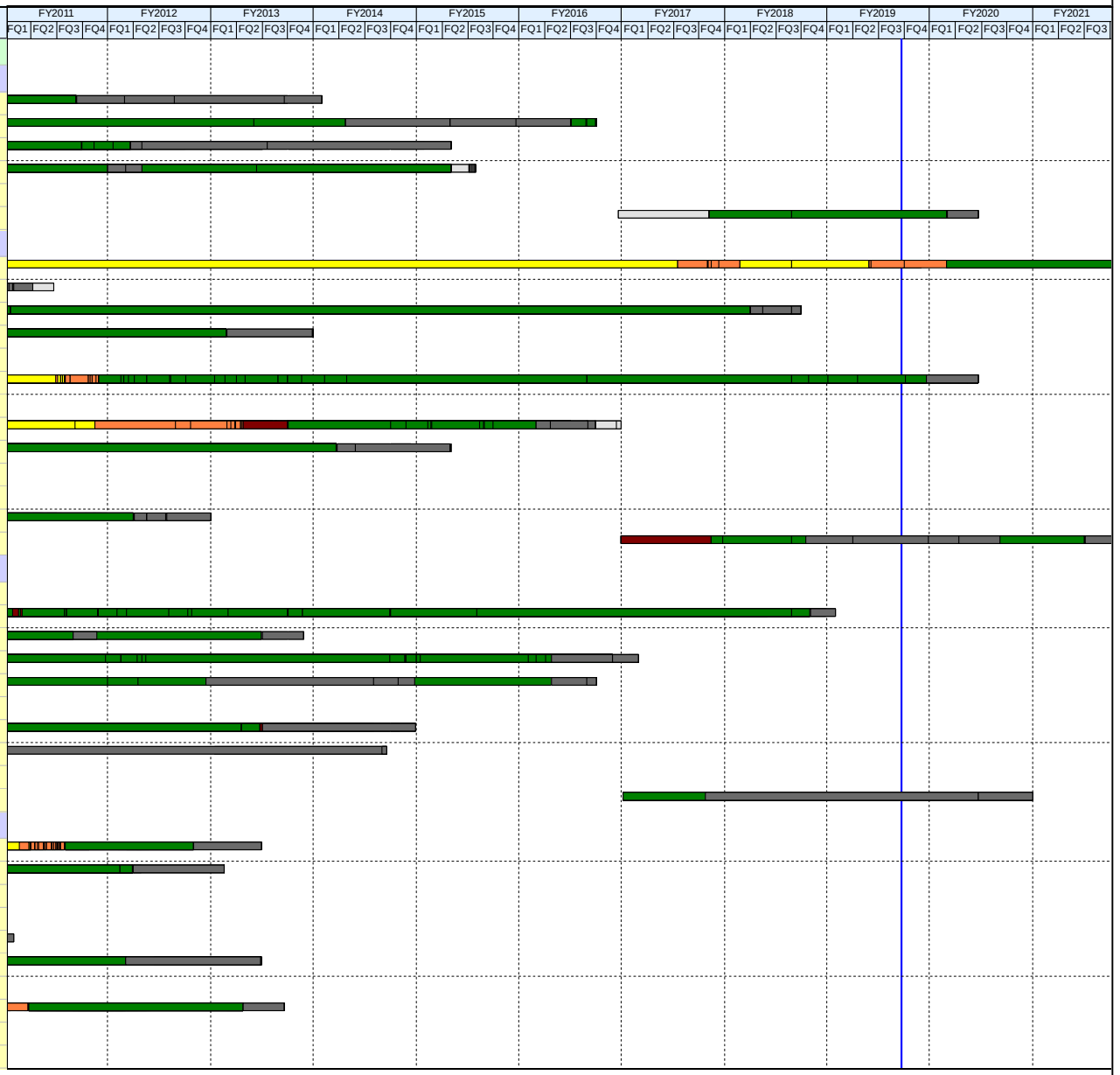
Figure B compares the spending plans associated with the various WSIP Approved Budgets to Actual Expenditures. It shows total annual expenditures from FY05-06 through Q3/FY18-19 and cost projections (Current Forecast) from FY18-19 through program completion in December 2021. Actual annual expenditures have ranged from 45% to 142% of planned expenditures.

Appendix C. WSIP Regional Program
Staffing Plan



APPENDIX D. WSIP Approved Project-Level Schedule

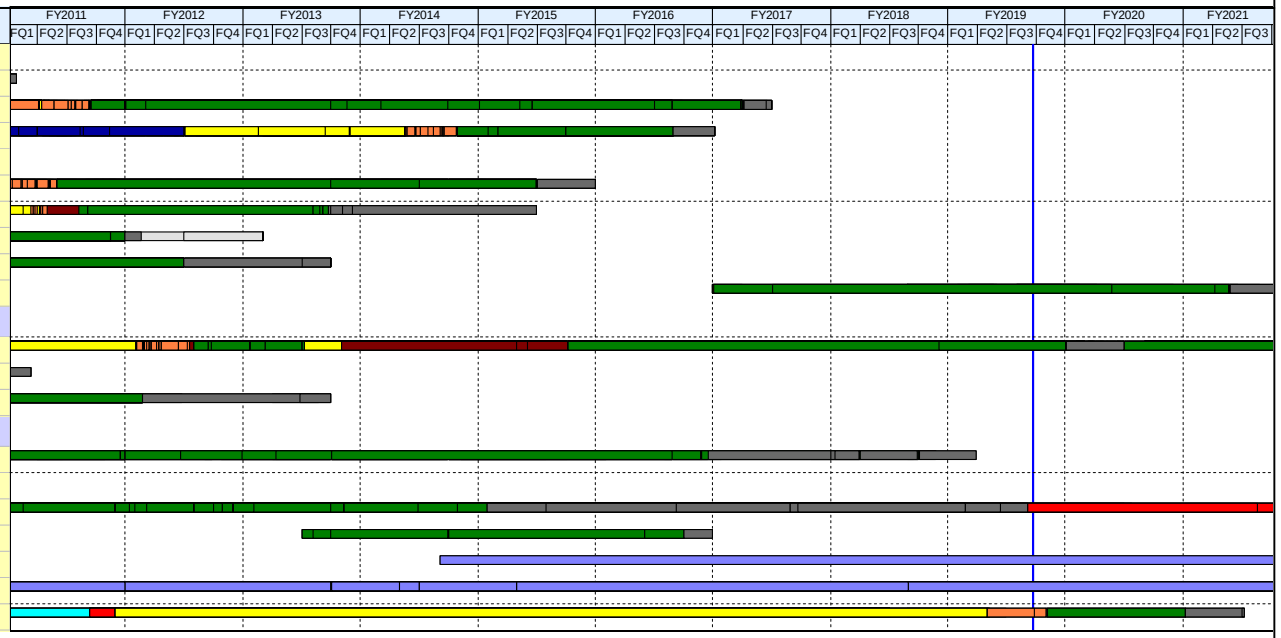
Project Name	Start	Finish
Regional Improvement Projects	31-Mar-00	30-Dec-21
San Joaquin Region	01-Jul-02	20-Dec-19
CUW36401 Lawrence Livermore Water Quality Ir	02-Feb-04	31-Jul-13
CUW37301 San Joaquin Pipeline System	19-Aug-02	31-Mar-16
CUW37302 Rehabilitation of Existing San Joaqui	03-Jul-06	31-Oct-14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



Project Management
Environmental
Right-of-Way
Construction Management
Closeout
Planning
Design
Bid & Award
Construction
Program Management

APPENDIX D. WSIP Approved Project-Level Schedule

Project Name	Start	Finish
CUW36602 HTWTP Short-Term Improvements -	12-Jan-06	22-Feb-08
CUW36603 HTWTP Short-Term Improvements -	03-Jul-06	28-Jul-10
CUW36701 HTWTP Long-Term Improvements	01-Jul-03	30-Dec-16
CUW36702 Peninsula Pipelines Seismic Upgrad	01-Jul-09	06-Jul-16
CUW36901 Capuchino Valve Lot Improvements	22-Apr-05	19-Aug-08
CUW37101 Crystal Springs/San Andreas Transn	18-Aug-03	30-Jun-15
CUW37801 Crystal Springs Pipeline No. 2 Repla	15-Jan-04	31-Dec-14
CUW37901 San Andreas Pipeline No. 3 Installati	15-Jan-04	30-Aug-12
CUW39101 Baden and San Pedro Valve Lots Im	03-Oct-05	29-Mar-13
CUWPWI0101 WSIP Closeout - Peninsula	01-Jul-16	19-May-21
San Francisco Regional Region	31-Mar-00	30-Dec-21
CUW30103 Regional Groundwater Storage and	01-Jun-03	30-Dec-21
CUW35801 Sunset Reservoir - North Basin	31-Mar-00	10-Sep-10
CUW37201 University Mound Reservoir - North E	24-Oct-05	29-Mar-13
Support Projects	13-Apr-04	30-Dec-21
CUW36302 System Security Upgrades	07-Jan-06	28-Sep-18
CUW38801 Programmatic EIR	13-Apr-04	30-Jun-09
CUW38802 Bioregional Habitat Restoration	06-Sep-06	30-Sep-21
CUW38803 Vegetation Restoration of WSIP Con	02-Jan-13	30-Jun-16
CUW38804 Long Term Mitigation Endowment	05-Mar-14	30-Sep-21
CUW39201 Program Management Project	01-Aug-05	30-Dec-21
CUW39401 Watershed and Environmental Impro	02-Jan-07	08-Jan-21



Project Management
Environmental
Right-of-Way
Construction Management
Closeout
Planning
Design
Bid & Award
Construction
Program Management

APPENDIX E. PROJECTS WITHIN BUDGET AND SCHEDULE

CUW35201 - Alameda Creek Recapture Project

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

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

Region: Sunol Valley	**Project Status:** Design	**Environmental Status:** Active (EIR)

Project Cost:		**Project Schedule:**	
Approved	$34.00 M	Approved Sep-03	Nov-21
Forecast*	$34.00 M	Forecast* Sep-03	Nov-21
Actual	$12.54 M	Project Percent Complete: 40.3%	

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

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

Progress and Status:

The project team continued to work on the updates to the Administrative Draft EIR.

Issues and Challenges:

The schedule for re-circulation is unknown at this time. The project schedule will be re-evaluated once the re-circulated Draft EIR is published.

Current Condition of Pond F2 Access Road

CUW37401 - Calaveras Dam Replacement

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

Region: Sunol Valley	**Project Status:** Construction	**Environmental Status:** Completed (EIR)

Project Cost:

Approved	$823.09 M
Forecast*	$820.29 M
Actual	$766.82 M

Project Schedule:

Approved	Sep-02	Dec-19
Forecast*	Sep-02	Dec-19

Project Percent Complete: 95.6%

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

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction+ NTP	Construction+ Final Completion
Current Forecast	01/27/11✓	(A) 01/31/11✓ (B) 01/04/16✓	(A) 08/15/11✓ (B) 04/19/16✓	(A) 06/19/19 (B) 09/30/19

\+ Project includes multiple construction contracts.
(A) Calaveras Dam Replacement (WD-2551); (B) Alameda Creek Diversion Dam (WD-2729)

Progress and Status:

WD-2551 CDRP: The contractor completed the installation of dam instrumentation, permanent power, and restoration of some disposal sites and staging areas. Initial reservoir fill started on 1/19/2019 when the reservoir reached an elevation of 695'. First "hold point" monitoring occurred between 2/19/2019 and 3/1/2019 with the reservoir level at elevation 724'. Activities that were underway this quarter and will continue in the next quarter include ADAS, SCADA, road paving and final restoration of the site. Project will reach substantial completion in the next quarter.

WD-2729 ACDD: The contractor completed control system programming and SCADA, final grading, hydroseeding, and site restoration. Training on equipment and facility operations has started and will continue in the next quarter. Substantial completion was reached on 2/15/2019. Punch list work is in progress. Diversion to Calaveras Reservoir has begun. Wet testing occurred between 3/18/2019 and 3/29/2019, but is incomplete due to lack of minimum required creek flow. Additional testing will need to be done in the Fall/Winter of 2019. The project team anticipates reaching non-wet test final completion by the end of the next quarter.

CDRP Aerial View

Issues and Challenges:

Although substantial completion has been achieved for WD-2729 ACDD, final completion has been extended to complete punchlist items, change order negotiations and contract closeout paperworks.

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:** Design	**Environmental Status:** Active (Various)

Project Cost:		**Project Schedule:**	
Approved	$5.99 M	Approved Jul-16	Jun-21
Forecast*	$5.99 M	Forecast* Jul-16	Jun-21
Actual	$1.28 M	Project Percent Complete: 57.2%	

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

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

Progress and Status:

JOC-60-14 – the project team recommends replacing the stators of the chemical feed pumps to address the pressure issue for the injection of water treatment chemicals. WSTD will perform this work as part of their maintenance effort. Therefore, this sub-project is considered complete as of the end of Q3FY2019. (2) JOC-59-20 - This subproject is now part of Turner Dam Spillway Erosion Repair project (a non-WSIP project). Contract WD-2855 was advertised on 11/9/2018; bids were received on 12/13/2018; and the contract was awarded to Sukut Construction, LLC on 3/12/2019. SSC is on 6/30/2020. (3) SVWTP Polymer Feed Facility - Stantec completed full scale testing, and completed the draft conceptual design for the system. Design RFP will be issued in May 2019 and will be included as part of the SVWTP Ozone and Phase 3 design RFP (non-WSIP project). SSC as part of the WSIP closeout is on 6/30/2021. (4) JOC-54-02 - Miscellaneous work at AWP, IVP and SABPL was completed on 6/30/18. The installation of several components for the Cathodic Protection system, has been issued as a Supplemental Task Order under the JOC 60-20. The issue relating to the vibration for the SABPL discharge valve vault riser will continue to be evaluated by SFPUC staff under JOC 60-23. (5) JOC-60-20 - CalState, the JOC Contractor, completed the relocation of the water quality instrumentation. Final plumbing and valve cathodic protection is pending. SSC is on 6/27/2019. (6) JOC-60-23 – Construction of Phase 1 work has started. Design for Phase 2 has been completed. Phase 2 is pending a needs assessment on the fluoride system for potential addition of scope. SSC is on 3/6/2020.

Issues and Challenges:

None at this time.

CUWBDP0101 - WSIP Closeout - Bay Division

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

Region: Bay Division	**Project Status:** Construction	**Environmental Status:** Not Applicable

Project Cost:		**Project Schedule:**	
Approved	$4.40 M	Approved Jul-16	Jun-20
Forecast*	$3.80 M	Forecast* Jul-16	Jun-20
Actual	$1.74 M	Project Percent Complete: 79.5%	

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

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

Progress and Status:

• Ventilation and Sump Pump System Installation – During the reporting period, CalState Constructors installed the ventilation fan at the BDPL3 vault. Other on-going work includes electrical work and installation of equipment pads at both BDPL3 & 4 vaults. Scheduled Subproject Completion is on 10/29/2019.

• Site Drainage and Pipe Coating Repairs – The design package has been revised and updated for the JOC Contractor to provide a cost proposal. Scheduled Subproject Completion is on 3/16/2020.

• BDPL 1&2 EIR Mitigation – Initial planning work for the project continued during the quarter. Scheduled Subproject Completion is on 6/30/2019. After 06/30/2019, remaining work will be performed under 10-year Water Capital Improvement Program.

• Bay Tunnel Warranty Inspection – Construction has been completed. Project team is working on the Bay Tunnel Dossier Report and on the As-Builts for Bay Division Pipeline 5. Scheduled Subproject Completion is on 2/06/2020.

• Hydro-seeding at Bay Tunnel Project – Completed on 10/20/2017.

• Newark Valve Lot Additional Gravel Placement – Completed on 10/20/2017.

Sump pump installation inside of vault 4

• Corrosion Protection for Valve E50U – Completed on 10/20/2017.

Issues and Challenges:

None at this time.

CUWPWI0101 - WSIP Closeout - Peninsula

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

Region: Peninsula	**Project Status:** Design	**Environmental Status:** Not Applicable

Project Cost:

Approved		$13.58 M
Forecast*		$13.58 M
Actual		$4.95 M

Project Schedule:

Approved	Jul-16	May-21
Forecast*	Jul-16	May-21

Project Percent Complete: 44.7%

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

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

Progress and Status:

Crystal Springs / San Andreas Items: (1). WD-2822R2 - Crystal Springs Dam Stilling Basin, Dissipation Structure, and H53 Valve – The NTP for Anvil Builders is forecasted for April 8, 2019, and Final Completion is forecasted for August 2020. Scheduled subproject completion (SSC) is 5/19/21. (2). Lower Crystal Springs Dam Bridge Replacement - joint project with San Mateo County (SMC). The bridge opening took place on January 11, 2019. The SFPUC will share costs with San Mateo County for the new security fencing for the bridge and dam. Two warranty issues for dam top ponding and hillside erosion need to be addressed. (2.1) JOC 76R-01 North Parapet Wall Extension will be set up to address a gap between the Lower Crystal Springs Dam north parapet wall and the new bridge abutment, with a forecasted start date for gap repair construction in May 2019. SSC is 4/29/20. (2.2) To close out the Memorandum of Agreement (MOA) with San Mateo County, a new PRO76A task order LCSD Security Assessment is being set up for the dam/bridge. SSC is 12/31/19.

Harry Tracy Water Treatment Plant Items: (1). JOC 59-01 Electrical & Mechanical Piping Modifications - Remaining training will be scoped to follow the emergency generator filters upgrades (JOC 59-17). SSC is 12/31/19. (2). JOC-59-17 Emergency Generators Filters Upgrades – The filter for the exterior generator was successfully tested this quarter. Installation of the two remaining filters began late this quarter following the completion of the Hetchy winter shutdown. SSC on 10/31/19. (3). Equalization Basin Mixers - Vendor has indicated that replacement mixers will be delivered next quarter. SSC is December 2019. (4). Erosion on CSSA Pipeline – Project closeout will be requested at the 4/9/19 Commission Meeting. SSC is 4/30/19.

Issues and Challenges:

Bids received for WD-2822R2 - Crystal Springs Dam Stilling Basin project are higher than the approved budget. The overall budget for the WSIP Peninsula Closeout project will be re-evaluated prior to the end of the next quarter.

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:** Design	**Environmental Status:** Active (TBD)

Project Cost:		**Project Schedule:**	
Approved	$20.00 M	Approved Jan-07	Jan-21
Forecast*	$20.00 M	Forecast* Jan-07	Jan-21
Actual	$4.99 M	Project Percent Complete: 25.5%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	06/06/19	TBD	TBD	TBD

Progress and Status:

The appraisals for three high priority properties for SFPUC acquisition in the Alameda watershed have been completed. Two properties are already under contract, and we anticipate that these acquisitions will go to the Commission for approval in early summer 2019. We are waiting to hear back from the owners of the third property whether or not they are interested in selling their property.

Issues and Challenges:

None at this time.

San Antonio Reservoir

APPENDIX F. LIST OF ACRONYMS

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

TWR	Treated Water Reservoir
UM	University Mound
UPS	Uninterruptable Power Supply
UV	Ultra Violet
VFD	Variable Frequency Drive
WEIP	Watershed Environmental Improvement Program
WSIP	Water System Improvement Program
WSTD	Water Supply and Treatment Division

San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission

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DATE: July 29, 2019

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

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

RE: WSIP Regional Projects Quarterly Report
4th Quarter / Fiscal Year 2018-2019

Enclosed please find the Water System Improvement Program (WSIP) Regional Projects Quarterly Report for the 4th Quarter (Q4) of Fiscal Year (FY) 2018-2019. The primary intent of the report is to provide the San Francisco Public Utilities Commission ("Commission"), stakeholders, and the public with a status summary of the program's regional projects for the period of April 1, 2019 through June 30, 2019.

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

STATUS AND PERFORMANCE SUMMARY

Overall, WSIP regional projects are 97.3% complete as of June 30, 2019.

As of the end of the reporting period, planning, environmental, design, and construction activities are 99.8%, 99.7%, 97.6%, 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.

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

Project Phase	No. of Projects	Percent by No. of Projects	Total Project Value ($M)[1]	Percent by Project Value
Planning	0	0%	$0	0%
Design	3	6%	$61	2%
Bid & Award	0	0%	$0	0%
Construction	5	10%	$1,015	27%
Close-Out	1	2%	$96	3%
Completed	42	81%	$2,619	69%
Not Applicable[2]	1	2%	$12	0%
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 one project that does not include construction: Long-Term Mitigation Endowment.

PROGRAM UPDATE

As of the end of the reporting period, five (5) regional projects with a total value of $1,015M are in construction and forty-three (43) projects with a total value of $2,715M are in close-out or have been completed. Forty-one (41) out of forty-three (43) Regional WSIP projects with specific Level of Service (LOS) goals have achieved their LOS goals to date. Besides the WSIP Closeout Projects, the one Regional project remaining in pre-construction is the Alameda Creek Recapture Project.

As of the end of the reporting period, the forecasted total program cost (regional and local projects) is $4,787.8M, which is the same as the current Commission Approved Budget. As of the end of the reporting period, all approved change orders (COs) on active construction contracts total $434.90M, and the current remaining construction contingency is $26.76M. Also, as of the end of the reporting period, all pending and potential COs, and trends total $15.54M. Therefore, if all pending and proposed COs and trends become approved COs, the current forecasted remaining construction contingency is $11.22M.

The current forecasted date to complete the overall WSIP is the same as the current approved date of December 2021.

UPDATE ON PROJECTS IN PRE-CONSTRUCTION

Alameda Creek Recapture

During this quarter, the project team continued to work on the updates to the Administrative Draft EIR. The anticipated date for re-circulation of the Draft EIR is October 2019. The project schedule will be re-evaluated once the re-circulated EIR is published.

WSIP Closeout Projects

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

In the San Joaquin Region, the project team has started design for the Solar Panel work and anticipates completing design in the next reporting quarter.

In the Sunol Valley Region, the contractor has mobilized to the project site and prepared submittals for the erosion repairs at Pond F3 East as part of the WD-2855. For the New Irvington Tunnel (NIT) Portal Water Quality Equipment Relocation project, CalState, the Job Order Contract (JOC) contractor, has finished all the punch list items and will complete installing the cathodic protection system in the next quarter. For the Sunol Valley Water Treatment Plant (SVWTP) Polymer Feed Facility (aka Basin 5), the consultant has completed the Conceptual Engineering Report (CER). Design work will be performed by SFPUC in-house staff, and therefore no RFP will be required. The project team has been working with Operations to restart the existing Mobile Pilot Plant as more data is needed through the pilot testing to inform design. CalState has completed SABPL Water Carrier System Modification Phase 1. Design for Phase 2 has also been completed. Due to the problems with the Hydrofluoric Acid (HA) System, which feeds HA to the SABPL, construction for Phase 2 has been on hold until issues with the HA system have been resolved.

In the Bay Division Region, CalState has completed all the scope for the Ventilation & Sump Pump Installation Project. For the installation of a V-Ditch and BDPL 3 pipe coating work, the City continues to negotiate with Power Engineering on the cost proposal.

In the Peninsula Region, (1) Lower Crystal Springs Dam (LCSD) Stilling Basin Connecting Channel - The Notice to Proceed for Anvil Builders was issued on April 8, 2019. The Contractor has mobilized at the project site. (2) LCSD Bridge Replacement - joint project with San Mateo County (SMC). There are a few warranty issues that are being addressed. (2.1) JOC 76R-01 North Parapet Wall Extension is being set up to close a gap between the LCSD north parapet wall and the new bridge abutment, with a forecasted start date for construction in September 2019. (2.2) To close out the Memorandum of Agreement with San Mateo County, a new PRO.0076A task order LCSD Security Assessment is being processed for the area around the dam/bridge. (2.3) The SFPUC is still working with the County to repair the drainage channels atop the south side of LCSD.

Several JOC task orders have been initiated for the Harry Tracy Water Treatment Plant (HTWTP) facility, with status as follows: 1) JOC 59-01 – Electrical & Mechanical Piping Modifications. The remaining training work will be completed following the Emergency Generators Filters Upgrades (JOC 59-17). 2) JOC-59-17 – Installation of the two remaining filters and testing were completed late this quarter. Substantial Completion is anticipated in July. 3) Equalization Basin Mixers –

New, upgraded mixer guiderails are being fabricated and will be onsite in August 2019. The guiderails and mixers will also be replaced in August 2019.

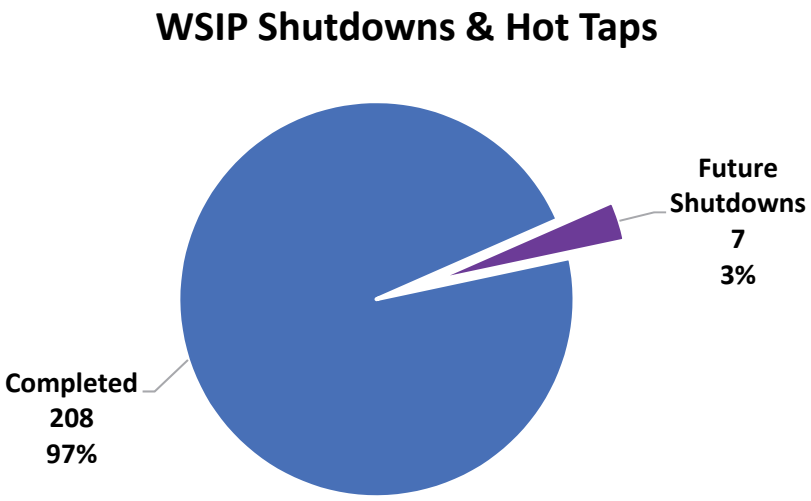
UPDATE ON PROJECTS IN CONSTRUCTION

Steady progress was reported on the ongoing WSIP construction activities. As of the end of June 2019, WSIP regional construction contracts (including active, completed, and future contracts) are 99.8% complete overall, an increase of 0.5% during the quarter.

A review of the construction work hours recorded over the last five (5) years shows continued ramping down of construction activities, with monthly work hours peaking at 206,400 in August 2012, compared to a total of 3,124 work hours recorded in June 2019. The monthly average workhours in the reporting Quarter was 13,584, a significant decrease compared to the 37,771 monthly average workhours for the same period in 2018.

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

The status of the WSIP Shutdowns and Hot Taps remained the same during the period. To date, 208 out of 215 (97%) of the planned shutdowns and hot taps have been completed. Currently, there are no active shutdowns/hot taps and seven (7) future planned shutdowns.



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

Calaveras Dam Replacement

Overall progress on the Calaveras Dam Replacement Project is reported at 99.6% as of the end of the quarter. During this quarter, the contractor reached substantial completion on April 12, 2019, and completed all the contract construction activities on site on May 28, 2019. The contractor also finished all the commissioning and training for the ADAS and SCADA systems and all restoration work. Contractor has started finishing warranty work items and continued working on closeout documentation and negotiating with the City on the remaining change orders.

Regional Groundwater Storage and Recovery

Overall progress on the Regional Groundwater Storage and Recovery Phase 1 construction contract (Contract B) is reported at 98.6% as of the end of the quarter. This value is 0.4% above the value reported during the previous quarter. Although Substantial Completion was achieved on December 31, 2017, there is still key construction work that is being implemented such as modifications of transmission line flowmeters and changes to the groundwater chemical treatment, which delay the contract and increase delivery and construction costs. In addition, the contractor is still working on other change order work related to access modification, chemical injection, and other miscellaneous items. The Regional Groundwater Storage and Recovery Phase 2 subproject is in the Planning Phase, and is 9.6% complete. The Conceptual Engineering Report will be issued next quarter.

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

The Fish Passage Facilities within the Alameda Creek Watershed construction is 98.4% complete as of the end of the quarter. The project reached substantial completion on February 15, 2019. The Contractor continued during the quarter to provide SCADA testing and training, finish the punch list work, and prepare closeout documents.

MAJOR PROGRAM TRENDS AND RISKS

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

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

The trends for the WSIP Active Regional construction contracts totaled $11.7M as of the end of the reporting period, a decrease of $1.3 M during the period. Approximately 38% of the total trends at the end of June 2019 belong to the Fish Passage Facilities Project, 32% to the Calaveras Dam Replacement Project, and 30% to the Regional Groundwater Storage & Recovery Project. The following table lists the trend totals for active projects:

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

Project	Trends ($ Million)	Percent Completion[1]
Fish Passage Facilities at ACDD	$4.5	98.4%
Calaveras Dam Replacement	$3.7	99.6%
Regional Groundwater Storage & Recovery (Contract B)	$3.5	98.6%

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 June 30, 2019, the Regional Groundwater Storage and Recovery project has six (6) of the top ten program risks, and the Fish Passage Facilities within the Alameda Creek Watershed project has the remaining four (4). All the PUC risks for Calaveras Dam Replacement project have expired. The current highest risk in the program is from the Fish Passage Facilities within the Alameda Creek Watershed project and concerns the potential claimed costs associated with an accelerated schedule to mitigate for previous schedule impacts. The following table lists the projects with the largest risks.

Top 10 Risks of WSIP Regional Projects (as of June 30, 2019)

Project	No. of Top 10 Risks	Percent Completion[1]
Risk Ranking Based on Likelihood of Occurrence and Potential Cost Impact		
Regional Groundwater Storage & Recovery (Contract B)	7	98.6%
Fish Passage Facilities at ACDD	3	98.4%

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

Based on the risks summarized above, the two (2) active construction contracts that carry the greatest potential to impact the Program's overall cost and schedule are the Fish Passage Facilities within the Alameda Creek Watershed and the Regional Groundwater Storage & Recovery projects.

Fish Passage Facilities within the Alameda Creek Watershed

This project is currently reporting on sixty-eight (68) active trends that total $4.5M, a decrease of $1.1M from the value reported last quarter. The current largest trend concerns the potential for claims related to alleged inefficiencies during construction. The second and third largest trends relate to the volume of subterranean water flow beneath the creek for the second and first construction season respectively. The fourth largest trend concerns the costs for landslide stabilization followed by the cost for shoring, both upstream and downstream, required due to over-excavation. The fifth largest trend concerns installation challenges encountered by the hydro-auger sub-contractor due to non-cohesive soil, boulders, and high groundwater level.

Other trends address additional costs to recover schedule and for additional shoring depth, an alternative fall protection system, the increase in the allowance for the storm-water pollution prevention plan (SWPPP), headwall length increases, the cleanout of training wall sediment, the cost of a second season winterization, and several differing site conditions.

The 80% risk confidence level as of the end of June 2019 is estimated at $2.8M which is a decreased of $0.2M from the value reported last quarter. Three (3) of the current top ten (10) risks for the active WSIP construction contracts, based on likelihood of occurrence and potential cost impact, belong to this contract. The current highest risk addresses the costs associated with the accelerated schedule and extended overhead. Other high risks include the risk of SCADA and other instruments not working properly and the risk of continuing insufficient water flow in the Alameda Creek to test the system.

Regional Groundwater Storage and Recovery

This project is currently reporting on twenty-one (21) active trends that total $3.5M, a decrease of $0.2M during the quarter. The largest trend at the end of the period is for the repairs and/or replacement of flowmeters (new trend). The second highest trend contemplates the addition of seven hot taps to calibrate the flowmeters. The third largest trend addresses the budget for access modification. Other high value trends include costs for startup testing; for changing use of aqueous NH3 to use of liquid ammonium sulfate; for installation of PG&E power for the Lake Merced Golf Club, Treasure Island, and Funeral Home sampling stations; for costs of new injection quill, water quality supplies, and equipment; costs for commissioning; and costs for additional disinfection and support.

Other relevant trends include miscellaneous plumbing and chemical changes, rental of generators for temporary power during commissioning, potential revisions to the Programmable Logic Control (PLC) programming, addressing naturally occurring ammonia at the Funeral Home and Linear Park sites, and eyewash station installation in pump room sinks.

The 80% risk confidence level as of the end of the reporting period is estimated at $1.9M, which is the same value reported last quarter. Seven (7) of the current top ten (10) risks for the active

WSIP construction contracts, based on likelihood of occurrence and potential cost impact, belong to this contract. The current largest risk addresses the change of chemical use (during implementation) from aqueous ammonia to ammonium sulfate. The second highest risk considers challenges in meeting water quality requirements. Additional risks include design errors and omissions, challenges in meeting regulatory and operational requirements (Testing), and delays in finalizing permanent easements (including with utilities), turnover of key personnel, and delay in responding to Submittals/RFIs in a timely manner and in issuing change orders in a timely manner.

Calaveras Dam Replacement

As of the end of June 2019, there are twenty (20) active trends on this contract, totaling $3.7M, remaining the same as last quarter. The largest trend is to account for the potential overrun in the Asphalt Concrete (AC) Pavement bid item for the re-paving of Calaveras Road.

The second largest trend is regarding the potential for adjustments to the home office overhead rate. The third largest trend is related to the potential quantity overrun of zone embankment materials. Other high cost trends include permanent instrumentation for long-term operations and maintenance, construction of a bridge approach, overrun for foundation cleaning, and differing site conditions regarding the existing native soil condition (nutrients) for purpose of completing site restoration. Other trends include external systems communication and coordination.

This contract has no remaining risks as they have all been eliminated through not transpiring.

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 all approved, pending, and potential change orders, as well as all current trends, have been provided for.

Contract	Final Construction Completion	Current Approved Contingency	Current Approved, Pending, and Potential Change Orders Plus Trends	Remaining Contingency	% Completion
CUW37401 CDRP Construction Contract (WD-2551)	7/12/19	$320.6M	$314.4M	$6.2M	99.6%

CUW37401 Alameda Creek Diversion Dam Fish Passage Facility (WD-2729)	9/30/19	$12.1M	$12.1M	$0M	98.4%
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	3/6/20	$19.6M	$19.6M	$0M	98.6%

As can be seen in the table, the Calaveras Dam Replacement construction contract has remaining construction contingency of $6.2 million.

The Fish Passage Facilities at Alameda Creek Diversion Dam is currently estimated to have used all approved contingency for change orders in process and forecasted trends as of the end of the reporting period. Therefore, it is likely that this construction contract may require additional contingency to cover the potential cost of remaining risks, valued at $2.8 million at the 80% risk confidence level. Since this project is a sub-project of the Calaveras Dam Replacement, the remaining unused contingency in the larger contract may be made available to cover any additional contingency needs for the smaller contract.

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

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

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

The current staff transition plan for the remainder of WSIP is included on page 42 of the attached WSIP Quarterly Report. As can be seen in the chart on that page, the overall staffing levels in June 2018 were approximately 85 full-time equivalents (FTEs), which has decreased to approximately 42 FTEs in June 2019. The decrease is attributable to both City and consultant staff ramping down activities as projects complete construction and close out. Actual staffing

levels will continue to be tracked monthly against this plan and appropriate staff adjustments made accordingly to ensure staffing levels stay within the remaining available budget.

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

CLOSING

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

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

Enclosure

HETCH HETCHY
WATER SYSTEM IMPROVEMENT PROGRAM

QUARTERLY REPORT

Regional Projects
Q4 FY 2018 | 2019
April 2019 — June 2019

Rebuilding Today for a Better Tomorrow

Published: 07/29/2019

Quarterly Report - Q4 FY2018/2019

Water System Improvement Program - Regional Projects

TABLE OF CONTENTS

1. PROGRAM DESCRIPTION

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

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

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

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

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

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

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

* Final Program Completion Date

2. PROGRAM STATUS

This fourth (4th) Quarterly Report for Fiscal Year (FY) 2018-2019 presents the progress made on the WSIP regional projects between April 1, 2019 and June 30, 2019. The program's schedule and budget were last approved by the San Francisco Public Utilities Commission (SFPUC or Commission) on April 10, 2018. The progress made on the local projects of the WSIP is presented in a separate quarterly report.

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

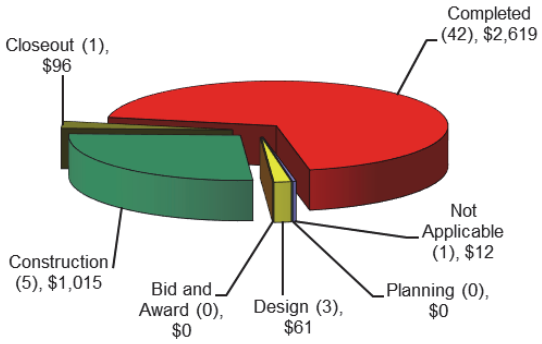


Figure 2.1 Total Current Approved Budget for Projects Active in Each Phase ($Million)

Figure 2.2 shows the number of regional projects in the following stages of the program as of June 30, 2019: Pre-construction, Construction, and Post-construction.

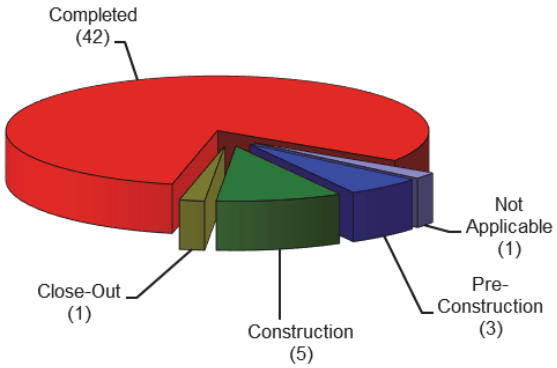


Figure 2.2 Number of Projects in Pre-construction, Construction, and Post-construction

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

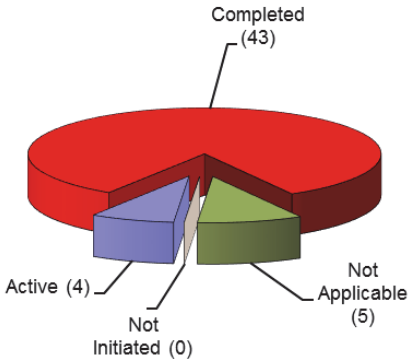


Figure 2.3 Program Environmental and Permitting Status

2.1 Progress Towards Meeting Level of Service (LOS) Goals

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

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

Table 2.1 Progress Towards Meeting LOS Goals [1]

Project No.	Project Name / Construction Contract	Actual / Approved Substantial Completion Date	LOS Goals (P =Primary, S =Secondary)				Actual Operational Service Start	Construction Progress Toward LOS Goals
			Water Quality	Seismic Reliability	Delivery Reliability	Water Supply		
San Joaquin Projects								
CUW36401	Lawrence Livermore Water Quality Improvement *(Completed)*	08/31/10	P				08/31/10	100%
CUW37301	San Joaquin Pipeline System *(Completed)* (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; *Completed*)	05/13/11			P		05/13/11	100%
CUW38401	Tesla Treatment Facility *(Completed)* (A) DB116 Tesla Treatment Facility Design-Build Contract (B) HH953 Tesla Portal Protection	(A) 06/24/11 (B) 08/05/13	P	S	S		(A) 06/24/11 (B) 08/05/13	100%
Sunol Valley Projects								
CUW35201	Alameda Creek Recapture	11/30/20				P		0%
CUW35501	Standby Power Facilities - Various Locations *(Completed)* (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 *(Completed)*	09/19/15		S	P		02/27/15	100%
CUW35902	Alameda Siphon #4 *(Completed)*	12/16/11		P	S		12/16/11	100%
CUW37001	Pipeline Repair & Readiness Improvements *(Completed)* (A) WD-2530 Phase A 8 Pipe Storage Sites (B) WD-2530 Phase B Pipe Rolling Machine Facility @ Sunol Yard	(A) 02/09/07 (B) 07/14/08		P	S		(A) 02/09/07 (B) 07/14/08	100%
CUW37401	Calaveras Dam Replacement (A) WD-2551 Calaveras Dam Replacement (B) WD-2729 Alameda Creek Diversion Dam	(A) 04/12/19 (B) 02/15/19		S	P	S	(A) 04/12/19 (B) 02/15/19	(A) 100% (B) 98%
CUW37402	Calaveras Reservoir Upgrades *(Completed)*	10/06/05	P				10/06/05	100%
CUW37403	San Antonio Backup Pipeline *(Completed)*	12/31/14			P		12/31/14	100%
CUW38101	SVWTP Expansion & Treated Water Reservoir *(Completed)*	05/17/13	P		P		05/17/13	100%
CUW38601	San Antonio Pump Station Upgrade *(Completed)*	06/30/11			P		06/30/11	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		
Bay Division Projects								
CUW35301	BDPL Nos. 3 & 4 Crossover/Isolation Valves *(Completed)*	11/15/07		P			11/15/07	100%
CUW35302	Seismic Upgrade of BDPL Nos. 3 & 4 *(Completed)*	10/26/15		P			06/20/14	100%
CUW36301	SCADA System - Phase II *(Completed)*	11/29/10			P		11/29/10	100%
CUW36801	BDPL Reliability Upgrade – Tunnel *(Completed)*	05/20/15		P	S		10/15/14	100%
CUW36802	BDPL Reliability Upgrade – Pipeline *(Completed)* (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 *(Completed)*	05/28/10			P		05/28/10	100%
CUW38001	BDPL Nos. 3 & 4 - Crossovers *(Completed)*	08/15/12		P	S		08/15/12	100%
CUW38901	SFPUC/EBMUD Intertie *(Completed)*	09/07/07			P		09/07/07	100%
CUW39301	BDPL No. 4 Condition Assessment PCCP Sections *(Completed)*	02/06/09		P	S		02/06/09	100%
Peninsula Projects								
CUW35401	Lower Crystal Springs Dam Improvements *(Completed)*	11/20/11			P	S	11/20/11	100%
CUW35601	New Crystal Springs Bypass Tunnel *(Completed)*	07/14/11		P	S		07/14/11	100%
CUW35701	Adit Leak Repair - Crystal Springs/Calaveras *(Completed)*	11/30/07			P		11/30/07	100%
CUW36101	Pulgas Balancing - Inlet/Outlet Work *(Completed)*	02/02/06	P		S		02/02/06	100%
CUW36102	Pulgas Balancing - Discharge Channel Modifications *(Completed)*	10/23/09			P		10/23/09	100%
CUW36103	Pulgas Balancing - Structural Rehabilitation & Roof Replacement *(Completed)*	07/26/11	P		S		07/26/11	100%
CUW36105	Pulgas Balancing - Modifications of the Existing Dechloramination Facility *(Completed)*	08/27/12	P		S		08/27/12	100%
CUW36501	Cross Connection Controls *(Completed)*	11/26/08	P				11/26/08	100%
CUW36601	HTWTP Short-Term Improvements - Demo Filters *(Completed)*	01/11/06		P	S		01/11/06	100%
CUW36603	HTWTP Short-Term Improvements - Coagulation & Flocculation/Remaining Filters *(Completed)*	12/21/09		P	S		12/21/09	100%
CUW36701	HTWTP Long -Term Improvements *(Completed)*	09/08/15		P	S		09/08/15	100%
CUW36702	Peninsula Pipelines Seismic Upgrade *(Completed)*	10/30/15		P			10/30/15	100%
CUW36901	Capuchino Valve Lot Improvements *(Completed)*	02/14/08			P		02/14/08	100%
CUW37101	Crystal Springs/San Andreas Transmission Upgrade *(Completed)*	06/30/14		P	S		09/02/14	100%
CUW37801	Crystal Springs Pipeline No. 2 Replacement *(Completed)*	01/31/13		P	S		01/31/13	100%
CUW37901	San Andreas Pipeline No. 3 Installation *(Completed)*	03/29/11		P	S		03/29/11	100%
CUW39101	Baden & San Pedro Valve Lots Improvements *(Completed)*	03/31/11		P	S		03/31/11	100%

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

Notes:

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

3. PROGRAM COST SUMMARY

Table 3.1 provides an overall program-level cost summary of the WSIP Regional Program. It shows the Expenditures to Date; the 2005 Baseline, 2018 Approved, Current Approved and Q4/FY18-19 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 the Regional Program (including construction contingency) are the same at $3,803.1 million. The Current Approved WSIP Budget and Forecasted Cost at completion for the Local Improvement Projects are the same at $331.4 million. Refer to Appendix B for a graphical representation of how the WSIP budget and actual expenditures have changed over time.

Table 3.1 Program Cost Summary

Cost Categories	Expenditures To Date ($ Million) (A)	2005 Baseline Budget ($ Million) (B)	2018 Approved Budget ($ Million) (C)	Current Approved Budget [7] ($ Million) (D)	Q4/FY18-19 Forecasted Costs ($ Million) (E)	Cost Variance ($ Million) (F = D - E)
Regional Improvement Projects	**$2,979**	**$3,181**	**$3,081.4**	**$3,081.4**	**$3,096.2**	**($14.9)**
Construction Costs [1]	$2,012	$2,322	**$2,065.9**	$2,065.9	$2,064.4	$1.5
Program Delivery Costs [2]	$941	$758	**$984.8**	$984.8	$984.5	$0.3
Other Costs [3]	$26	$101	**$30.7**	$30.7	$47.3	($16.7)
Support Projects [4]	**$220**	**$33**	**$244.9**	**$244.9**	**$245.2**	**($0.3)**
Construction Contingency for Regional & Support Projects [5]	**$432**	**$193**	**$476.8**	**$476.8**	**$461.6**	**$15.2**
REGIONAL PROGRAM WITH CONTINGENCY	**$3,630**	**$3,407**	**$3,803.1**	**$3,803.1**	**$3,803.1**	**-**
Local Improvement Projects	$331	**$383**	**$331.4**	**$331.4**	**$331.4**	**-**
Local Water Supply Projects [6][8]	**$144**	**-**	**$281.3**	**$281.3**	**$281.3**	**-**
Finance	**$372**	**$552**	**$372.0**	**$372.0**	**$372.0**	**-**
PROGRAM TOTAL	**$4,478**	**$4,343**	**$4,787.8**	**$4,787.8**	**$4,787.8**	**-**

Notes:

1. **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.
2. **Delivery Costs** include project management, planning, environmental (CEQA, permitting, construction compliance), design, construction management, and engineering support during construction.
3. **Other Costs** include environmental mitigation, art enrichment, security improvements, and real estate expenses.
4. **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.
5. Expenditures to Date for Construction Contingency for Regional and Support projects correspond to the Total Approved Change Orders on those projects. For projects with ongoing or completed construction, the 2018 Approved Budget for construction contingency includes all change orders and trends as identified at the time of the March 2018 Revised WSIP, as well as additional contingency funding allocated to cover the 80% confidence level risks identified at the time of the March 2018 Revised WSIP. For projects in pre-construction, the 2018 Approved Budget for construction contingency includes 10% of the estimated construction base bid.
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 2018 Revised WSIP, plus any additional budget changes approved by the Commission as part of additional contingencies on construction contracts.
8. The WSIP Local Water Supply projects underwent a September 2013 re-baseline. Only the original WSIP portion of the re-baselined costs is reported here. The remaining budget is funded under the Water Enterprise CIP and is managed outside the purview of the WSIP.
9. The original $522M estimate of financing cost was based on a memorandum to the Commission dated November 23, 2005.
10. The financing cost budget of $372M that was included in the March 2018 Revised WSIP includes all financing costs appropriated to date.
11. The actual financing cost is assumed to match the budgeted financing cost. Final reconciliation of all associated financing costs will occur upon WSIP completion.

Table 3.2 provides the current remaining construction contingency. For each region, it shows the 2018 Approved Construction Contingency; the Total Approved Change Orders prior to the reporting quarter; Change Orders Approved during the reporting quarter; Total Approved Change Orders through the reporting quarter; Project Savings Moved to Contingency/ Funds Moved out of Contingency during the Reporting Quarter; the Q4/FY18-19 Forecasted Construction Contingency; and the Remaining Contingency as of the end of the reporting quarter. As of June 30, 2019, the Forecasted Construction Contingency is $461.7 million, and the Current Remaining Contingency is $26.8 million.

The Change Orders Approved in Q4/FY18-19 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/FY18-19 Forecasted Construction Contingency [1] ($ Million) (A)	Total Approved Change Orders as of Q3/FY18-19[2,3] ($ Million) (B)	Change Orders Approved in Q4/FY18-19[2] ($ Million) (C)	Total Approved Change Orders as of Q4/FY18-19 ($ Million) (D = B+C)	Project Savings or Director's Reserves (+) Moved to Contingency/ Funds (--) Moved out of Contingency during Q4/FY18-19 [4] ($ Million) (E)	Q4/FY18-19 Forecasted Construction Contingency ($ Million) (F = A + E)	Q4/FY18-19 Remaining Contingency ($ Million) (G = F - D)
San Joaquin Region	$0.22	-	-	-	-	$0.22	$0.22
Sunol Valley Region	$374.17	$356.50	($0.37)	$356.13	($0.11)	$374.06	$17.93
Bay Division Region	$8.65	$8.06	-	$8.06	($0.40)	$8.25	$0.19
Peninsula Region	$57.34	$56.79	-	$56.79	$0.04	$57.38	$0.59
San Francisco Regional Region	$20.25	$13.83	$0.21	$14.04	$0.29	$20.54	$6.50
Support Projects	$1.21	$0.14	($0.26)	($0.12)	-	$1.21	$1.33
Regional Total	**$461.84**	**$435.32**	**($0.42)**	**$434.90**	**($0.19)**	**$461.65**	**$26.76**

Notes:

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

Table 3.3. Details on Transactions Out of and Into Contingency

Project No. - Contract	Transactions Out of Contingency			Transactions Into Contingency		
	Approved Change Orders ($ Million) (A)	Budget Underrun at Project Completion / Director's Reserve Moved Out of Project ($ Million) (B)	Sub Total ($ Million) (C = A + B)	Savings Due to Low Bid ($ Million) (D)	Budget Overrun at Project Completion / Director's Reserve Moved to Project ($ Million) (E)	Sub Total ($ Million) (F = D + E)
Sunol Valley Region	**($0.37)**	**$0.11**	**($0.25)**	**-**	**-**	**-**
CUW37401 Calaveras Dam Replacement WD-2551	$0.15	-	$0.15	-	-	-
CUW37401 Calaveras Dam Other Construction WD-2729	($0.51)	-	($0.51)	-	-	-
CUWSVI0101 WSIP Closeout - Sunol Valley	-	$0.11	$0.11	-	-	-
Bay Division Region	**-**	**$0.40**	**$0.40**	**-**	**-**	**-**
CUWBDP0101 - WSIP Closeout - Bay Division		$0.40	$0.40		-	-
Peninsula Region	**-**	**-**	**-**	**-**	**$0.04**	**$0.04**
CUWPWI0101 WSIP Closeout - Peninsula	-	-	-	-	$0.04	$0.04
San Francisco Regional	**$0.21**	**-**	**$0.21**	**-**	**$0.29**	**$0.29**
CUW30103 Regional Groundwater Storage and Recovery (WD-2668)	$0.21	-	$0.21	-	$0.29	$0.29
Support Projects	**($0.26)**	**-**	**($0.26)**	**-**	**-**	**-**
CUW36302 System Security Upgrade WD-2707	($0.26)	-	($0.26)	-	-	-
Regional Total	**($0.42)**	**$0.52**	**$0.09**	**-**	**$0.33**	**$0.33**

Table 3.4 Forecasted Remaining Construction Contingency

Region	Q4/FY18-19 Remaining Construction Contingency [1] ($ Million) (A)	Pending Change Orders as of Q4/FY18-19 [2] ($ Million) (B)	Potential Change Orders as of Q4/FY18-19 [3] ($ Million) (C)	Trends as of Q4/FY18-19 [4] ($ Million) D	Q4/FY18-19 Forecasted Remaining Construction Contingency ($ Million) (E =A-B-C-D)
San Joaquin Region	$0.22	-	-	-	$0.22
Sunol Valley Region	$17.93	$1.10	$0.62	$8.25	$7.95
Bay Division Region	$0.19	-	-	-	$0.19
Peninsula Region	$0.59	-	-	-	$0.59
San Francisco Regional Region	$6.50	$0.79	$1.29	$3.49	$0.94
Support Projects	$1.33	-	-	-	$1.33
Regional Total	**$26.76**	**$1.89**	**$1.91**	**$11.74**	**$11.22**

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

Table 3.4 provides the forecasted remaining construction contingency. For each region as of Q4/FY18-19, it shows the Remaining Construction Contingency, Pending Change Orders, Potential Change Orders, Trends, and Forecasted Remaining Construction Contingency. As of June 30, 2019, the Total Forecasted Remaining Construction Contingency is $11.2 million. This amount does not include funds that are currently held in Director's Reserve.

The Program Management project includes programmatic activities that span multiple regions and benefit several WSIP projects (Table 3.5). The project provides funding for the following functions and resources: SFPUC Staff assigned to the management of the overall program; consultants supporting SFPUC staff at the program level (program, project and pre-construction management consultant, program construction management consultant, program control consultant); labor relations, including management of the project labor agreement; communication and public outreach; programmatic legal support; real estate acquisitions; program controls, including the tracking and reporting of all WSIP efforts; and program-level construction management activities associated with quality assurance, risk management, the Supplier Quality Surveillance (SQS) Program, operations assistance, safety, and training.

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

Table 3.5 Status of Program Management Project Cost Breakdown

Category	Expenditures To Date ($ Million) (A)	2018 Approved Budget ($ Million) (B)	Current Approved Budget ($ Million) (C)	Q4/FY18-19 Forecasted Cost* ($ Million) (D)	Cost Variance ($ Million) (E = C-D)
Management Support	$37.1	$42.8	$42.8	$42.8	-
Project Labor Agreement	$3.7	$3.8	$3.8	$3.8	-
Planning and Project Development	$18.0	$18.3	$18.3	$18.3	-
Program Controls	$19.8	$19.8	$19.8	$19.8	-
Program Construction Management	$27.7	$28.0	$28.0	$27.9	-
Program Management Total	**$106.3**	**$112.7**	**$112.7**	**$112.7**	**-**

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

4. PROGRAM SCHEDULE SUMMARY

Figure 4.1 and Table 4.1 compare the 2005 Baseline, 2018 Approved, Current Approved, and Q4/FY18-19 Forecasted Schedules for the WSIP Regional Program. Refer to the "Cost and Schedule Status" notes in Section 5 for the criteria associated with the three color-coded Forecast Status levels in Figure 4.1 – Meet Requirements, Need Attention, and Exceed Limits. The Current Approved and Forecasted Schedule completion for the overall WSIP (including Regional and Local Programs) are in December 2021. Refer to Appendix C for a graphical presentation of the WSIP Approved Project-Level Schedule.

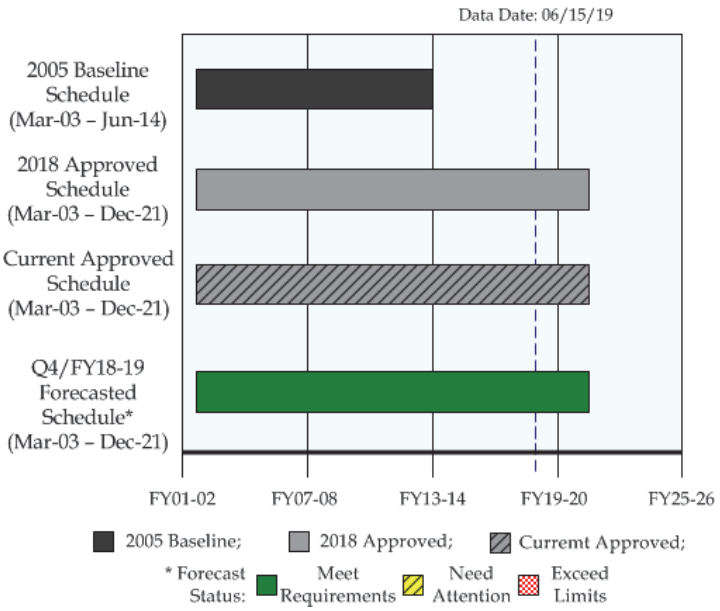


Figure 4.1 Program Schedule Summary

Table 4.1 2018 Approved vs. Q4/FY18-19 Forecasted Schedule Dates

Category	2005 Baseline Start	2018 Approved Start	Current* Approved Start	Actual Start	2005 Baseline Finish	2018 Approved Finish	Current* Approved Finish	Q4/FY18-19 Forecasted Finish	Schedule Variance (Months)
Regional Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/30/14	12/30/21	12/30/21	12/30/21	-
Local** Program	03/01/03	03/31/03	03/31/03	03/01/03✓	06/28/13	7/31/18	7/31/18	09/30/19	14.0 (Late)
Overall WSIP	03/01/03	03/01/03	03/01/03	03/01/03✓	06/30/14	12/30/21	12/30/21	12/30/21	-

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

** Excluding Local Water Supply Projects

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5. PROJECT PERFORMANCE SUMMARY*

All costs are shown in $1,000s as of 06/15/19

Project Name	Active Phase (**)	2005 Baseline Budget (a)	2018 Approved Budget (b)	Current Approved Budget (c)	Q4/FY18-19 Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f= c - d)	Cost Status (+)	2005 Baseline Completion (g)	2018 Approved Completion (h)	Current Approved Completion (i)	Q4/FY18-19 Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
San Joaquin Region															
CUWSJI0101 - WSIP Closeout - San Joaquin	CN		$ 4,376	$ 4,376	$ 3,876	$ 599	$ 500	★		12/20/19	12/20/19	12/18/20	12.0 mo. Late	●	See Section 6
Sunol Valley Region															
CUW35201 - Alameda Creek Recapture Project	DS	$ 18,809	$ 34,000	$ 34,000	$ 34,000	$ 12,560	-	★	05/25/12	11/03/21	11/03/21	11/03/21	-	★	See Appendix E
CUW37401 - Calaveras Dam Replacement	CN	$ 256,511	$ 823,092	$ 823,092	$ 819,782	$ 770,977	$ 3,310	★	05/25/12	12/20/19	12/20/19	12/20/19	-	★	See Appendix E
CUWSVI0101 - WSIP Closeout - Sunol Valley	DS		$ 5,990	$ 5,990	$ 5,990	$ 1,750	-	★		06/30/21	06/30/21	06/30/21	-	★	See Appendix E
Bay Division Region															
CUWBDP0101 - WSIP Closeout - Bay Division	CN		$ 4,399	$ 4,399	$ 3,801	$ 2,087	$ 598	★		06/30/20	06/30/20	06/30/20	-	★	See Appendix E
Peninsula Region															
CUWPWI0101 - WSIP Closeout - Peninsula	CN		$ 13,580	$ 13,580	$ 12,786	$ 5,682	$ 794	★		05/19/21	05/19/21	08/05/21	2.6 mo. Late	⚠	See Section 6
San Francisco Regional Region															
CUW30103 - Regional Groundwater Storage and Recovery	CN	$ 39,233	$ 138,793	$ 138,793	$ 146,073	$ 103,658	($7,280)	⚠	02/27/14	12/30/21	12/30/21	12/30/21	-	★	See Section 6
Support Projects															
CUW38804 - Long Term Mitigation Endowment ++	NA		$ 12,000	$ 12,000	$ 12,000	$ 0	-	★		09/30/21	09/30/21	09/30/21	-	★	NA
CUW39401 - Watershed and Environmental Improvement Program	DS	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 5,119	-	★	06/28/13	01/08/21	01/08/21	01/08/21	-	★	See Appendix E

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

**** Phase Status Legend**

PL Planning DS Design BA Bid & Award

CN Construction NA Not Applicable

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

+ Cost and Schedule Status

★ Meet Requirements: Forecasted Cost/Schedule is within Current Approved Budget/Schedule.

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

● Exceed Limits: Forecasted Cost is over Current Approved Budget by 10% or more. Or Forecasted Schedule is over Current Approved Schedule by greater than 6 months or 10% or more.

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

6. PROJECTS NOT WITHIN BUDGET AND/OR SCHEDULE

CUWSJI0101 - WSIP Closeout - San Joaquin

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

Region: San Joaquin	**Project Status:** Construction	**Environmental Status:** Not Applicable

Project Cost:		**Project Schedule:**	
Approved	$4.38 M	Approved Jun-16	Dec-19
Forecast*	$3.88 M	Forecast* Jun-16	Dec-20
Actual	$0.60 M	Project Percent Complete: 38.3%	

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

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

Progress and Status:

• JOC 49-21 Tesla Portal. Completed on 9/30/2018.

• Solar Panels Project. During this reporting period, HHWP completed their review and signed off on the Technical Memorandum that describes the conceptual recommendations for work to be performed at the three different sites. The design consultant (AECOM) has completed the 50% design for the Project. The Project is anticipated to complete 100% design and initiate the JOC process in the next reporting period. Scheduled Subproject Completion will be on 12/20/2020.

Oakdale Valve House No. 4 Solar Facilities

Issues and Challenges:

None at this time.

CUWPWI0101 - WSIP Closeout - Peninsula

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

Region: Peninsula	**Project Status:** Construction	**Environmental Status:** Not Applicable

Project Cost:

Approved		$13.58 M
Forecast*		$12.79 M
Actual		$5.68 M

Project Schedule:

Approved Jul-16		May-21
Forecast* Jul-16		Aug-21

Project Percent Complete: 62.3%

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

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

Progress and Status:

Crystal Springs / San Andreas Items: (1). WD-2822R2 – Lower Crystal Springs Dam (LCSD) Stilling Basin Connecting Channel – The Notice to Proceed for Anvil Builders was issued on 4/8/19, and Final Completion (FC) is forecasted for November 2020. Scheduled subproject completion (SSC) is 8/5/21. The Contractor has mobilized at the project site. Dewatering of the stilling basin has started. (2). LCSD Bridge Replacement - joint project with San Mateo County. There are a few warranty issues that are being addressed. (2.1) JOC 76R-01 North Parapet Wall Extension is being set up to close a gap between the LCSD north parapet wall and the new bridge abutment, with a forecasted start date for gap repair construction in September 2019. SSC is 9/2/20. (2.2) To close out the Memorandum of Agreement (MOA) with San Mateo County, a new PRO.76A task order LCSD Security Assessment has been set up for the area around the dam/bridge. SSC is 6/30/20. (2.3) The SFPUC is still working with the County to repair the drainage channels atop the south side of LCSD.

Harry Tracy Water Treatment Plant Items: (1). JOC 59-01 Electrical & Mechanical Piping Modifications - Remaining training will be scoped to follow the emergency generator filters upgrades (JOC 59-17). SSC is 12/31/19. (2). JOC-59-17 Emergency Generators Filters Upgrades – The filter for the exterior generator was successfully tested this quarter. Installation of the two remaining filters began late this quarter following the completion of the Hetchy winter shutdown. SSC on 10/31/19. (3). Equalization Basin Mixers - Vendor has indicated that replacement mixers will be delivered next quarter. SSC is December 2019. (4). Erosion on CSSA Pipeline – Project closeout was requested at the 4/9/19 Commission Meeting. SSC was 4/30/19.

Issues and Challenges:

Crystal Springs / San Andreas Items: (1) The award amount to the winning bidder for WD-2822R2 – LCSD Stilling Basin project is higher than the engineer's estimate. Based on the re-evaluation of the overall budget for the WSIP Peninsula Closeout project, additional project funds are not needed to cover the higher bid. Funds from other projects within CUWPWI0101 – Peninsula Regional Closeout project have been reallocated to the LCSD Stilling Basin project. The rebid of the contract resulted in a three months schedule delay. (2.1) The delay in receiving the cost proposal for JOC 76R-01 North Parapet Wall Extension contract resulted in the delay of the start of construction by four months. (2.2) The six month delay for the PRO.76A LCSD Security Assessment is due to the delay in acquiring a security consultant to perform the assessment.

CUW30103 - Regional Groundwater Storage and Recovery

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

Region: San Francisco Regional	**Project Status:** Construction	**Environmental Status:** Active (Various)

Project Cost:

Approved		$138.79 M
Forecast*		$146.07 M
Actual		$103.66 M

Project Schedule:

Approved Jun-03		Dec-21
Forecast* Jun-03		Dec-21

Project Percent Complete: 76.9%

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) 09/30/19	(A) 09/07/11✓ (B) 09/22/14✓ (C) 02/03/20	(A) 01/30/12✓ (B) 04/06/15✓ (C) 05/01/20	(A) 09/05/12✓ (B) 03/06/20 (C) 07/31/21

\+ Project includes multiple construction contracts.

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

Progress and Status:

For Contract B, modifications to piping connections, pressure relief valves, and programming due to a switch from using aqueous ammonia to liquid ammonium sulfate at all treatment facilities were completed. Monitoring and calibration of the transmission line flowmeter, and functional testing of the components of the chemical system are ongoing.

For Phase 2 (associated with Contract C), the final draft Conceptual Engineering Report for the South San Francisco (SSF) Main well station and the carryover work from Contract B will be issued next quarter. Additional carryover work from Contract B has been identified, and will be presented to the Change Control Board for approval prior to inclusion as part of Phase 2.

Issues and Challenges:

The variances between the Approved and Forecasted cost and schedule for Phase 1 (Contract B) are due to the modifications to the chemical system for groundwater treatment, the retrofit of existing transmission line flowmeters, and other changes to programming, access, and treatment testing. A switch from using aqueous ammonia to liquid ammonium sulfate was recently issued as a change order to the contract. Modifications to piping connections, pressure relief valves, sight glass, and programming, as well as other changes, began this quarter. Further monitoring and calibration are needed to acquire more accurate and consistent readings on the transmission line flowmeters. These changes have resulted in delaying the 7-day testing. The project team continues to evaluating potential costs and schedule impacts for Phase 2 work for incorporation into a future quarterly report.

7. On-Going Construction

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion*	Q4/FY18-19 Forecasted Construction Final Completion**	Approved Contract Cost +	Q4/FY18-19 Forecasted Cost++	Schedule (Cal. Days)	Cost	
Sunol Valley Region								
CUW37401 - Calaveras Dam Replacement (Contract A)	08/15/11	05/28/19	07/12/19	$ 569,012,326	$ 570,235,052	(45)	($1,222,726)	99.6%
CUW37401 - Alameda Creek Diversion Dam (Contract B)	04/19/16	12/16/18	09/30/19	$ 36,002,346	$ 36,498,896	(288)	($496,550)	98.4%
San Francisco Regional Region								
CUW30103 - Regional GW Storage and Recovery (Contract B)	04/06/15	03/28/19	03/06/20	$ 57,015,301	$ 59,091,338	(344)	($2,076,037)	98.6%

Program Total for On-Going Construction	Approved Contract Cost	Q4/FY18-19 Forecasted Cost*	Variance	
			Cost	Percent
	$ 662,029,973	**$ 665,825,285**	**($3,795,312)**	**(0.6%)**

Note:

* Approved Construction Final Completion Date includes approved change orders.

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

\+ Approved Contract Cost includes awarded contract amount and approved change orders.

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

8. PROJECTS IN CLOSE-OUT

Project Title	2005 Baseline Construction Phase Completion	2018 Approved Construction Phase Completion	Current Approved Construction Phase Completion	Actual Construction Phase Completion	2005 Approved Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Forecasted Project Completion	2005 Baseline Construction Phase Budget	2018 Approved Construction Phase Budget	Current Approved Construction Phase Budget	Construction Phase Expenditures To Date
Support Projects												
CUW38802 - Bioregional Habitat Restoration		05/31/18	05/31/18	05/31/18		09/30/21	09/30/21	09/30/21		$ 52,299,498	$ 51,636,156	$ 50,640,318
TOTAL										$ 52,299,498	$ 51,636,156	$ 50,640,318

9. COMPLETED PROJECTS

Project Title	2005 Baseline Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2018 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
San Joaquin Region								
CUW36401 - Lawrence Livermore Water Quality Improvement	11/07/11	07/31/13	07/31/13	07/31/13	$ 4,235,258	$ 4,198,247	$ 4,198,247	$ 4,198,247
CUW37301 - San Joaquin Pipeline System	03/25/14	03/31/16	03/31/16	03/31/16	$ 352,732,000	$ 203,178,014	$ 203,178,015	$ 203,178,015
CUW37302 - Rehabilitation of Existing San Joaquin Pipelines	06/30/14	10/31/14	10/31/14	10/31/14	$ 80,000,000	$ 21,153,622	$ 21,153,622	$ 21,153,622
CUW38401 - Tesla Treatment Facility	07/01/11	01/30/15	01/30/15	01/30/15	$ 101,643,001	$ 113,211,607	$ 113,211,607	$ 113,211,607
Sunol Valley Region								
CUW35501 - Standby Power Facilities - Various Locations	12/06/10	12/22/10	12/22/10	12/22/10	$ 9,949,735	$ 12,950,566	$ 12,950,566	$ 12,950,566
CUW35901 - New Irvington Tunnel	09/17/13	03/31/18	03/31/18	03/31/18	$ 214,650,004	$ 340,406,358	$ 340,406,358	$ 339,893,582
CUW35902 - Alameda Siphon #4	04/14/11	06/28/13	06/28/13	06/28/13	$ 78,577,000	$ 64,950,507	$ 64,950,507	$ 64,950,507
CUW37001 - Pipeline Repair & Readiness Improvements	03/30/07	04/16/09	04/16/09	04/16/09	$ 5,591,770	$ 5,195,381	$ 5,195,381	$ 5,195,381
CUW37402 - Calaveras Reservoir Upgrades	02/17/06	07/28/06	07/28/06	07/28/06	$ 1,740,055	$ 1,690,552	$ 1,690,552	$ 1,690,552
CUW37403 - San Antonio Backup Pipeline	06/29/12	06/30/16	06/30/16	06/30/16	$ 7,677,000	$ 53,594,683	$ 53,594,683	$ 53,594,683
CUW38101 - 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	$ 27,039,149
CUW35302 - Seismic Upgrade of BDPL Nos. 3 & 4	10/15/12	07/30/18	07/30/18	07/30/18	$ 66,792,849	$ 73,623,296	$ 73,623,296	$ 70,551,789
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	$ 271,823,743
CUW36802 - BDPL Reliability Upgrade - Pipeline	-	03/31/16	03/31/16	03/31/16	-	$ 216,871,156	$ 216,871,156	$ 216,722,172
CUW36803 - BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2	-	05/28/10	05/28/10	05/28/10	-	$ 3,046,981	$ 3,046,981	$ 3,046,981
CUW38001 - BDPL Nos. 3 & 4 Crossovers	04/24/13	06/30/14	06/30/14	06/30/14	$ 36,616,911	$ 29,910,449	$ 29,910,449	$ 29,910,449
CUW38901 - SFPUC/EBMUD Intertie	02/07/07	03/20/14	03/20/14	03/20/14	$ 8,598,851	$ 9,167,306	$ 9,167,306	$ 9,167,306
CUW39301 - BDPL No. 4 Condition Assessment PCCP Sections	05/01/08	02/06/09	02/06/09	02/06/09	$ 2,000,000	$ 1,937,599	$ 1,937,599	$ 1,937,599
Peninsula Region								
CUW35401 - Lower Crystal Springs Dam Improvements	08/16/11	12/28/12	12/28/12	12/28/12	$ 27,752,222	$ 34,859,040	$ 34,859,040	$ 34,859,040
CUW35601 - New Crystal Springs Bypass Tunnel	10/28/10	08/17/12	08/17/12	08/17/12	$ 83,222,790	$ 81,466,732	$ 81,466,732	$ 81,466,732
CUW35701 - Adit Leak Repair - Crystal Springs/Calaveras	07/03/08	07/31/08	07/31/08	07/31/08	$ 3,748,452	$ 2,787,322	$ 2,787,322	$ 2,787,322
CUW36101 - Pulgas Balancing - Inlet/Outlet Work	05/11/06	05/11/06	05/11/06	05/11/06	$ 1,667,532	$ 1,765,938	$ 1,765,938	$ 1,765,938

Project Title	2005 Baseline Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2018 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
Peninsula Region								
CUW36102 - Pulgas Balancing - Discharge Channel Modifications	08/05/13	07/30/10	07/30/10	07/30/10	$ 8,111,422	$ 2,910,007	$ 2,910,007	$ 2,910,007
CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement	01/29/13	12/28/12	12/28/12	12/28/12	$ 36,712,846	$ 20,238,716	$ 20,238,716	$ 20,238,716
CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility	-	03/20/13	03/20/13	03/20/13	-	$ 5,390,031	$ 5,390,031	$ 5,390,031
CUW36501 - Cross Connection Controls	05/15/09	04/30/09	04/30/09	04/30/09	$ 6,111,779	$ 3,948,944	$ 3,948,944	$ 3,948,944
CUW36601 - HTWTP Short-Term Improvements (Demo Filters)	07/03/06	11/14/06	11/14/06	11/14/06	$ 4,381,375	$ 3,067,903	$ 3,067,903	$ 3,067,903
CUW36603 - HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters	09/08/10	07/28/10	07/28/10	07/28/10	$ 9,741,617	$ 18,604,937	$ 18,604,937	$ 18,604,937
CUW36701 - HTWTP Long-Term Improvements	04/08/14	12/30/16	12/30/16	12/30/16	$ 167,570,000	$ 274,081,969	$ 274,081,969	$ 273,833,162
CUW36702 - Peninsula Pipelines Seismic Upgrade	-	07/06/16	07/06/16	07/06/16	-	$ 38,825,346	$ 38,825,346	$ 38,773,174
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	$ 14,445,717
CUW38801 - Programmatic EIR	06/20/07	06/30/09	06/30/09	06/30/09	$ 9,271,001	$ 10,730,684	$ 10,730,684	$ 10,730,684
CUW38803 - Vegetation Restoration of WSIP Construction Sites	-	06/30/16	06/30/16	06/30/16	-	$ 2,111,546	$ 2,111,546	$ 2,099,755
TOTAL					$ 2,640,070,249	$ 2,531,645,931	$ 2,531,645,931	$ 2,525,810,569

APPENDICES

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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 E50U Valve was installed in 2011 as part of the CUW36802 BDPL Reliability Upgrade – Pipeline

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

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

PENINSULA REGION

CUW35401 - Lower Crystal Springs Dam Improvements (Completed)

The project consists of:

• Spillway modifications that include widening the spillway, constructing two bridge piers within the spillway to accommodate rebuilding of a San Mateo County Bridge, removing the existing timber stop-log system, constructing a new weir system within the spillway, installing access cat-walks for operation and maintenance, and eliminating water ponding on top of the dam.

• Parapet wall modifications that include increasing the height of the wall that is located on top of the upstream face of the dam and increasing the height of the approach walls to the spillway.

• Stilling basin modifications at the base of the spillway that include removing the existing basin, constructing a new larger basin, and adding downstream riprap protection at the toe of the basin.

CUW35601 - New Crystal Springs Bypass Tunnel (Completed)

The project consists of:

• A 4,200-foot long tunnel with 8-foot diameter welded steel liner.

• Vertical shafts on each end of the tunnel to accommodate a tunnel boring machine and future maintenance. The southern shaft will include a connection to the existing Crystal Springs Bypass Pipeline; the northern shaft will tie into the southern ends of both Crystal Springs Pipeline No. 2 and Sunset Supply Line.

• New isolation valves and valve vaults.

• Standby power near valve vault G40.

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

The project consists of :

• Crystal Springs Outlet Tower No. 1: repairing leaks inside the tower, blasting and recoating piping and valves, replacing roof, structurally retrofitting the access footbridge, and installing a marine hatch at the tower drain.

• Crystal Springs Outlet Tower No. 2: installing a marine hatch at the tower drain.

• Calaveras Outlet Tower: installing a dewatering pump, replacing a deteriorated valve actuator, and providing ladder fall protection.

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

CUW36101 - Pulgas Balancing - Inlet/Outlet Work (Completed)
The project consists of new inlet and outlet piping designed to direct the path of the water in such a manner as to promote better mixing. The shutdowns associated with construction of these improvements provided an opportunity to perform a condition assessment of the reservoir interior that has been used to help identify work associated with CUW36103 - Pulgas Balancing Reservoir - Structural Rehabilitation and Roof Replacement project. This project was successfully completed in May 2006.

CUW36102 - Pulgas Balancing - Discharge Channel Modifications (Completed)
The project consists of raising the channel walls, repairing concrete cracks and exposed reinforcing steel, strengthening and interconnecting the channel floor sections, and strengthening the wall near the Pulgas Tunnel as needed. The project will restore the Discharge Channel capacity for accommodating flow up to 250 mgd.

CUW36103 - Pulgas Balancing - Structural Rehabilitation and Roof Replacement (Completed)
The project consists of the seismic retrofit of the walls, installation of a new steel frame roof, and repair of concrete cracks and exposed reinforcing steel. The project scope also includes installing a new ventilation system and sampling ports, replacing utility piping, and upgrading the electrical system.

CUW36104 - Pulgas Balancing - Laguna Creek Sedimentation (Completed)
This project consists of the execution of the Laguna Creek Habitat Management and Revegetation Plan. This is a mitigation measure for the Non-WSIP Pulgas Dechlorination Facility Project, which involves the restoration of the Laguna Creek Sedimentation Basin, a 6-8 acre catchment basin that provides habitat for the San Francisco Garter Snake and the California Red Legged Frog. In coordination with regulatory agencies, a strategy was developed to accomplish this habitat restoration, and to have it measured under the Habitat Reserve Program (HRP). This project was closed in December 2007 and combined with Project CUW38802-Habitat Reserve Program (HRP).

CUW36105 - Pulgas Balancing - Modifications of the Existing Dechloramination Facility (Completed)
The project consists of various improvements to the dechloramination and pH control facilities that are necessary to address immediate compliance issues. Anticipated improvements include modifications to the flow measurement and control systems, and to the various process control and chemical feed systems.

CUW36501 - Cross Connection Controls (Completed)
The project consists of providing improvements at 304 different sites to address potential cross connections. The work varies from site to site due to specific site conditions. The major work elements typically include: Install air gaps at blow-off locations and at air valves; install backflow prevention devices; reconstruct or raise existing vaults; install new vault covers; replace existing air valves; and/or modify, relocate, or remove existing blow-off facilities.

CUW36601 - HTWTP Short-Term Improvements (Demo Filters) (Completed)
The project consists of retrofitting two filters and performing full-scale performance demonstration testing of the retrofitted filters. The project was successfully completed in November 2006.

CUW36602 - HTWTP Short-Term Improvements - Remaining Filters (Completed)
This project consists of filtration modification to eight of the ten existing filters, replacement of effluent control valves and backwash supply valves, provision for a filter to waste system, installation of new underdrains and media, and seismic retrofit of basin walls. Combined with CUW36603 - HTWTP Short-term Improvements - Coagulation & Flocculation project.

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

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

CUW36701 - HTWTP Long-Term Improvements (Completed)

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

CUW36702 - Peninsula Pipelines Seismic Upgrade (Completed)

The scope of this project includes geotechnical investigations to characterize the Serra Fault in the vicinity of the pipelines and to confirm assumptions about sub-surface conditions along the length of the pipelines (SAPL2 and SAPL3 from HTWTP to San Pedro Valve Lot, SSBPL from HTWTP to Capuchino Valve Lot, and Sunset Supply Pipeline (SSPL) from Capuchino Valve Lot to San Pedro Valve Lot). In addition, hydraulic modeling has been performed to review system/facility requirements to meet system goals. The objectives of the investigations were: 1)to determine the potential fault offset at the Serra Fault crossings and the potential response from the three pipelines to these offsets, and 2) to determine potential for pipeline rupture due to displacement from liquefaction, landslides, and other seismically-triggered hazards along the pipeline alignments. The extensive geotechnical and modeling analyses performed to date have been carefully reviewed to identify specific project recommendations.

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

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

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

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

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

CUW36901 - Capuchino Valve Lot Improvements (Completed)

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

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

CUW37101 - Crystal Springs/San Andreas Transmission Upgrade (Completed)
The project consists of improvements to facilities necessary to transport water from Upper Crystal Springs Reservoir, through the lower Crystal Springs Reservoir to San Andreas Reservoir, and ultimately, to the Harry Tracy Water Treatment Plant (HTWTP) Raw Water Pump Station. Specifically, improvements will be made to the Upper Crystal Springs Dam discharge culverts, the Lower Crystal Springs outlet structures, the Crystal Springs Pump Station (CSPS), the Crystal Springs/San Andreas Pipeline, and the San Andreas outlet structures.

CUW37801 - Crystal Springs Pipeline No. 2 Replacement (Completed)
The project consists of:
• Seismic reliability improvements, which include replacing or relocating a total of 1.7 miles of pipe at 12 locations, sliplining 3.5 miles of pipe, retrofitting pipe bridge pier supports at two creek crossings, providing a new connection at the Crystal Springs Pump Station, and providing a connecting segment with a blind flange for later connection to the New Crystal Springs Bypass Tunnel.
• Facility improvements, which include installing fences and enclosures for exposed facilities, and concealing exposed portions of pipe.
• Upgrading the cathodic protection system along the length of the pipeline.

CUW37901 - San Andreas Pipeline No. 3 Installation (Completed)
The project consists of installation of 4.4 miles of 36-inch-diameter pipe from San Pedro Valve Lot in Daly City to Merced Manor Reservoir in San Francisco. There will be three jack and bore crossings along 19th Avenue and John Daly Boulevard. Work will also include installation of five customer service connections, a new cathodic protection system along the length of the new pipeline, three interconnections to the San Andreas Pipeline No.2, various valves, and a flow meter.

CUW39101 - Baden and San Pedro Valve Lots Improvements (Completed)
This project consists of upgrades to valve vaults, valves, and piping in the Baden Valve Lot and the San Pedro Valve Lot. It also includes the installation of a pressure reducing valve and associated system valving to allow transfer of a portion of the flow from the HTWTP high-pressure zone to the low- pressure zone during emergencies.

CUWPWI0101- WSIP Closeout - Peninsula
• **LCSD Stilling Basin Modifications & Dissipation Structure Riprap** – This sub-project is provided in response to concerns that fish may be "trapped" in the Lower Crystal Springs Dam (LCSD) stilling basin during low flow summer periods, and that high flow discharges from the new LCSD dissipation structure and potential high water levels in Pool 2 may cause erosion of the bank adjacent to the dissipation structure. The dissipation structure includes 60-inch diameter pipes with a maximum flow of 600 cubic feet per second (cfs) each and two 8-inch diameter pipes with maximum flow of 7 cfs each. During flow testing of the dissipation structure, released water could be observed flowing over the dissipation structure, potentially eroding the bank adjacent to the structure. It was also observed that during summer periods, of low flow in the channel downstream of the stilling basin, fish trapped in the basin were dying due to warm water temperatures. The purposes of this sub-project are to hydraulically connect the stilling basin with Pool 2 in order to allow fish to escape the basin in summer, and to add rip-rap behind the dissipation structure to prevent erosion. Specifically, this sub-project consists of:
o A new deeper channel between the dissipation structure and the Pool 2, which would prevent fish from being trapped in the stilling basin,
o Installation of a new SCADA controls to the existing 8-in discharge pipeline and re-routing one line to the stilling basin,
o Installation of additional rip-rap around the dissipation structure,
o Installation of a new 24-inch HDPE pipeline

through an existing abandoned 60-inch pipe directed to the stilling basin
o Coordination and facilitation of access for a piezometer drilling contractor during periods of concurrent work in the stilling basin
o Deletion of landscaping around the new Crystal Springs Pump Station
o Addition of tree, shrub and grass plantings along the creek bank in accordance with the approved re-vegetation plan

• **LCSD Valve H53/ Pipeline Investigation & Fisheries Release Valve** – As stipulated by the US Army Corps of Engineers 404 permit and the associated biological opinion by NOAA's National Marine Fisheries Service (NMFS) covering the SFPUC activities at the Crystal Springs Pump Station (CSPS), the SFPUC is to take measures to protect the threatened Central California Coast (CCC) steelhead present in San Mateo Creek at CSPS site. One measure requires the release of fresh water at a rate of 3 to 17 cubic feet per second (cfs) depending on the season in recorded dry and wet years. This sub-project will utilize modification of an existing pipeline to release the required flows to the LCSD stilling basin feeding San Mateo Creek. Specifically, this sub-project consists of:
o Condition assessment of the existing 60-in diameter pipeline from Valve H-53 to the stilling basin. In addition, valve H-53 will be exposed and visually inspected to determine its condition, requiring excavation and shoring of a pit approximately 20 feet long by 20 feet wide by 20 feet deep.
o Depending on the verified condition, viable alternatives, including abandonment of the option to use H-53 pipeline, will be evaluated.
o The approved option will include a SCADA controlled 12-inch valve installed at the discharge end of the pipeline. Depending on the condition of the pipeline, the approved option may also include repairs to the pipeline lining. Options may also include slip-lining the existing line with a smaller diameter pipeline such as 12 to 24-in diameter flexible polypropylene pipe.
o Use of a temporary pipeline "line stop" and associated shoring upstream of Valve H-53 to allow for potential installation of a permanent blind flange.
o Replacement of leaking plug valves that discharge from an existing concrete vault to the stilling basin with new knife gate valves.
o Installation of new flow control valves, isolation valves and appurtenances for Pool 2.
o Connections to the existing 72-inch pipeline using hot taps.
o Construction of a new concrete walkway from the access road to the existing stairs at the flow dissipation structure adjacent to the stilling basin.

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

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

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

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

• **Harry Tracy Water Treatment Plant (HTWTP) Improvements.** The Harry Tracy Long-Term Improvements Project (CUW36701) was completed in 2014. Since 2014, the following needs were identified to address construction issues and improve operations at the plant to fully meet the LOS goals and objectives:

o Automate the 12-inch gate valve at the High Rate Clarifiers' filter to waste manhole to eliminate the need for Operations to manually operate the valve on a frequent basis

o Modify Sludge Tank No. 1 piping to eliminate cavitation in the washwater pumps

o Upgrade the filters of three (3) emergency generators from passive filters to active filters to increase the effectiveness of the exhaust filtration and to reduce the need for Operations to constantly clean the filters

o Repair leaks in the filter gallery channels where stainless steel angle plates were added to support several concrete walls

o Automate flushing of the sludge transfer pumps and piping to eliminate the need for Operations to manually flush on a frequent basis

o Replace and relocate failed variable frequency drives (VFDs) for the wash water and sludge transfer pumps to address an over-heating issue

o Install double containment for the diesel fuel supply lines for the exterior generator to protect against leaks into the environment

o Provide training and programming modifications to the Raw Water Pump Station switchgear equipment to enable remote SCADA control

o Install vibration control monitoring system on the electrical panels at the Raw Water Pump Station to replace the existing obsolete system

o Evaluate/Assess condition of failed mixers in the equalization basin

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

SAN FRANCISCO REGIONAL REGION

CUW30103 - Regional Groundwater Storage and Recovery

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

CUW35801 - Sunset Reservoir - North Basin (Completed)

This project consists of:

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

CUW37201 - University Mound Reservoir - North Basin (Completed)

This project consists of:

- Seismic rehabilitation of the reservoir walls and roof using seismic joints, shear walls, diagonal bracing, and struts and foundation improvements. A geotechnical investigation was conducted that verified that the reservoir embankments are not subject to seismically induced failure.
- General rehabilitation, which includes repairing deteriorated concrete; replacing the reservoir lining material; replacing inlet/outlet, drain, and overflow piping; replacing outlet and drain valves; and performing landscaping and other miscellaneous site improvements.

SUPPORT PROJECTS

CUW36302 - System Security Upgrades

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

CUW38801 - Programmatic EIR (Completed)

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

and (3) propose mitigation measures.

CUW38802 - Bioregional Habitat Restoration
The Bioregional Habitat Restoration project was created to provide a coordinated and consolidated approach to compensate for habitat impacts that may result from implementation of the WSIP projects in the San Joaquin, Sunol Valley, Bay Division, and Peninsula Regions of the SFPUC Regional Water System. The previously approved scope of the Bioregional Habitat Restoration project included projects to preserve, enhance, restore, or create approximately 2,350 acres of tidal marsh, vernal pools, white alder riparian forest, sycamore alluvial woodland, arroyo willow riparian habitat, oak woodland and savannah, sage scrub habitat, serpentine grasslands, coastal live oak woodland, annual grasslands, and oak riparian forest.
The project includes design, environmental permitting, construction, construction management, maintenance and performance monitoring during a 3-year plant establishment period.
The wide variety of the types of impacts from WSIP projects resulted in the need for development of 18 compensation sites on SFPUC property and for contracting with 7 property owners to secure compensation on property outside the Alameda and Peninsula watersheds. There are 7 compensation sites on SFPUC property in the Alameda watershed with an average size of 250 acres, demonstrating a significant commitment to the continued protection of species habitat. Although the average size of the 11 Peninsula compensation sites is 15 acres, the projects have been strategically placed to best benefit the San Francisco garter snake and the fountain thistle. The increase in habitat compensation addresses mitigation for the fountain thistle and for changes in the Calaveras Dam Replacement Project.
Under the March 2014 Revised WSIP, some scope for the Bioregional Habitat Restoration project associated with Lower Crystal Springs Dam and long term monitoring and maintenance of the compensation sites was reduced. The remaining wetland development at Upper San Mateo Creek and Boat Ramp and most of the oak woodland compensation for the Lower Crystal Springs Dam Improvement Project has been deferred until the operating elevation of the reservoir has increased, estimated to be around 2020. This work will be completed in the future by SFPUC Water Enterprise.

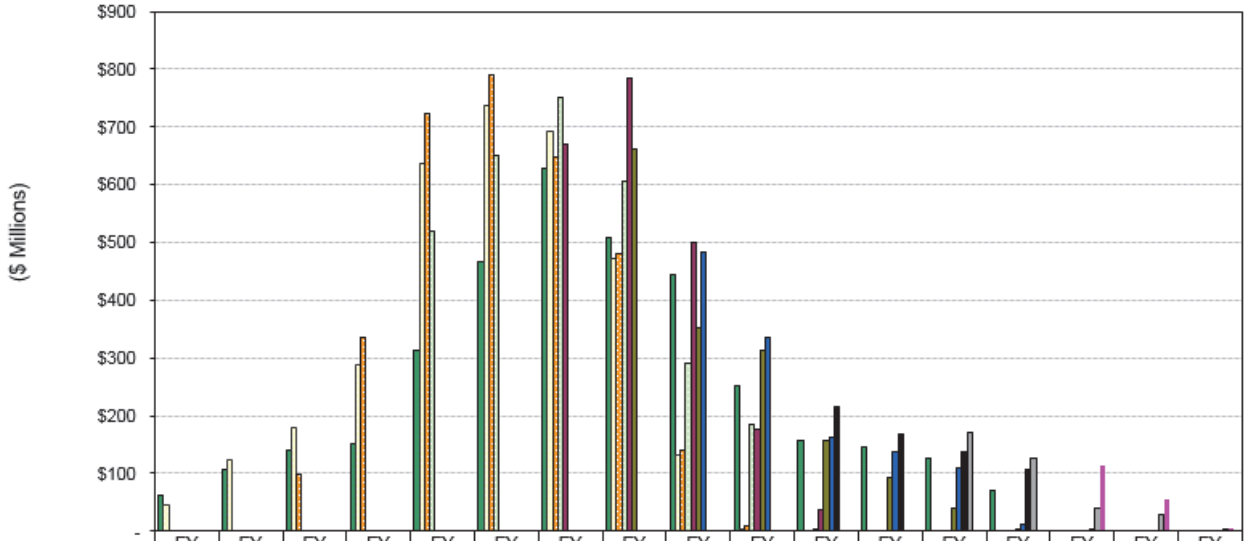
CUW38803 - Vegetation Restoration of WSIP Construction Sites (Completed)
The Vegetation Restoration of WSIP Construction Sites is a WSIP project that received Commission approval on October 9, 2012. This project is required to comply with the CEQA and resource agency permit requirements to restore and re-vegetate habitat areas temporarily impacted by construction at the various WSIP sites to preconstruction condition.

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

CUW39401 - Watershed and Environmental Improvement Program
The Watershed and Environmental Improvement Program (WEIP) includes the comprehensive identification and protection of critical watershed lands and ecosystem restoration needs within the hydrologic boundaries of the Alameda Creek, Peninsula (San Mateo and Pilarcitos Creeks) and Tuolumne River watersheds, and prioritizes the protection and/or restoration of these lands. Projects under this program will protect source water quality, native species, and their habitat as well as identifying critical watershed lands for

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

APPENDIX B. BUDGET AND EXPENDITURE HISTOGRAM*



	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Actual Total Cost	$62	$108	$140	$151	$312	$468	$628	$509	$444	$253	$158	$145	$126	$71			
2005 Approved Budget	$46	$123	$180	$287	$638	$738	$692	$473	$133	$1							
2007 Approved Budget			$99	$335	$724	$790	$649	$481	$140	$10							
2009 Approved Budget					$519	$651	$751	$606	$290	$186	$5						
2011 Approved Budget							$669	$784	$501	$176	$38	$0					
2013 Approved Budget								$662	$352	$314	$156	$94	$41	$4			
2014 Approved Budget									$484	$335	$164	$138	$109	$11			
2016 Approved Budget											$215	$168	$138	$106	$3		
2018 Approved Budget													$171	$126	$41	$30	$2
Current Forecast															$114	$55	$4
Percentage Spent**	136%	88%	142%	45%	60%	72%	94%	77%	92%	76%	73%	86%	74%	56%			

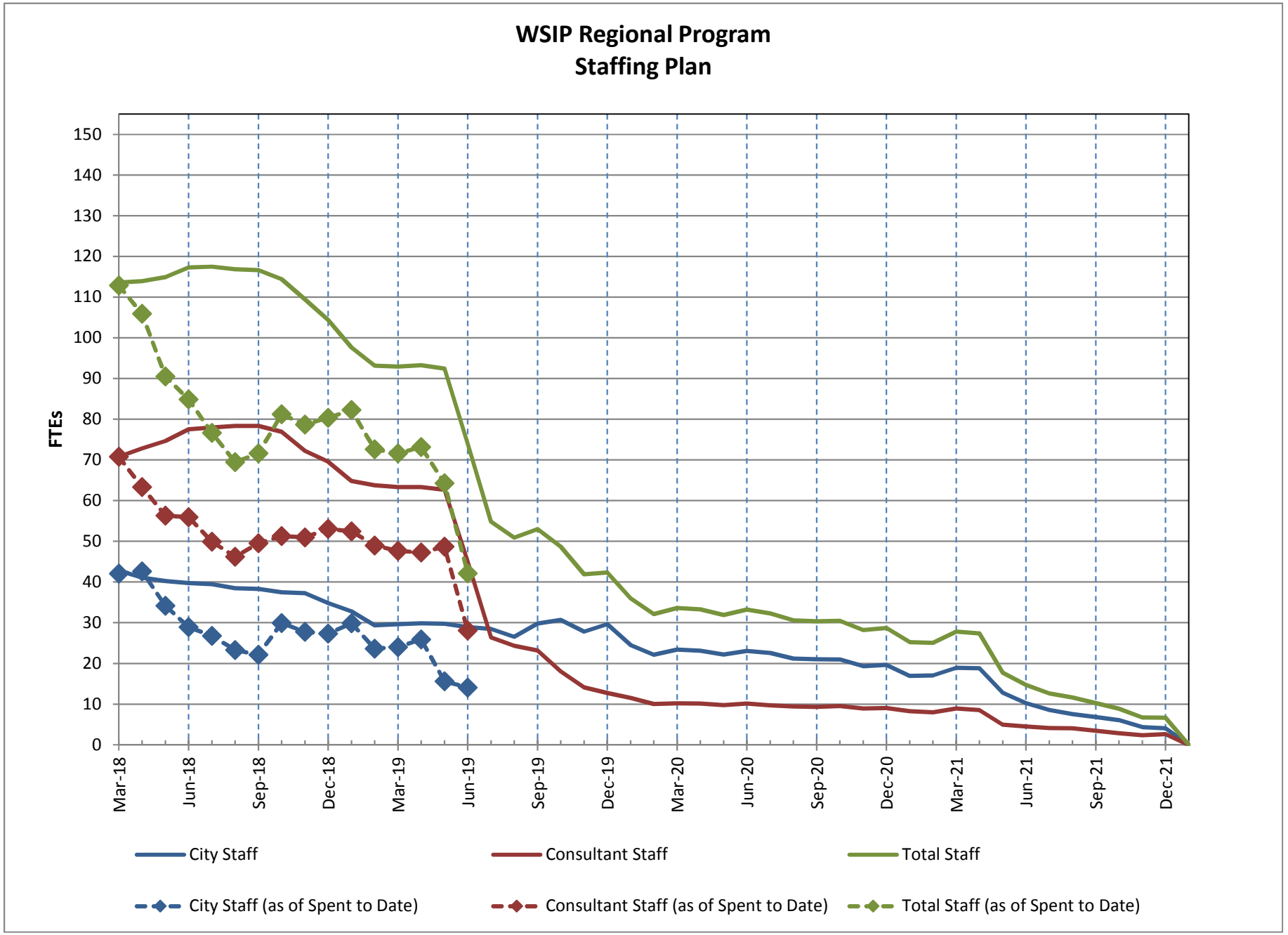
All costs are shown in $ Millions.

* 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.

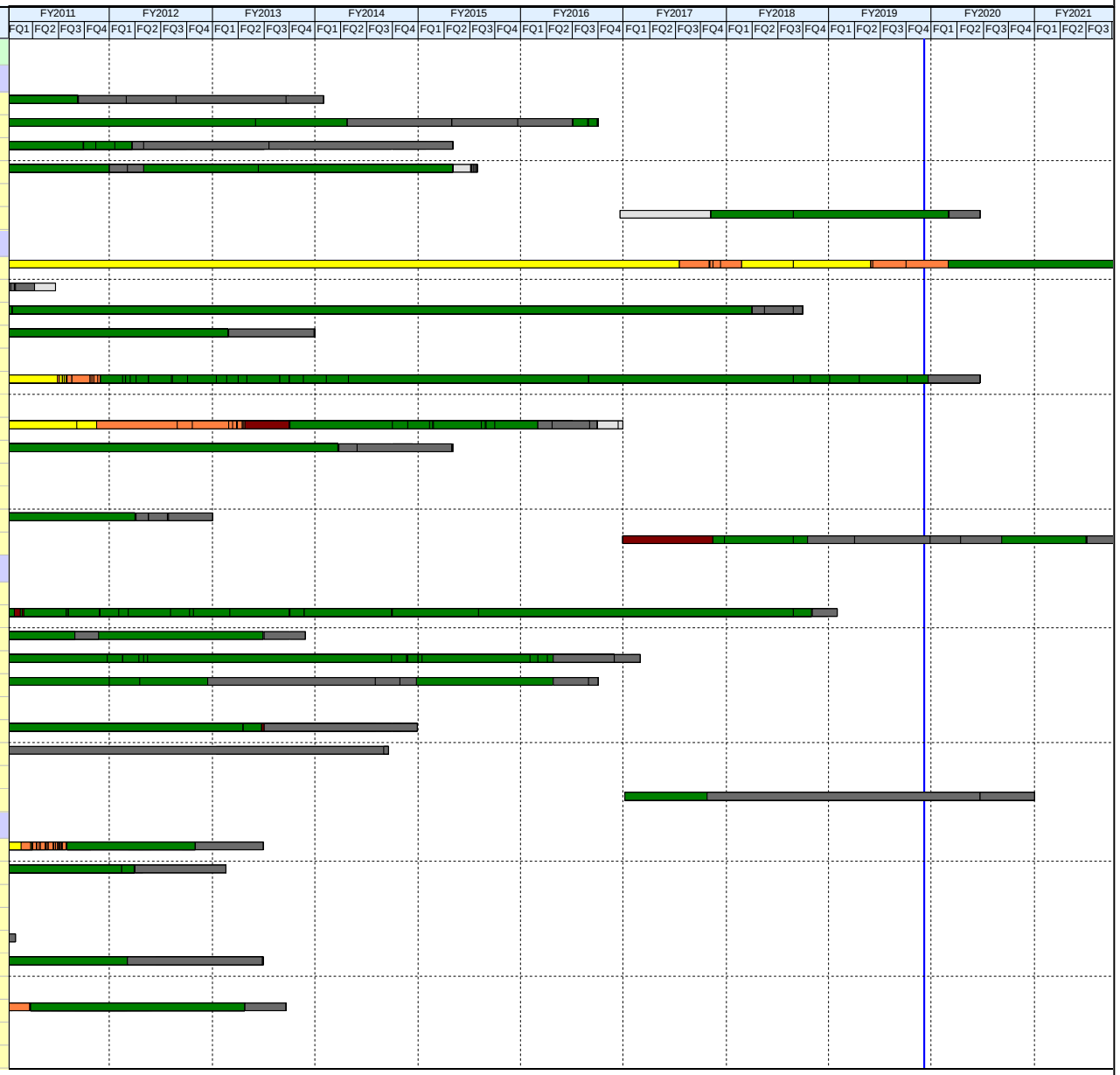
Figure B: Annual Budgeted Spending Plans vs. Actual Expenditures

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 FY18-19 and cost projections (Current Forecast) from FY19-20 through program completion in December 2021. Actual annual expenditures have ranged from 45% to 142% of planned expenditures.


WSIP Regional Program
Staffing Plan
FTEs
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sep-19
Dec-19
Mar-20
Jun-20
Sep-20
Dec-20
Mar-21
Jun-21
Sep-21
Dec-21
City Staff
Consultant Staff
Total Staff
City Staff (as of Spent to Date)
Consultant Staff (as of Spent to Date)
Total Staff (as of Spent to Date)

APPENDIX D. WSIP Approved Project-Level Schedule

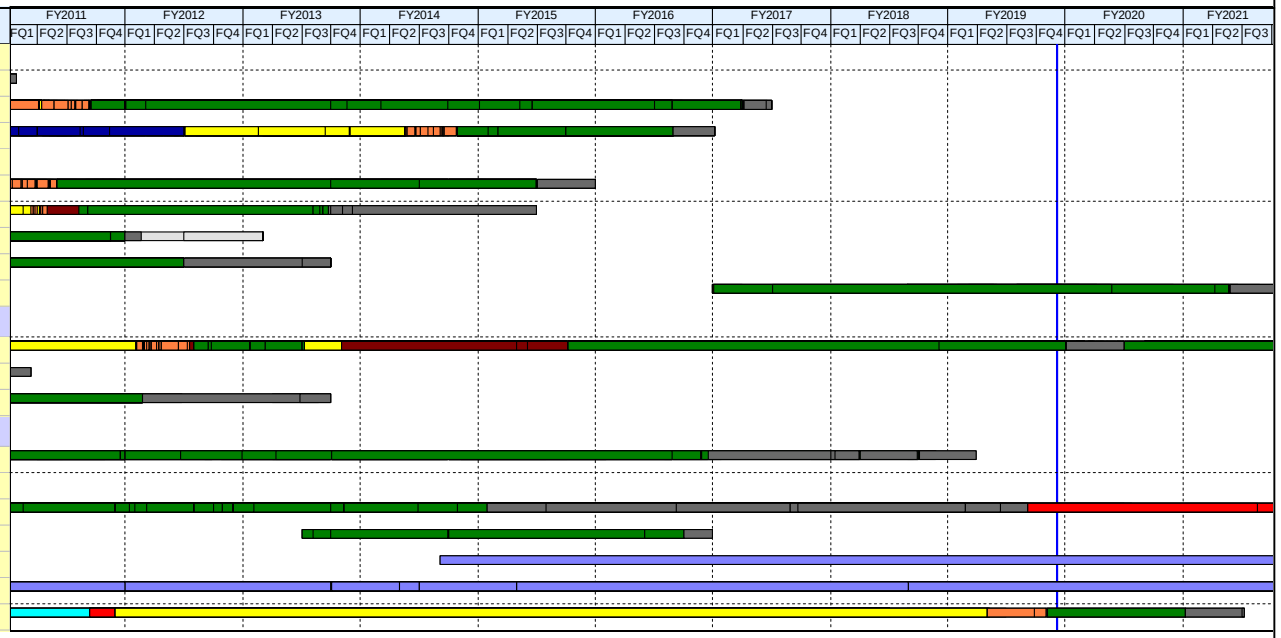
Project Name	Start	Finish
Regional Improvement Projects	31-Mar-00	30-Dec-21
San Joaquin Region	01-Jul-02	20-Dec-19
CUW36401 Lawrence Livermore Water Quality Ir	02-Feb-04	31-Jul-13
CUW37301 San Joaquin Pipeline System	19-Aug-02	31-Mar-16
CUW37302 Rehabilitation of Existing San Joaqui	03-Jul-06	31-Oct-14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



Project Management
Environmental
Right-of-Way
Construction Management
Closeout
Planning
Design
Bid & Award
Construction
Program Management

APPENDIX D. WSIP Approved Project-Level Schedule

Project Name	Start	Finish
CUW36602 HTWTP Short-Term Improvements -	12-Jan-06	22-Feb-08
CUW36603 HTWTP Short-Term Improvements -	03-Jul-06	28-Jul-10
CUW36701 HTWTP Long-Term Improvements	01-Jul-03	30-Dec-16
CUW36702 Peninsula Pipelines Seismic Upgrad	01-Jul-09	06-Jul-16
CUW36901 Capuchino Valve Lot Improvements	22-Apr-05	19-Aug-08
CUW37101 Crystal Springs/San Andreas Transn	18-Aug-03	30-Jun-15
CUW37801 Crystal Springs Pipeline No. 2 Repla	15-Jan-04	31-Dec-14
CUW37901 San Andreas Pipeline No. 3 Installati	15-Jan-04	30-Aug-12
CUW39101 Baden and San Pedro Valve Lots Im	03-Oct-05	29-Mar-13
CUWPWI0101 WSIP Closeout - Peninsula	01-Jul-16	19-May-21
San Francisco Regional Region	31-Mar-00	30-Dec-21
CUW30103 Regional Groundwater Storage and	01-Jun-03	30-Dec-21
CUW35801 Sunset Reservoir - North Basin	31-Mar-00	10-Sep-10
CUW37201 University Mound Reservoir - North E	24-Oct-05	29-Mar-13
Support Projects	13-Apr-04	30-Dec-21
CUW36302 System Security Upgrades	07-Jan-06	28-Sep-18
CUW38801 Programmatic EIR	13-Apr-04	30-Jun-09
CUW38802 Bioregional Habitat Restoration	06-Sep-06	30-Sep-21
CUW38803 Vegetation Restoration of WSIP Con	02-Jan-13	30-Jun-16
CUW38804 Long Term Mitigation Endowment	05-Mar-14	30-Sep-21
CUW39201 Program Management Project	01-Aug-05	30-Dec-21
CUW39401 Watershed and Environmental Impro	02-Jan-07	08-Jan-21



Project Management
Environmental
Right-of-Way
Construction Management
Closeout
Planning
Design
Bid & Award
Construction
Program Management

APPENDIX E. PROJECTS WITHIN BUDGET AND SCHEDULE

CUW35201 - Alameda Creek Recapture Project

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

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

Region: Sunol Valley	**Project Status:** Design	**Environmental Status:** Active (EIR)

Project Cost:		**Project Schedule:**	
Approved	$34.00 M	Approved Sep-03	Nov-21
Forecast*	$34.00 M	Forecast* Sep-03	Nov-21
Actual	$12.56 M	Project Percent Complete: 40.3%	

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

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

Progress and Status:

The project team continued to work on the updates to the Administrative Draft EIR.

Issues and Challenges:

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

Current Condition of Pond F2 Access Road

CUW37401 - Calaveras Dam Replacement

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

Region: Sunol Valley	**Project Status:** Construction	**Environmental Status:** Completed (EIR)

Project Cost:		**Project Schedule:**	
Approved	$823.09 M	Approved Sep-02	Dec-19
Forecast*	$819.78 M	Forecast* Sep-02	Dec-19
Actual	$770.98 M	Project Percent Complete: 95.7%	

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

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

\+ Project includes multiple construction contracts.
(A) Calaveras Dam Replacement (WD-2551); (B) Alameda Creek Diversion Dam (WD-2729)

Progress and Status:

WD-2551 CDRP: During the reporting period, the contractor completed the ADAS, SCADA, road paving and final restoration of the site. Project reached substantial completion on 4/12/2019. The contractor is currently finishing the punch list items, finalizing all the closeout documents, and completing negotiation with the City on all the remaining change orders. The project will reach final completion in the next quarter.

WD-2729 ACDD: The contractor continued to work on the punch list items, prepare closeout documents, and negotiate with the City on all the remaining change orders. Wet testing occurred between 3/18/2019 and 3/29/2019, but is incomplete due to lack of minimum required creek flow. Additional testing will need to be done in the Fall/Winter of 2019.

CDRP Aerial View

Issues and Challenges:

WD-2551 CDRP – None at this time.

For WD-2729 ACDD, change order negotiations continue and may require additional time to fully close out the contract.

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:** Design	**Environmental Status:** Active (Various)

Project Cost:		**Project Schedule:**	
Approved	$5.99 M	Approved Jul-16	Jun-21
Forecast*	$5.99 M	Forecast* Jul-16	Jun-21
Actual	$1.75 M	Project Percent Complete: 65.9%	

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

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

Progress and Status:

• Subprojects of JOC-60-14 and JOC-54-02 were completed.

• JOC-59-20 - This subproject is part of WD-2855, Turner Dam Spillway Erosion Repair project (a non-WSIP project). During the reporting period, Sukut Construction prepared submittals and applied for permits for the project. Final Completion (FC) on 12/1/19. Scheduled Subproject Completion (SSC) on 6/30/20.

• SVWTP Polymer Feed Facility – This project was originally planned to be included in the SVWTP Ozone design RFP. After reconsidering the availability of in-house resources, EMB will perform the design for this project. Based on the results from the full-scale testing, additional testing through an existing Mobile Pilot Plant (MPP) is recommended to better inform the design. The project team is getting a JOC contractor on board to connect utilities and restart the plant. SSC will be on 6/30/21.

• JOC-60-20 - CalState, the JOC Contractor, completed the relocation of all the water quality instrumentation. All of the instrumentation is back online for the NIT. Additional time is needed to issue a supplemental task order for the valve cathodic protection work. FC on 7/31/19. SSC on 1/31/20.

• JOC-60-23 – Construction for Phase 1 has almost been completed except for the piping in one chemical injection vault. Design for the Phase 2 work has also been completed. Phase 2 is on hold until the design for the rehabilitation of the Hydrofluoric Acid system is completed by late this year. FC on 12/31/20. SSC on 6/30/21.

Issues and Challenges:

None at this time.

CUWBDP0101 - WSIP Closeout - Bay Division

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

Region: Bay Division	**Project Status:** Construction	**Environmental Status:** Not Applicable

Project Cost:		**Project Schedule:**	
Approved	$4.40 M	Approved Jul-16	Jun-20
Forecast*	$3.80 M	Forecast* Jul-16	Jun-20
Actual	$2.09 M	Project Percent Complete: 81.0%	

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	Various	Various

Progress and Status:

• Subprojects 3, 4, and 5 were completed on 10/20/2017.

• Ventilation and Sump Pump System Installation – During the reporting period, CalState Constructors(CSC) completed all the field work at both BDPL3 & 4 vaults and began working on the as-built and the Operation and Maintenance Manual. Scheduled Subproject Completion will be on 10/29/2019.

• Site Drainage and Pipe Coating Repairs – Power Engineering (JOC Contractor) submitted a cost proposal for the City to review. The proposal was reviewed, and the City is currently negotiating with the Contractor on the cost. Scheduled Subproject Completion is on 3/16/2020.

• BDPL 1&2 EIR Mitigation – Notice to Proceed to prepare the Conceptual Engineering Report (CER) was issued to AECOM during the reporting period. The Project team has started to prepare the CER. After 06/30/2019, remaining work will be performed under the 10-year Water Capital Improvement Program (CIP). Progress of the project will be reported under the CIP in the next reporting period. Scheduled Subproject Completion is on 6/30/2019.

• Bay Tunnel Warranty Inspection – The Bay Tunnel Dossier Report and As-Builts for Bay Division Pipeline 5 were all completed during the reporting period. Completed on 04/18/2019.

Ventilation Fan and Control Panel at the Articulated Vault

Issues and Challenges:

None at this time.

CUW39401 - Watershed and Environmental Improvement Program

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

Region: Support Projects	**Project Status:** Design	**Environmental Status:** Active (TBD)

Project Cost:

Approved		$20.00 M
Forecast*		$20.00 M
Actual		$5.12 M

Project Schedule:

Approved	Jan-07	Jan-21
Forecast*	Jan-07	Jan-21

Project Percent Complete: 25.7%

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

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	07/18/19	TBD	TBD	TBD

Progress and Status:

The appraisals for four high priority properties for SFPUC acquisition in the Alameda watershed have been completed. Two properties are already under contract, and we anticipate that these acquisitions will go to the Commission for approval in summer 2019. We are waiting to hear back from the owners of the other two properties to confirm their interest in moving forward with sale.

Issues and Challenges:

None at this time.

One of the Proposed Land Acquisitions – Wool Ranch, with Calaveras Reservoir in the Background

APPENDIX F. LIST OF ACRONYMS

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

TWR	Treated Water Reservoir
UM	University Mound
UPS	Uninterruptable Power Supply
UV	Ultra Violet
VFD	Variable Frequency Drive
WEIP	Watershed Environmental Improvement Program
WSIP	Water System Improvement Program
WSTD	Water Supply and Treatment Division

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