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June 29, 2018

The Honorable Tim Strack, Chairman
California Seismic Safety Commission
1755 Creekside Oaks Drive, Suite 100
Sacramento, CA 95833-3637

Mr. Stefan Cajina
Division of Drinking Water
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Subject: Wholesale Regional Water System Security and Reliability Act Notice of Changes to Water System Improvement Program (WSIP)

Dear Commissioner Strack and Mr. Cajina:

Pursuant to the reporting requirements of the Wholesale Regional Water System Security and Reliability Act, the San Francisco Public Utilities Commission (SFPUC) respectfully submits this Change Notice, describing changes adopted by the SFPUC Commission (Commission) on April 10, 2018 to the schedule of the Water System Improvement Program (WSIP). Although not required by the Wholesale Regional Water System Security and Reliability Act, the SFPUC is also providing a description of the budget revisions and the project scope changes adopted by the Commission.

The SFPUC has made significant progress towards the implementation of the WSIP since the Commission last adopted program-wide revisions to the scope, schedule, and budget for the program in April 2016. Between March 2016 and March 2018, the overall completion of WSIP Regional projects increased from 89.0% to 95.5%. With only a few projects remaining in design, the implementation of the program almost exclusively focuses on construction activities. As of March 2018, seven (7) Regional projects with a total value of $1,183 million are in construction and forty (40) with a total value of $2,527 million are in closeout or have been completed. The remaining four (4) Regional projects are in pre-construction, one (1) being a support project that does not contribute directly to the program's Level of Service (LOS) goals. Forty (40) out of

forty-three (43) Regional WSIP projects with specific LOS goals have achieved their LOS goals to date.

Program revisions are necessary to incorporate the project teams' latest knowledge, understanding, and analysis due to encountering unexpected challenges during construction.

In early 2018, WSIP Senior Management recognized the need to refine estimates at completion for other active projects based on the latest available information and formally initiate the process for approval of program revisions in order to:

- Incorporate the latest project schedule and cost forecasts based on the most recent information available, including the status of change orders, trends, risks and contingencies reported by the various construction management (CM) teams;

- Transfer forecasted project savings to projects with forecasted overruns;
- Secure the additional funding needed to complete all WSIP projects;
- Provide realistic project baselines for more accurate performance measurements; and
- Ensure compliance with the California Water Code (Assembly Bills [AB] 1823 and 2437).

On March 9, 2018, the SFPUC notified the Bay Area Water Supply and Conservation Agency (BAWSCA) that the Commission would be considering changes to the WSIP at a public hearing on April 10, 2018. At our request, BAWSCA forwarded the notification to the 26 wholesale agencies it represents to comply with the change notice requirements of the Wholesale Regional Water System Security and Reliability Act. In addition, the Notice of Public Hearing and all supporting documents submitted to BAWSCA were posted on the SFPUC website. On April 10, 2018, following a 30-day review period, the Commission, per Resolution No. 18-0052, adopted the March 2018 Revised WSIP.

In summary, the overall scope of the WSIP essentially remains unchanged and no projects were deleted from the program. The scopes of seven (7) projects were refined to facilitate their implementation, but those changes will not impact the LOS goals to be achieved by the WSIP. These goals also remain unchanged.

A number of project schedules were revised to address an appeal of an environmental review of one project and construction challenges in the field for other projects. The program completion date adopted as part of the March 2018 Revised WSIP is December 30, 2021, which represents about a 24-month extension over the last program-level schedule approved by the Commission as part of the March 2016 Revised WSIP.

Of the fifty-two (52) existing regional projects in the WSIP, thirty-nine (39) have been completed, three (3) have no schedule variance, and ten (10) have been extended. The project with the longest forecast schedule extension is the Bioregional Habitat Restoration (BHR) Project at 40 months. The last project forecast to complete in the March 2018 Revised WSIP is the Regional Groundwater Storage and Recovery (RGWSR) project.

The forecasted cost of regional projects has increased from $4,373.8M to $4,415.8M (an increase of $42M or 1%). This forecast does not include financing costs which are currently being reconciled for comparison to the original financing budget for the program.

The budget revisions involve a mix of cost increases and cost savings at the project level. The project with the largest cost increase is the RGWSR. The 2018 approved project budget of the RGWSR is $25.2M greater than the 2016 approved project budget had been.

To facilitate distribution, the attached document is also available in the Reports section of the WSIP Web Page at www.sfwater.org/wsip. Please do not hesitate to contact me at (415) 554-1600 if you have questions or need additional information.

Sincerely,

Harlan L. Kelly, Jr.
General Manager

Attachment: Notice of Changes Report, Water System Improvement Program

cc: (with attachment)

Nicole Sandkulla - Chief Executive Officer and General Manager, BAWSCA

Thomas (Tom) Francis – Water Resources Manager, BAWSCA

Richard (Dick) McCarthy - Executive Director, California Seismic Safety Commission

Fred Turner - Structural Engineer, California Seismic Safety Commission

Bruce Burton - Chief of Northern California Drinking Water Field Operations Branch, California Department of Public Health

cc: (without attachment)

Commissioner Ike Kwon, President

Commissioner Vince Courtney, Vice President

Commissioner Ann Moller Caen

Commissioner Francesca Vietor

Commissioner Anson Moran

Assembly Member Al Muratsuchi – Chair, Joint Committee on Legislative Audit

Senator Richard Roth – Vice Chair, Joint Committee on Legislative Audit

Dr. Karen Smith, MD, MPH, Director, CA Dept. of Public Health

The Honorable Tracy Johnson, Vice-Chairman, California Seismic Safety Commission

Al Mendall - Chair, BAWSCA

Barbara Pierce - Vice-Chair, BAWSCA

BAWSCA Member Agencies (distributed by BAWSCA)

HETCH HETCHY
WATER SYSTEM
IMPROVEMENT
PROGRAM

Wholesale Regional Water System
Security and Reliability Act

Notice of Changes Report
Water System Improvement Program

June 29, 2018

Hetch Hetchy
Regional
Water
System

Services of the San Francisco Public Utilities Commission

Notice of Changes Report
Water System Improvement Program (WSIP)

TABLE OF CONTENTS

1. INTRODUCTION

The Water System Improvement Program (WSIP) is a multi-billion dollar, multi-year program to upgrade the San Francisco Public Utilities Commission's (SFPUC) drinking water system. The program will deliver capital improvements that enhance the SFPUC'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 the City and County of San Francisco, in an environmentally sustainable manner. The WSIP is structured to cost-effectively meet water quality requirements, improve seismic and delivery reliability, and meet water supply reliability goals. Figure 1-1 shows the location along the SFPUC Regional Water System where some of the 87 WSIP projects are located.

This report serves to document amendments to the WSIP since those adopted by the SFPUC Commission ("Commission") on April 26, 2016 and presented to the State in a report entitled *Notice of Changes Report - 2016 Revised Water System Improvement Program*, dated June 30, 2016 as well as revisions to the schedules of three projects adopted by the Commission at a public hearing on February 14, 2017, and presented to the State in a letter report dated September 1, 2017. Since then, there have been the following revisions to the WSIP:

- Revisions to the WSIP, referred to as the March 2018 Revised WSIP (or March 2018 Revised Program), were adopted by the Commission at a public hearing on April 10, 2018.

All changes and refinements at both the program and project levels that have occurred since April 2016 are incorporated herein; and updated project descriptions, schedules, and budgets are presented in the appendices.

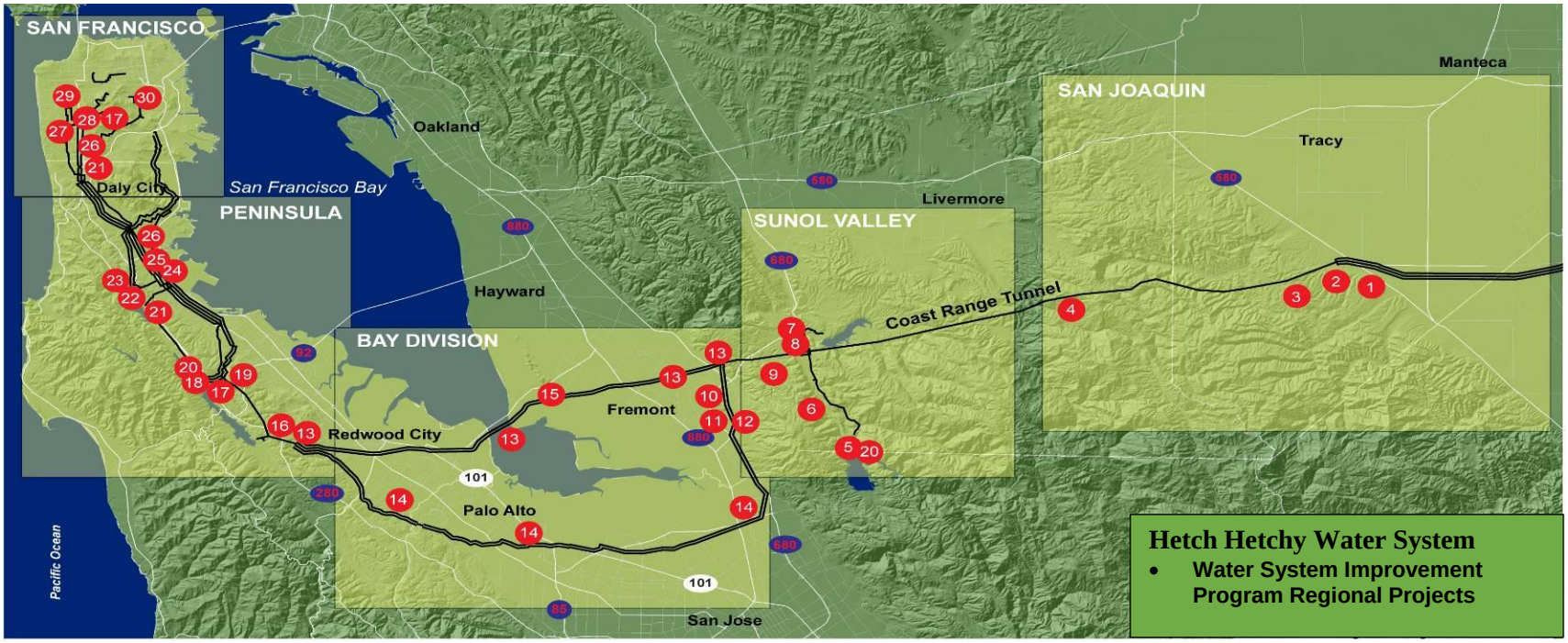
The SFPUC has made significant progress towards the implementation of the WSIP since the Commission last adopted program-wide revisions to the scope, schedule, and budget of the program in April 2016. This progress is reflected in the percent complete figures in the table below.

Table 1-1: Percent Complete for WSIP Regional Program

Phase	As of 03/31/16	As of 03/31/18
Planning	100.0%	99.3%
Environmental	97.1%	98.4%
Design	98.6%	96.9%
Construction	87.9%	96.4%
Overall	**89.0%**	**95.5%**

The implementation of the program going forward, almost exclusively focuses on construction activities. As of March 31, 2018, seven (7) regional projects with a total value of $1,188M are in construction and forty (40) projects with a total value of $2,527M are in close-out or have been completed. There are four (4) regional projects remaining in pre-construction with a total value of $75M: Alameda Creek Recapture Project, Watershed and Environmental Improvement Program, and the WSIP Closeout Project for each of the Sunol Valley and Peninsula Regions. One (1) project, the Long Term Mitigation Endowment, does not involve construction.

FIGURE 1-1: WATER SYSTEM IMPROVEMENT PROGRAM MAP



1. San Joaquin Pipeline System
2. Rehabilitation of Existing San Joaquin Pipelines
3. Tesla Treatment Facility
4. Lawrence Livermore Water Quality Improvement
5. Calaveras Reservoir Upgrades
5. Calaveras Dam Replacement
6. SVWTP Expansion & Treated Water Reservoir
7. Alameda Creek Recapture Project
8. San Antonio Backup Pipeline
8. Alameda Siphon #4
8. San Antonio Pump Station Upgrade
9. New Irvington Tunnel
10. BDPL No. 4 Condition Assessment PCCP Sections
11. Seismic Upgrade of BDPL Nos. 3 & 4
12. BDPL Nos. 3 & 4 Crossover / Isolation Valves
13. BDPL Reliability Upgrade – Tunnel
13. BDPL Reliability Upgrade - Pipeline
13. BDPL Reliability Upgrade – Relocation of BDPL Nos. 1 & 2
14. BDPL Nos. 3 & 4 Crossovers
15. SFPUC / EBMUD Intertie
16. Pulgas Balancing – Inlet/Outlet Work
16. Pulgas Balancing – Discharge Channel Modifications
16. Pulgas Balancing – Structural Rehabilitation & Roof Replacement
16. Pulgas Balancing – Modification of the Existing Dechlorination Facility
17. Crystal Springs Pipeline No. 2 Replacement
18. Lower Crystal Springs Dam Improvements
19. New Crystal Springs Bypass Tunnel
20. Adit Leak Repair – Crystal Springs/Calaveras
21. Crystal Springs / San Andreas Transmission Upgrade
22. HTWTP Long-Term Improvements
23. HTWTP Short-Term Improvements – Demo Filters
23. HTWTP Short-Term Improvements – Coagulation & Flocculation / Remaining Filters
24. Capuchino Valve Lot Improvements
25. Peninsula Pipelines Seismic Upgrade
26. Baden and San Pedro Valve Lots Improvements
27. Regional Groundwater Storage and Recovery
28. San Andreas Pipeline No. 3 Installation
29. Sunset Reservoir – North Basin
30. University Mound Reservoir – North Basin

WSIP Project In Various Locations
- Standby Power Facilities – Various Locations
- Pipeline Repair & Readiness Improvements
- SCADA System – Phase II
- System Security Upgrades
- Cross Connection Controls
- Programmatic EIR
- Bioregional Habitat Restoration
- Watershed & Environmental Improvement Program

As projects move from planning, to design and eventually to construction, new information becomes available and unexpected challenges are often encountered in the field. Project level and Program revisions are necessary to incorporate the project teams' latest knowledge, understanding and analysis.

In early 2018, the WSIP Senior Management recognized the need to refine active projects based on the latest available information and receive formal approval of program revisions in order to:

- Incorporate the latest project schedule and cost forecasts based on the most recent information available, including the status of change orders, trends, risks and contingencies reported by the various construction management (CM) teams;
- Transfer forecasted project savings to projects with forecasted overruns;
- Secure the additional funding needed to complete all WSIP projects;
- Provide more realistic project baselines for performance measurements; and
- Ensure compliance with the California Water Code (Assembly Bills [AB] 1823 and 2437).

On March 9, 2018, the SFPUC notified the Bay Area Water Supply & Conservation Agency (BAWSCA) that the Commission would be considering changes to the WSIP at a public hearing on April 10, 2018. A copy of the Notice of Public Hearing is included in Appendix A. We also asked BAWSCA to forward the Notice of Public Hearing to the 26 wholesale agencies it represents. BAWSCA confirmed the notification was forwarded. This notification was made to comply with the change notice requirements of the Wholesale Regional Water System Security and Reliability Act. In addition, the Notice of Public Hearing and all supporting documents submitted to BAWSCA were posted on the SFPUC Website on March 9, 2018. BAWSCA provided comments on the WSIP revisions outlined in the Notice of Public Hearing in a letter dated April 3, 2018. A copy of that letter along with SFPUC's response letter is included in Appendix B. On April 10, 2018, following a 30-day review period, the Commission, per Resolution No. 18-0052, adopted the March 2018 Revised WSIP. A copy of the Commission Resolution is provided in Appendix C.

1.1 Previous Changes to WSIP

The SFPUC began development of the Capital Improvement Program (CIP) in the late 1990's through a series of studies, reports and authorizations. The SFPUC initiated a water supply planning effort that culminated in the Water Supply Master Plan (WSMP), issued in April 2000. Concurrent with the WSMP efforts, reliability studies of the water system facilities were conducted to assess their vulnerability to earthquakes, landslides, fire, flood and power outages.

On May 28, 2002, the Commission, per Resolution No. 02-0101, approved a *Long-Term Strategic Plan (LTSP) for Capital Improvements,* a *Long-Range Financial Plan (LRFP)* and a *Capital Improvement Program (CIP) and Appendices*. These reports document the original SFPUC CIP. On November 5, 2002, San Francisco residents approved Proposition A, a $1.6 billion revenue bond measure to fund the CIP. The program at the time contained seventy-seven (77) water infrastructure projects designed to replace or repair, and improve the seismic condition of

facilities; enhance water quality; and improve water supply reliability. Projects were chosen and ranked based on the need to reduce risk and improve reliability.

On February 26, 2003, in accordance with AB 1823, as codified in Chapter 841 of the California Water Code, Section 73502(a), the SFPUC submitted to the California Department of Health Services (CDHS), now the California Department of Public Health (CDPH), a copy of the SFPUC CIP, including the LRFP and LTSP. The CIP specified the list of projects for the regional water system and local water system with project schedules and cost estimates. The LRFP presented the financing plan for the CIP, while the LTSP presented objectives and performances measures related to the SFPUC's capital improvements.

The Local Water CIP, consisting of forty (40) projects totaling approximately $715 million, was designed to enhance reliable water deliveries within San Francisco City limits, update outmoded equipment, and rehabilitate aging infrastructure to withstand seismic events. The Regional Water CIP, consisting of thirty-seven (37) projects totaling approximately $2.9 billion of the overall Water CIP, was designed to reduce exposure to risk from seismic events and to improve system reliability by ensuring transmission system redundancy for facilities that bring water from the Sierra Nevada and local watersheds to the San Francisco Bay Area.

In 2004, additional program development efforts were completed including the evaluation of customer demand and conservation potential for the 2030 planning horizon; the analysis of system performance under various operating conditions; and the development of a draft regional operational strategy/principles document to explain current and future system operating strategies, goals and constraints.

From October 2004 through January 2005, through a series of public workshops before the Commission, program-specific goals and objectives were developed to ensure the system-wide integration of the projects within the program and that all system improvement needs were addressed by the CIP. In early 2005, the Commission adopted the four (4) following categories of Level of Service (LOS) goals: Seismic Reliability, Delivery Reliability, Water Quality and Water Supply. The scope, schedule and budget of the program were revised based upon the selected LOS goals. The program revisions to meet the newly adopted LOS goals were so significant that the program name was changed from CIP to Water System Improvement Program (WSIP). In February 2005, the SFPUC published its revised program, entitled *Water System Improvement Program Prepared for the Programmatic Environmental Impact Report (PEIR)*, which documented the LOS goals used to define the WSIP for the PEIR.

Following an extensive review of the February 2005 revised program description, Parsons Water & Infrastructure (Parsons), in their report *Water System Improvement Program Assessment Report* ("2005 Assessment"), published on October 21, 2005, confirmed that in general, the overall program met the established LOS goals, and the necessity and scope of individual projects in the WSIP. The 2005 Assessment also identified some specific recommendations for changes in the overall program and individual projects.

In addition to the independent review performed as part of the 2005 Assessment, a Seismic Safety Task Force (SSTF) was convened to provide guidance on the program's seismic design

requirements. The SSTF, comprised of five (5) eminent experts in the fields of structural and seismic engineering, was directed to assess potential system vulnerabilities and propose seismic design criteria for projects.

The Commission, per Resolution No. 05-0176, formally adopted the revised program on November 29, 2005. The revised program is described in *Water System Improvement Program (SFPUC, January 2006)*. This revised version of the program, the first approved by the Commission following the adoption of LOS goals, is referred to as the November 2005 WSIP. Because the adoption of the LOS goals resulted in so many significant changes to the overall scope of the program, which was first provided to the State of California in February 2003, this version of the program (November 2005 WSIP) is used as the original baseline for performance tracking purposes.

On January 19, 2006, a change notice report, *AB1823: Notice of Changes to Water System Improvement Program (SFPUC, January 2006)*, was submitted to the State of California, along with the January 2006 program description document. The Change Notice described in detail, changes to the program since the previously adopted program in May 2002 (and submitted to the State of California in February 2003), including development of the LOS goals and subsequent project descriptions. Appendix A to that report (Seismic Risk Profile Comparison) was revised in response to clarifications requested by the California Seismic Safety Commission (CSSC) and the change notice report with the revised Appendix A was resubmitted to the State on March 8, 2006.

Throughout 2006, project teams focused on further developing project designs, including specific design criteria to meet LOS goals, without significant project changes. A few programmatic efforts assisted in guiding development of the project-specific design criteria as well as assuring conformance with LOS goals. The *Facilities Sizing Report*, published on January 26, 2006 by Parsons and their sub-consultant CH2MHill, provided interpretation of the LOS goals into sizing criteria for specific projects using results from hydrologic and hydraulic system modeling. The *WSIP System Assessment for Levels of Service Objectives*, published November 22, 2006 by Parsons, better defined and quantified the goals for seismic reliability and delivery reliability, and confirmed the projects that are required to meet these goals.

The SFPUC's Engineering Management Bureau (EMB) published the *General Seismic Requirements for Design of New Facilities and Upgrade of Existing Facilities* on August 15, 2006. That design manual was prepared in collaboration with the SFPUC's SSTF and the criteria in that document were reviewed by the CSSC. The criteria provide guidance for determining project-specific seismic criteria based on LOS goals, facility usage and site-specific geotechnical information.

As projects evolved during 2006 and 2007, more information became available about project design details, environmental compliance and permitting needs, right-of-way (ROW) challenges, and facility shutdown and construction sequencing requirements. The WSIP Team initiated the WSIP Re-alignment Initiative to evaluate how adjustments could best be made to scopes, schedules and budgets in order to minimize program risks and assure that all program goals could be effectively achieved, with the underlying assumption that all current LOS goals for the program must continue to be met. On February 26, 2008, the Commission, per Resolution No. 08-0024,

adopted scope, schedule and budget revisions. The revised program approved at that time is referred to as the November 2007 Revised WSIP. Shortly thereafter, a change notice report documenting these latest revisions approved by the Commission, *Notice of Changes to Water System Improvement Program (SFPUC, March 31, 2008),* was submitted to the CSSC and CDPH. This was the second such report submitted to the State.

On October 30, 2008, the San Francisco Planning Commission certified the PEIR for the WSIP as required under the California Environmental Quality Act (CEQA). On the same day, the SFPUC Commission, per Resolution No. 08-0200, approved the Phased WSIP, including the Goals and Objectives, and adopted the CEQA findings. The Phased WSIP is a variant of the originally proposed WSIP and includes full implementation of the WSIP facility projects to ensure that the public health, water quality, seismic safety and delivery reliability goals are achieved, with phased implementation of the water supply portion of the program. Under the Phased WSIP, the SFPUC will establish an interim, mid-term implementation horizon of 2018. The Phased WSIP includes water supply delivery to wholesale and retail customers through 2018.

The Phased WSIP goals and objectives are founded on two (2) fundamental principles pertaining to the existing regional water system: (1) maintain a clean, unfiltered water source from the Hetch Hetchy system; and (2) maintain a gravity-driven system.

The overall goals of the Phased WSIP for the Regional Water System are the same as for the originally proposed WSIP, and are to:

- Maintain high-quality water and a gravity-driven system;
- Reduce vulnerability to earthquakes;
- Increase delivery reliability;
- Meet customer water supply needs;
- Enhance sustainability; and
- Achieve a cost-effective, fully operational system.

To meet the program goals and objectives, the Phased WSIP includes the following program elements:

- Full implementation of WSIP facility improvement projects;
- Water supply delivery to Regional Water System customers through 2018 with an average annual target delivery of 265 million gallons per day (mgd) originating from the watersheds. This includes 81 million gallons per day (mgd) for the retail customers and 184 mgd for the wholesale customers;
- Water supply sources include 265 mgd average annual delivery from the Tuolumne River watershed and the local watersheds plus 20 mgd of conservation, recycled water, and groundwater developed in the service area (10 mgd retail; 10 mgd wholesale);
- Implementation of delivery and drought reliability elements of the WSIP, including dry-year water transfers coupled with the Regional Groundwater Storage and Recovery project,

to meet the drought-year goal of limiting rationing to no more than 20 percent (20%) on a system wide basis;

- Re-evaluation of 2030 demand projections, potential regional system demand (purchase requests), and water supply options by 2018, and SFPUC decision in 2018 regarding regional water system deliveries after 2018; and
- Financial incentives to limit water sales to an average annual amount of 265 mgd from the SFPUC watersheds.

Throughout 2008 and the first half of 2009, program execution efforts focused on project design and environmental review, and implementation of the WSIP CM Program to address the program's impending transition into construction. For a few projects, refinement of project environmental and design requirements resulted in identification of additional project constraints that presented significant challenges in meeting approved scopes, schedules and/or budgets. At the same time, the economic recession led to a very favorable bidding environment that allowed for the accumulation of project savings. On July 28, 2009, the Commission, per Resolution 09-0125, approved a third program-wide revision that captured these changing conditions on the program. A change notice report documenting these latest revisions approved by the Commission, *Notice of Changes Report - June 2009 Revised Water System Improvement Program (SFPUC, September 1, 2009),* was subsequently submitted to the State of California.

In early 2011, WSIP Senior Management recognized the need to assess the cumulative effects of refinements made on the program in the previous few years. Based on that assessment, it was determined that a program-wide revision to the WSIP was required to incorporate the recent construction bids and the near-term effects of the economic recession into construction cost estimates, as well as to consolidate project cost savings accumulated to date in a Program Management Reserve. On July 12, 2011, the Commission, per Resolution 11-0109, formally adopted the forth revision to the program. A change notice report documenting the latest approved program-wide revisions, *Notice of Changes Report - June 2011 Revised Water System Improvement Program (SFPUC, September 1, 2011)* was subsequently submitted to the State of California.

From June 2011 to March 2013, the following project-level budget and schedule changes were approved by the SFPUC Commission:

- On June 12, 2012, per Resolution No. 12-0099, the Commission approved budget and schedule changes for three individual WSIP projects – New Irvington Tunnel, Bay Division Pipeline (BDPL) Reliability Upgrade – Pipeline ("BDPL No. 5") and Pulgas Balancing – Modification of the Existing Dechloramination Facility. A change notice report documenting these project-specific revisions was submitted to the State on July 12, 2012; and
- On October 9, 2012, per Resolution No. 12-0181, the Commission approved budget changes for four individual WSIP projects – San Joaquin Pipeline (SJPL) System, Tesla Treatment Facility, Vegetation Restoration of WSIP Construction Sites (new project), and Program Management; and

- On January 22, 2013, per Resolution No. 13-0020, the Commission approved budget and schedule changes for one individual WSIP project – Calaveras Dam Replacement. A change notice report documenting these project-specific revisions was submitted to the State on February 20, 2013.

In March 2013, the WSIP Senior Management recognized the need to refine estimates at completion for all active projects based on the latest available information and formally approved program revisions. On April 23, 2013, per Resolution No. 13-0060, the Commission formally adopted the revisions to the program schedule and budget. A change notice report documenting the approved program-wide revisions, *Notice of Changes Report – March 2013 Revised Water System Improvement Program (SFPUC, June 28, 2013)* was submitted to the State of California.

In early 2014, WSIP Senior Management recognized the need to refine estimates at completion for all active projects based on the latest available information and formally approve program revisions. On April 22, 2014, per Resolution No. 14-0065, the Commission formally adopted the revisions to the program schedule and budget. A change notice report documenting the approved program-wide revisions, *Notice of Changes Report – March 2014 Revised Water System Improvement Program (SFPUC, June 20, 2014)* was submitted to the State of California.

In late 2015, WSIP Senior Management recognized the need to request project-level schedule changes for six individual projects. On December 8, 2015, per Resolution No. 15-0263, the Commission approved schedule changes for six individual WSIP projects – San Joaquin Pipeline System, San Antonio Backup Pipeline, Seismic Upgrade of BDPL Nos. 3&4, BDPL Reliability Upgrade – Pipeline (BDPL No.5), HTWTP Long-Term Improvements, and Vegetation Restoration of WSIP Construction Sites.

In early 2016, WSIP Senior Management also recognized the need to refine estimates at completion for other active projects based on the latest available information and formally approve program revisions. On April 26, 2016, per Resolution No. 16-0071, the Commission formally adopted the revisions to the program schedule and budget. A change notice report documenting both the 2015 approved project-level schedule changes and the 2016 approved program-wide revisions, *Notice of Change Report – March 2016 Revised Water System Improvement Program (SFPUC June 30, 2016)*, was submitted to the State of California.

In early 2017, WSIP Senior Management recognized the need to request project-level schedule changes for three individual projects. On February 14, 2017, per Resolution No. 17-0026, the Commission approved schedule changes for three individual WSIP projects – New Irvington Tunnel, Seismic Upgrade of BDPL Nos. 3&4, and Security System Upgrade. A change notice report documenting these project-specific changes was submitted to the state on September 1, 2017.

In early 2018, WSIP Senior Management recognized the need to refine estimates at completion for all active projects based on the latest available information and formally approve program revisions. On April 10, 2018, per Resolution No. 18-0052, the Commission formally adopted the revisions to the program schedule and budget.

1.2 Last Notice of Change Report

As indicated above, the last program-wide notice of change report - *Notice of Changes Report – March 2016 Revised Water System Improvement Program* - was submitted to the State of California on June 30, 2016. That report described in detail the WSIP revisions adopted by the Commission on April 26, 2016. On September 1, 2017, the SFPUC additionally reported to the State of California schedule changes to three individual WSIP projects – New Irvington Tunnel, Seismic Upgrade of BDPL Nos. 3&4, and Security System Upgrade, which had been approved by the Commission on February 14, 2017.

1.3 Public Hearings for Consideration of Latest Changes to WSIP

On March 9, 2018, the SFPUC notified BAWSCA that the Commission would be considering changes to the WSIP at a public hearing on April 10, 2018. Refer to Appendix A for a copy of the Notice of Public Hearing. At our request, BAWSCA forwarded the notification to the 26 wholesale agencies it represents to comply with the change notice requirements of the Wholesale Regional Water System Security and Reliability Act. In addition, the Notice of Public Hearing and all supporting documents submitted to BAWSCA were posted on the SFPUC Website.

In response to the notice, BAWSCA submitted a comment letter dated April 3, 2018. The BAWSCA letter outlines a number of scope, budget and schedule recommendations to which the SFPUC responded in a memorandum dated June 29, 2018. Refer to Appendix B for a copy of the BAWSCA comment letter along with SFPUC's response to BAWSCA's recommendations.

On April 10, 2018, following a 30-day review period, the program revisions documented in this report were presented to the Commission at a public hearing. All revisions proposed by staff were adopted by the Commission on these respective dates. The Commission Resolution is included in Appendix C.

In addition, correspondence with State of California staff (State Seismic Safety Commission and State Water Resources Control Board) since the last program-wide revisions were approved in 2016 and are included in Appendix D.

1.4 Summary of Latest Approved Changes

The overall scope of the WSIP remains unchanged. The most significant changes to the WSIP are (1) the extension of the overall program completion date from December 20, 2019 to December 30, 2021, and (2) the increase of the forecasted cost of regional projects from $4,373.8M to $4,415.8M ($42M or 1% increase).

Of the fifty-two (52) existing regional projects in the WSIP, thirty-nine (39) have been completed, three (3) have no schedule variance, and ten (10) have been extended.

The project with the longest forecast schedule extension is the Bioregional Habitat Restoration (BHR) Project at 40 months. The last project forecast to complete in the March 2018 Revised WSIP is the Regional Groundwater Storage and Recovery (RGWSR) project.

The budget revisions involve a mix of cost increases and cost savings at the project level. The project with the largest cost increase is the RGWSR. The projected cost variance of the RGWSR is $25.2M from the 2016 approved project budget.

The SFPUC is undertaking a number of steps to reduce and control the remaining costs of the WSIP. For example, we have significantly reduced the regional management structure of the program and we have reduced significantly the City and Consultant resources at the program level. Furthermore, we have substantially transitioned much of the work from Consultants to City staff and will continue to do so where practicable.

No regional projects were deleted from the WSIP since program-wide revisions were last approved in 2016 and there are no project name changes, although there are several sub-projects with name changes in the WSIP Closeout Projects. Most project scopes remain the same as those previously approved by the SFPUC. Seven (7) projects have scope changes as follows:

- Project CUW30103: Regional Groundwater Storage and Recovery
- Project CUW37401: Calaveras Dam Replacement
- Project CUW39401: Watershed and Environmental Improvement Program
- Project CUWSJI: WSIP Closeout - San Joaquin Region
- Project CUWSVI: WSIP Closeout – Sunol Valley Region
- Project CUWBDP: WSIP Closeout – Bay Division Region
- Project CUWPWI: WSIP Closeout – Peninsula Region

2. PROJECT STATUS

There has been steady progress on the implementation of the WSIP since March 2016. As of March 2018, construction was completed on forty (40) of the WSIP's fifty-two (52) Regional projects; construction was ongoing on seven (7) Regional projects. There are four (4) Regional projects remaining in pre-construction. The only projects still in pre-construction are Alameda Creek Recapture Project, Watershed and Environmental Improvement Program, and the WSIP Closeout Project for each of the Sunol Valley and Peninsula Regions. One (1) project, the Long Term Mitigation Endowment, does not involve construction. Table 2-1 summarizes the status of the WSIP projects as of March 31, 2018.

Table 2-1: March 2018 Revised WSIP – Projects Status

Projects Not Initiated		
Project No.	**Project Name**	**Project Start Date**
	None	
Projects in Pre-Construction		
Project No.	**Project Name**	**Construction Notice-to-Proceed (NTP) Date**
CUWSVI0101	WSIP Closeout - Sunol Valley (1)	04/10/17
CUWPWI0101	WSIP Closeout - Peninsula (1)	07/24/18
CUW39401	Watershed and Environmental Improvement Program (4), (5)	05/06/19
CUW35201	Alameda Creek Recapture Project	08/30/19
Projects in Construction		
Project No.	**Project Name**	**Construction Phase Completion Date**
CUW36302	System Security Upgrades (1)	03/31/18
CUW35302	Seismic Upgrade of BDPL Nos. 3 & 4	04/30/18
CUW37401	Calaveras Dam Replacement	06/19/19
CUWSJI0101	WSIP Closeout - San Joaquin	08/30/19
CUWBDP0101	WSIP Closeout - Bay Division (1)	11/19/19
CUW30103	Regional Groundwater Storage and Recovery (1)	06/30/21
CUW38802	Bioregional Habitat Restoration (1, 2)	05/31/18
CUW38804	Long Term Mitigation Endowment (3)	N/A
Projects in Closeout		
Project No.	**Project Name**	**Project Completion Date**
CUW35901	New Irvington Tunnel	03/31/18

Projects Completed		
Project No.	**Project Name**	**Actual Project Completion Date**
CUW36101	Pulgas Balancing - Inlet/Outlet Work	05/11/06
CUW37402	Calaveras Reservoir Upgrades	07/28/06
CUW36601	HTWTP Short-Term Improvements (Demo Filters)	11/14/06
CUW35701	Adit Leak Repair - Crystal Springs/Calaveras	07/31/08
CUW36901	Capuchino Valve Lot Improvements	08/19/08
CUW39301	BDPL No. 4 Condition Assessment PCCP Sections	02/06/09
CUW37001	Pipeline Repair & Readiness Improvements	04/16/09
CUW36501	Cross Connection Controls	04/30/09
CUW35301	BDPL Nos. 3 & 4 Crossover/Isolation Valves	07/31/09
CUW36803	BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2	05/28/10
CUW36102	Pulgas Balancing - Discharge Channel Modifications	07/28/10
CUW36603	HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters	07/30/10
CUW35801	Sunset Reservoir - North Basin	09/10/10
CUW35501	Standby Power Facilities - Various Locations	12/22/10
CUW38601	San Antonio Pump Station Upgrade	06/29/12
CUW35601	New Crystal Springs Bypass Tunnel	08/17/12
CUW37901	San Andreas Pipeline No. 3 Installation	08/30/12
CUW35401	Lower Crystal Springs Dam Improvements	12/28/12
CUW36103	Pulgas Balancing - Structural Rehabilitation and Roof Replacement	12/28/12
CUW36105	Pulgas Balancing - Modifications of the Existing Dechloramination Facility	03/20/13
CUW37201	University Mound Reservoir - North Basin	03/29/13
CUW39101	Baden and San Pedro Valve Lots Improvements	03/29/13
CUW36301	SCADA System - Phase II	05/28/13
CUW35902	Alameda Siphon #4	06/28/13
CUW36401	Lawrence Livermore Water Quality Improvement	07/31/13
CUW38901	SFPUC/EBMUD Intertie	03/20/14
CUW38001	BDPL Nos. 3 & 4 Crossovers	06/30/14
CUW37302	Rehabilitation of Existing San Joaquin Pipelines	10/31/14
CUW38101	SVWTP Expansion & Treated Water Reservoir	10/31/14
CUW37801	Crystal Springs Pipeline No. 2 Replacement	12/31/14
CUW38401	Tesla Treatment Facility	01/30/15
CUW37101	Crystal Springs/San Andreas Transmission Upgrade	06/30/15
CUW36802	BDPL Reliability Upgrade - Pipeline	03/31/16
CUW37301	San Joaquin Pipeline System	03/31/16
CUW37403	San Antonio Backup Pipeline	06/30/16
CUW38803	Vegetation Restoration of WSIP Construction Sites	06/30/16

Projects Completed		
Project No.	**Project Name**	**Actual Project Completion Date**
CUW36702	Peninsula Pipelines Seismic Upgrade	07/06/16
CUW36801	BDPL Reliability Upgrade / Tunnel	08/30/16
CUW36701	HTWTP Long-Term Improvements	12/30/16

Notes:

(1) Project currently active in multiple phases. Project classified according to the phase in which a majority of the work is taking place.

(2) The Bioregional Habitat Restoration Project includes 9 construction contracts.

(3) The Long Term Mitigation Endowment (LTME) fund is to provide a secure source of funds for perpetual monitoring and maintenance of the Bioregional Habitat Restoration sites constructed in the SFPUC watershed. The LTME fund does not involve construction activities. The LTME is scheduled to be completed on 09/30/21.

(4) The Watershed and Environmental Improvement Program (WEIP) is a program-wide effort to permanently protect watersheds and other lands through perpetual conservation easements and/or fee title purchase of property from willing landowners, and includes funding for construction of educational/outreach facilities. The program is scheduled to be completed on 01/08/21.

(5) A portion of the WEIP funding will be allocated for construction of educational/outreach facilities. However, construction will be managed outside of the WSIP.

3. GENERAL PROJECT CHANGES

Overall, the changes for March 2018 Revised WSIP is very similar to the March 2016 Revised WSIP. The March 2018 Revised WSIP includes scope refinements to seven (7) existing projects.

Project Name Changes

There were no project name changes; however, there were several name changes to sub-projects of the WSIP Closeout Projects as described in Section 4

Project Eliminated

No projects have been eliminated

Projects Added

No projects have been added; however, there are several additional sub-projects to the WSIP Closeout Projects as described in Section 4.

Projects Modified

There are seven (7) projects with scope refinements as follows:

- Project CUW30103: Regional Groundwater Storage and Recovery
- Project CUW37401: Calaveras Dam Replacement
- Project CUW39401: Watershed and Environmental Improvement Program
- Project CUWSJI: WSIP Closeout - San Joaquin Region
- Project CUWSVI: WSIP Closeout – Sunol Valley Region
- Project CUWBDP: WSIP Closeout – Bay Division Region
- Project CUWPWI: WSIP Closeout – Peninsula Region

4. SCOPE CHANGES

The scope of all but seven (7) projects remains the same as those last approved by the San Francisco Public Utilities Commission (SFPUC) in the March 2016 Revised WSIP. The following seven projects have scope changes in the March 2018 Revised WSIP: Regional Groundwater Storage and Recovery, Calaveras Dam Replacement, Watershed and Environmental Improvement Program, WSIP Closeout - San Joaquin Region, WSIP Closeout – Sunol Valley Region, WSIP Closeout – Bay Division Region, and WSIP Closeout – Peninsula Region. The scope changes and additions are described below.

CUW30103 **Regional Groundwater Storage and Recovery**

The goal of the Regional Groundwater Storage and Recovery (RGSR) 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 installation of up to sixteen (16) new deep groundwater wells to achieve the 7.2 mgd of water supply. The design goal of pumping 7.2 mgd over 7.5 years is based on modeling results and would need to be confirmed based on operating and monitoring data.

The original scope of the RGSR project was planned to be constructed in two phases. The original scope of Phase 1 included construction of thirteen (13) new deep groundwater wells, and the original scope of Phase 2 included construction of 2 to 3 additional wells, depending upon well yield.

Based on the modeling data inputs and results, it is projected that the thirteen (13) new wells constructed in Phase 1 would produce approximately 6.2 mgd of dry year supply over 7.5 years. Operating the RGSR Project during times of drought will provide data and insights into how much water can be reasonably expected to be produced by the project and if additional well stations are needed to reach the desired drought period pumping capacity.

In addition to the need for collecting operational data to determine the pumping capacity of the thirteen (13) new wells, the Daly City Recycled Water Expansion Project proposes to serve recycled water to existing irrigated properties (golf courses and cemeteries) in the Colma area for irrigation use. Replacing groundwater with recycled water for irrigation use will decrease or eliminate the cemeteries' use of the aquifer, creating more in lieu storage in the aquifer for water supply use. The SFPUC will identify potential benefits to its ability to utilize the aquifer resulting from the Daly City Recycled Water Expansion Project during project planning and design, as well as monitor operation of the project.

Given the considerations noted above, the SFPUC has modified the scope of Phase 2 to install up to three (3) test wells (Ludeman North, Ludeman South, and Centennial Trail), complete the South San Francisco Main well and pipeline, and complete other Phase 1 scope items, including chemical system monitoring, sampling, and storage at various sites. The test wells will allow for determination as to whether the identified sites could be viable production wells, and will provide valuable information related to water quality and potential pumping capacities that can be used for future planning and decision making. The test wells would not be converted to production wells at this time.

Proceeding with these changes to Phase 2 will allow all thirteen (13) new Phase 1 RGSR wells to be operated to gain experience and insight into the pumping capacities of each individual well in addition to how the wells work in combination with each other and existing municipal and irrigation wells. Staff will gain valuable experience regarding the relationship of RGSR drought year pumping to the management of

the groundwater basin. Operational experience will allow refinement of the modeled dry year water supply yield of the RGSR project.

The changes to RGSR Phase 2 also allows for the collection of test well data at up to three (3) locations for use in future planning if the operational experience with the thirteen (13) wells shows the need for more pumping capacity. This option also allows for the basin effects of the Daly City Recycled Water Expansion Project to be identified and may provide greater flexibility in the future to utilize the basin for water supply.

CUW37401 **Calaveras Dam Replacement Project**

The Calaveras Dam Replacement Project (CDRP) is provided in response to the Seismic Reliability, Delivery Reliability, and Water Supply LOS goals. The dam was originally designed to store up to 96,850 acre-feet of water in the Calaveras Reservoir. Water from the reservoir is treated at the SVWTP before delivery to customers. The California Department of Water Resources Division of Safety of Dams (DSOD) has, however, mandated that the maximum reservoir level be significantly reduced because the dam is located near the active Calaveras Fault and has been determined to be seismically vulnerable. The storage volume associated with the reduced level is approximately 38,100 acre-feet (39% of original capacity). The replacement dam will restore the original reservoir capacity, and it is designed such that it can be raised to accommodate a potential reservoir enlargement in the future.

The CDRP is currently in construction and as of March 31, 2018, construction was over 90 percent complete.

After approval of the March 2016 Revised WSIP, severe and unusual precipitation events occurred between October 2016 and March 2017 that have impacted the project construction schedule. The severe weather triggered landslides on Calaveras Road, which made the road impassable and required that it be shut down for several months. This portion of Calaveras Road is the major access to the construction site and is needed for the import of sands and gravels used to construct the filter and drain zones within the dam embankment as well as the downstream blanket filter and drain zones. In addition, the West Haul Road along the rim of the reservoir was flooded. This impacted the ability to import clay materials used to build the core of the dam from the clay borrow source on the south side of the reservoir. Scope refinements include repairs to the landslide portion of Calaveras Road and restoration of the West Haul Road.

The Fish Passage Facilities Project at Alameda Creek Division Dam (ACDD) is a subproject to the CDRP. The ACDD is currently in construction and as of March 31, 2018, construction was over 80 percent complete.

There have been several differing site conditions identified on the ACDD project and they are in various phases of completion and negotiation. The largest differing site condition relates to a deep seated landslide in the hillside adjacent to the project site that resulted in an increase in contract scope and costs.

The project geotechnical data report (GDR) indicates multiple shallow landslide deposits and debris-flows along the right abutment and immediately upstream of the existing dam structure. Additionally, it is noted that these geologic features are underlain by large, deep-seated landslides. The GDR provides multiple cross section profiles, interpreting sub-surface geologic

conditions that exist. Five (5) known landslides were mapped in the GDR, all of which occur upslope of the existing dam structure. However, two (2) of these known landslides on the right bank have the potential to affect the intake/diversion structure which extends upstream of the dam. The contract drawings include a landslide stabilization wall along a portion of the right abutment to shore these known hazards.

During the installation of a contractor-designed soil nail wall used for excavation support down slope of the landslide stabilization wall, movement was noted in two (2) locations along a previously installed section of the soil nail wall. One of the movement locations is downstream of the existing dam structure, and the other is directly adjacent to the crest of the dam. Four (4) inclinometers were installed along the right abutment, and verification of movement was recorded. Additionally, the contractor's geotechnical consultant mapped observed geologic contacts during the excavation of the soil nail wall. These newly mapped geologic contacts show a slip plane that extends further down slope than the contract landslide stabilization wall, extending into the soil nail wall.

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

CUW39401 **Watershed and Environmental Improvement Program**

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

Consistent with the SFPUC Water Enterprise Environmental Stewardship Policy, the scope refinement is to allocate a portion of the funding under the WEIP 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 the remaining WEIP funds.

WSIP Closeout Projects

The WSIP Closeout Projects were approved as part of the March 2016 Revised WSIP for each of four (4) regions (San Joaquin, Sunol, Bay Division, and Peninsula) in response to miscellaneous identified needs and/or improvements that are needed to supplement the scope of WSIP regional projects to ensure that WSIP Level of Service (LOS) goals are fully achieved. The scopes of work for the individual sub-projects that are refined and/or added within each region are described below.

CUWSJI WSIP Closeout - San Joaquin Region

- **Supplemental Solar Panel Installations** – This sub-project was originally scoped to provide additional solar panels to cover power shortfalls observed under certain operational conditions. Since the March 2016 Revised WSIP was approved, the Hetch Hetchy Water and Power (HHWP) Division installed new microwave towers at Oakdale,

Knight Ferry Throttling Station, and San Joaquin Junction No. 4 in the summer of 2016. These towers have cast additional shadows on the existing solar panels, which further reduced the power generated from these arrays. The scope refinements are to re-evaluate the existing photo-voltaic systems at these three (3) locations before proceeding with modifications to the existing arrays. The results could potentially require an increase in power output at each of the sites.

- ***Tesla Portal Facility Interior Floor Slab*** – *No scope changes.*

CUWSVI WSIP Closeout - Sunol Valley Region

- **AS4 Carrier Water System Modifications** – No scope changes.

- **Erosion Repair at Pond F3 East** – The CUW37401 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. Scope refinements include use of new rockfill rather than grouted riprap for erosion repairs.

- **Sunol Valley Water Treatment Plant Basin 5 Optimization** – The new name of this sub-project is **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 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 (CIP).

- **Miscellaneous Work at AWP, IVP and SABPL (new sub-project addition in 2018)** – The CUW 35901 New Irvington Tunnel (NIT) was completed in 2017, and the CUW 37403 San Antonio Backup Pipeline (SABPL) was completed in 2016. This subproject will include the following work:

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

- **NIT Water Quality Equipment Relocation (new sub-project addition in 2018)** – 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 (new sub-project addition in 2018)** – 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.

CUWBDP WSIP Closeout - Bay Division Region

- **Caltrans V-Ditch Across SFPUC Right-of-Way -** The new name of this sub-project is **Site Drainage and Pipe Coating Repairs**. The original scope of this sub-project was to coordinate with Caltrans on an agreement and design for a drainage system across SFPUC ROW between the Caltrans storm-water pipeline and an open field associated with the construction of the CUW35302 Seismic Upgrades of BDPL Nos. 3 & 4. However, coordination efforts with Caltrans were unsuccessful, so this sub-project now will focus on providing a drainage system solely within SFPUC Right-of-Way. 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.

- **Bay Tunnel Warranty Inspection and BDPL 1 & 2 EIR Mitigation –** The original scope of this sub-project included warranty inspection of the new Bay Tunnel and mitigation required by the Bay Tunnel Environmental Impact Report (EIR) to decommission the existing Bay Division Pipelines (BDPLs) Nos. 1 and 2 by punching holes in the pipe to prevent buoyancy during extreme future high tides and storm events and covering those holes with wire mesh to prevent entrapment of wildlife, and installation of historical panels for public education. Since that time, the SFPUC has established a project under the Water 10-Year Capital Improvement Program (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. Accordingly, the scope refinement for this sub-project is to eliminate the physical work of punching holes in the existing pipelines, and utilize the funding to advance the planning for the decommissioning study until such time that the funding for the new CIP project becomes available in FY2020-21.

- **Hydro-seeding at Bay Tunnel Project –** No scope changes.

- **Newark Valve Lot Additional Gravel Placement –** No scope changes.

- **Corrosion Protection for Valve E5OU** – No scope changes.
- **Ventilation and Sump Pump Systems Installation (new sub-project in 2018)** - This sub-project provides improvements for inspection, monitoring and maintenance

associated with the construction of the CUW35302 Seismic Upgrades of BDPL Nos. 3 and 4. The BDPL 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 3 vault. Furthermore, the BDPL 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.

CUWPNI WSIP Closeout - Peninsula Region

- **Lower Crystal Springs Dam (LCSD) Stilling Basin Modifications & Dissipation Structure Riprap -** This sub-project was created in response to concerns that fish may be "trapped" in the Lower Crystal Springs Dam (LCSD) Stilling Basin. The following are scope refinements to the original scope of this project:
    - Installation of a new 24-inch HDPE pipeline through an existing abandoned 60-inch pipe directed to the stilling basin
    - Coordination and facilitation of access for a piezometer drilling contractor during periods of concurrent work in the stilling basin
    - Deletion of landscaping around the new Crystal Springs Pump Station
    - Addition of tree, shrub and grass plantings along the creek bank in accordance with the approved re-vegetation plan

- **LCSD Valve H-53 / Pipeline Investigation & Fisheries Release Valve** – This sub-project was created to utilize modification of an existing 60-inch diameter pipeline to release the required flows to the LCSD stilling basin feeding San Mateo Creek. The construction contract for this sub-project will be combined with the LCSD Stilling Basin Modifications & Dissipation Structure Riprap contract. The following are scope refinements to the original scope of this project:
    - 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
    - Replacement of leaking plug valves that discharge from an existing concrete vault to the stilling basin with new knife gate valves
    - Installation of new flow control valves, isolation valves and appurtenances for Pool 2
    - Connections to the existing 72-inch pipeline using hot taps
    - 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** – No scope changes.

- **Closeout of DSOD Permit Applications for LCSDI and CSSA Projects** - No scope changes.

- **Coordination with San Mateo County Bridge Construction over LCSD** – No scope changes.

- **Harry Tracy Water Treatment Plant (HTWTP) Improvements (new sub-project in 2018)** - The Harry Tracy Long-Term Improvements Project (CUW36701) was completed in 2014. Since 2014, the following needs were identified to address construction issues and improve operations at the plant to fully meet the LOS goals and objectives:
    - 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
    - Modify Sludge Tank No. 1 piping to eliminate cavitation in the washwater pumps
    - 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
    - Repair leaks in the filter gallery channels where stainless steel angle plates were added to support several concrete walls
    - Automate flushing of the sludge transfer pumps and piping to eliminate the need for Operations to manually flush on a frequent basis
    - Replace and relocate failed variable frequency drives (VFDs) for the wash water and sludge transfer pumps to address an over-heating issue
    - Install double containment for the diesel fuel supply lines for the exterior generator to protect against leaks into the environment
    - Provide training and programming modifications to the Raw Water Pump Station switchgear equipment to enable remote SCADA control
    - Install vibration control monitoring system on the electrical panels at the Raw Water Pump Station to replace the existing obsolete system
    - Evaluate/Assess condition of failed mixers in the equalization basin

- **Crystal Springs/San Andreas Pipeline (CSSA) Erosion Repairs (new sub-project in 2018) -** The heavy winter storms of 2017 exacerbated erosion at two (2) watershed culvert locations, OW-13 and OW-18, along the CSSA Pipeline. Erosion has caused the CSSA Pipeline to be exposed and potentially undermined. The scope of this sub-project is to repair the erosion with systems consistent with the requirements of permitting agencies such as the State Water Resources Control Board.

5. SCHEDULE CHANGES

The project schedules in the March 2018 Revised WSIP reflect the latest available information on each active regional project based on the status of ongoing implementation efforts as of early March 2018. It is standard practice to refine project schedules as more knowledge is gained about project-specific needs and challenges. The recent schedule forecasting and review efforts have led to more accurate and realistic project-specific schedules. With only four (4) WSIP projects remaining in pre-construction (Alameda Creek Recapture, WSIP Closeout – Sunol Valley, WSIP Closeout – Peninsula, and Watershed and Environmental Improvement Program), most of the schedule changes are related to issues encountered in the field during construction.

TABLE 5-1: March 2018 Revised WSIP – Summary of Schedule Changes, below, compares the January 2017 (approved by the Commission on February 14, 2017) and March 2018 Revised WSIP dates for Construction Notice-to-Proceed (NTP), Construction Phase Completion, and Project Completion for all WSIP regional projects. Provided below is a brief explanation as to why the March 2018 Revised WSIP completion dates for certain projects have been extended. Note that this document does not provide explanations for the thirty-nine (39) projects that have been completed and the three (3) projects that have no schedule variances (i.e., the Current Approved Project Completion date is the same as or is less than one (1) month off the March 2018 Project Completion date).

Projects with Completion Dates Extended Less than 3 Months

None

Projects with Completion Dates Extended by 3 to 6 Months

Seismic Upgrade of BDPL Nos. 3 & 4 (4-Month Change):
The new facilities and improvements constructed as part of the Seismic Upgrade of BDPL Nos. 3 & 4 Project have been in service since June 20, 2014. As such, the SFPUC Water Enterprise has beneficial use of all the new facilities and improvements built as part of this project. The project is currently in the administrative closeout phase.

The schedule revision is to allow the Contractor to resolve labor compliance and stop notice issues and for the SFPUC to close out the memorandum of understanding with Alameda County Water District regarding project work, which is taking longer than previously anticipated. The January 2017 Project Completion date was March 31, 2018 and the March 2018 Revised WSIP Project Completion Date is July 30, 2018, which represents a 4-month extension.

Projects with Completion Dates Extended by 6 to 12 Months

WSIP Closeout - Bay Division (6-Month Change):
The schedule revision is to allow for the planning to advance for decommissioning of the BDPL Nos. 1 and 2 until such time that the funding for a new project established under the Water Enterprise 10-Year Capital Improvement Program (CIP) becomes available in July 2020. The January 2017 Project Completion date was December 20, 2019 and the March 2018 Revised WSIP Project Completion Date is June 30, 2020, which represents a 6-month extension.

System Security Upgrades (6-Month Change):
This project provides furnishing and installing of Access Control and Alarm Monitoring System (ACAMS) and Digital Video Surveillance System (DVSS) equipment, and necessary security systems, to WSIP regional projects after each project is substantially completed. The schedule revision is due to delay in the fabrication and installation of security doors at Irvington and Alameda West portals under the WSIP Closeout – Sunol Valley Region project. The doors were recently installed, and the requisite security system installation work can now proceed. The January 2017 Project Completion Date was March 31, 2018 and the March 2018 Revised WSIP Project Completion Date is September 28, 2018, which represents a 6-month extension.

Projects with Completion Dates Extended by Greater than 12 Months

WSIP Closeout - Peninsula (17-Month Change):
The work to be performed below Lower Crystal Springs Dam (LCSD) as part of the construction contract for the combined LCSD Stilling Basin Modifications & Dissipation Structure Riprap & LCSD Valve H53 / Pipeline Investigation & Fisheries Valve sub-projects will be delayed. This is to allow completion of the San Mateo County Bridge over the dam so as to avoid potential safety issues with performing work below an active construction site. In addition, during the re-bidding process, only one (1) bid was received, and it was deemed non-responsive; therefore, the bid was rejected and work under these sub-projects that were merged into one (1) construction project will need to be re-bid. The January 2017 Project Completion date was December 20, 2019 and the March 2018 Revised WSIP Project Completion date is May 19, 2021, which represents a 17-month extension.

WSIP Closeout - Sunol Valley (18-Month Change):
The schedule revision is to accommodate the change in scope for the Sunol Valley Water Treatment Plant (SVWTP) Basin 5 Optimization (now re-named the SVWTP Polymer Feed Facility) sub-project to now also include Basins 1 to 4. Although Basins 1 to 4 will be funded by the Water Enterprise 10-Year CIP, adding this scope to the sub-project will require extending the duration of the project. The January 2017 Project Completion date was December 20, 2019 and the March 2018 Revised WSIP Project Completion date is June 30, 2021, which represents an 18-month extension.

Watershed and Environmental Improvement Program (20-Month Change):
The schedule revision is to allow additional time to complete the environmental review process and finalize the design of the Southern Skyline Boulevard Ridge Trail Extension project. The January 2017 Project Completion date was April 26, 2019 and the March 2018 Revised WSIP Project Completion Date is November 5, 2020, which represents a 20-month extension.

Alameda Creek Recapture Project (28-Month Change):
The project was advertised for construction bids on June 29, 2017. However, the advertisement for bids was cancelled due to an appeal of the Environmental Impact Report (EIR) which had previously been certified by the San Francisco Planning Department. The San Francisco Board of Supervisors upheld the appeal for a portion of the EIR; accordingly, a section of the EIR needs to be prepared for re-circulation. The construction contract will be re-advertised for bids once the re-circulated portion of the EIR is re-certified and approved. The schedule revision will allow for the EIR re-circulation, the permitting, the contract re-advertisement for bids, and an increase to the construction phase duration. The January 2017 Project Completion date was June 28, 2019 and the March 2018 Revised WSIP Project Completion date is November 3, 2021, resulting in a 28-month extension.

Regional Groundwater Storage and Recovery (29-Month Change):
The schedule revision will allow for completion of Phase 1 work and implementation of the revised scope of Phase 2 work for the project. Substantial completion for Phase 1 work was achieved on December 31, 2017. However, the schedule extension to achieve final completion for Phase 1 work is related to necessary changes in the chemical injection points for sodium hydroxide (NaOH) treatment which required the addition and modification of NaOH systems as well as the addition of remote automated sampling analyzers at seven well stations. Other significant issues impacting the Phase 1 completion schedule include modifications to utility connections, modifications to site access at three (3) well stations to accommodate large chemical delivery trucks, and execution of the system-wide startup and testing. The overall project schedule revision also allows for the implementation of the revised Phase 2 scope of the project, which includes drilling of up to three (3) additional test wells in Millbrae and South San Francisco and design and construction of the South San Francisco Main well and pipeline to be connected to an existing Cal Water service station. The January 2017 Project Completion date was July 30, 2019 and the March 2018 Revised WSIP Project Completion date is December 30, 2021, resulting in a 29-month extension.

In their letter dated April 3, 2018, BAWSCA requested justification for the extended schedule of the RGSR given that the revised scope is smaller than the 2016 scope and deletes the installation of two permanent wells. During the March 2016 re-baselining, there was uncertainty regarding the Phase 2 siting of wells. The schedule was compressed to absorb delays already impacting Phase 2 to avoid reflecting arbitrary changes in the schedule for unknowns. The decision was made to not speculate on the impacts to the overall schedule, and instead wait until the siting of the new wells was determined. At that point, the schedule would be reassessed based on sound assumptions rather than speculation. Consequently, the March 2016 Phase 2 baseline schedule reflected a shorter duration than had been previously estimated in order to not exceed the overall project approved finish date until it could be verified that more time, in fact, would be needed. Issues and challenges related to the last two well sites had been flagged in the quarterly report before and after the March 2016 re-baselining. Furthermore, there were significant delays to procure a drilling contractor for the test wells due to driller availability and difficulties in negotiating task orders that fit within the task order limit of the Job Order Contract (JOC) process. Now that the scope has been reduced in the March 2018 Revised WSIP, the length of time needed to procure a contractor for the test wells has been actualized and the original duration for the Phase 2 design and construction of the South San Francisco Main well and pipeline as well as closeout activities have been restored to the schedule.

Long Term Mitigation Endowment (37-month change):
This project will establish the perpetual endowment fund requested by the US Army Corps of Engineers and the California Department of Fish and Wildlife to provide a secure source of funds for the perpetual monitoring and maintenance of the Bioregional Habitat Restoration (BHR) sites constructed in the SFPUC watershed. The schedule revision is to synchronize the completion date of the project with the revised completion date of the BHR project so as to allow for the negotiation, preparation, and approval of a financial assurances memorandum of understanding (MOU) with regulatory agencies. The January 2017 Project Completion date was August 31, 2018 and the March 2018 Revised WSIP Project Completion date is September 30, 2021, resulting in a 37-month extension.

Bioregional Habitat Restoration (40-month change):
The schedule revision is based on the estimated time to complete outstanding financial planning and MOUs which are pre-requisites for the creation of long term maintenance endowments. Endowments for the long term management and maintenance of the WSIP BHR mitigation sites

must be complete and supported by the federal and state permitting agencies (via MOUs) prior to the real estate transactions that will establish BHR conservation easements. Significant work has been completed to date, including but not limited to the creation and enhancement of the BHR sites, the drafting of conservation easements, the drafting of MOUs with land trusts and federal and state permitting agencies, and the fulfillment of annual monitoring and reporting requirements. Due to complex legal and investment options and potential restrictions, additional time is required to analyze and determine the most appropriate long term endowment management and related investment options, finalize financial MOUs, and secure approval from federal and state permitting agencies, land trusts, the SFPUC Commission, and the BOS for the conservation easements and endowment plans. The January 2017 Project Completion Date was May 31, 2018 and the March 2018 Revised WSIP Project Completion Date is September 30, 2021, which represents a 40-month extension.

TABLE 5-1: March 2018 Revised WSIP – Summary of Schedule Changes

Project No.	Project Name	January 2017 (1)			March 2018			Variance (in months)		
		Construction NTP (2)	Construction Phase Completion	Project Completion	Construction NTP (2)	Construction Phase Completion	Project Completion	Construction NTP (2)	Construction Phase Completion	Project Completion
San Joaquin Region										
36401	Lawrence Livermore Water Quality Improvement *(Completed)*	08/26/09	03/11/11	07/31/13	08/26/09	03/11/11	07/31/13	-	-	-
37301	San Joaquin Pipeline System *(Completed)*	06/02/10	03/31/16	03/31/16	06/02/10	03/31/16	03/31/16	-	-	-
37302	Rehabilitation of Existing San Joaquin Pipelines *(Completed)*	08/26/09	11/01/11	10/31/14	08/26/09	11/01/11	10/31/14	-	-	-
38401	Tesla Treatment Facility *(Completed)*	03/31/09	10/31/14	01/30/15	03/31/09	10/31/14	01/30/15	-	-	-
SJI0101	WSIP Closeout – San Joaquin (2)	07/01/16	06/20/19	12/20/19	05/09/17	08/30/19	12/20/19	10 (Late)	2 (Late)	-
Sunol Valley Region										
35201	Alameda Creek Recapture Project	07/03/17	12/31/18	06/28/19	08/30/19	05/04/21	11/03/21	26 (Late)	28 (Late)	28 (Late)
35501	Standby Power Facilities - Various Locations *(Completed)*	12/10/07	05/28/10	12/22/10	12/10/07	05/28/10	12/22/10	-	-	-
35901	New Irvington Tunnel	07/22/10	09/30/17	03/31/18	07/22/10	09/30/17	03/31/18	-	-	-
35902	Alameda Siphon #4 *(Completed)*	08/26/09	08/24/12	06/28/13	08/26/09	08/24/12	06/28/13	-	-	-
37001	Pipeline Repair & Readiness Improvements *(Completed)*	01/30/06	10/15/08	04/16/09	01/30/06	10/15/08	04/16/09	-	-	-
37401	Calaveras Dam Replacement	08/15/11	06/19/19	12/20/19	08/15/11	06/19/19	12/20/19	-	-	-
37402	Calaveras Reservoir Upgrades *(Completed)*	N/A	02/14/06	07/28/06	N/A	02/14/06	07/28/06	-	-	-

Project No.	Project Name	January 2017 (1)			March 2018			Variance (in months)		
		Construction NTP (2)	Construction Phase Completion	Project Completion	Construction NTP (2)	Construction Phase Completion	Project Completion	Construction NTP (2)	Construction Phase Completion	Project Completion
37403	San Antonio Backup Pipeline *(Completed)*	03/29/13	12/31/15	03/31/16	03/29/13	12/31/15	06/30/16	-	-	3 (Late)
38101	SVWTP Expansion & Treated Water Reservoir *(Completed)*	06/23/10	09/20/13	10/31/14	06/23/10	09/20/13	10/31/14	-	-	-
38601	San Antonio Pump Station Upgrade *(Completed)*	11/02/09	09/30/11	06/29/12	11/02/09	09/30/11	06/29/12	-	-	-
SVI0101	WSIP Closeout – Sunol Valley (2)	07/01/16	06/20/19	12/20/19	04/10/17	12/31/20	06/30/21	9 (Late)	18 (Late)	18 (Late)
Bay Division Region										
35301	BDPL Nos. 3 & 4 Crossover/Isolation Valves *(Completed)*	08/21/06	03/19/08	07/31/09	08/21/06	03/19/08	07/31/09	-	-	-
35302	Seismic Upgrade of BDPL Nos. 3 & 4	09/04/12	09/30/17	03/31/18	09/04/12	04/30/18	07/30/18	-	7 (Late)	4 (Late)
36301	SCADA System - Phase II *(Completed)*	12/15/09	12/28/12	05/28/13	12/15/09	12/28/12	05/28/13	-	-	-
36801	BDPL Reliability Upgrade – Tunnel *(Completed)*	04/01/10	05/30/16	08/30/16	04/01/10	05/30/16	08/30/16	-	-	-
36802	BDPL Reliability Upgrade – Pipeline *(Completed)*	01/07/10	03/31/16	03/31/16	01/07/10	03/31/16	03/31/16	-	-	-
36803	BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2 *(Completed)*	01/07/10	05/28/10	05/28/10	01/07/10	05/28/10	05/28/10	-	-	-
38001	BDPL Nos. 3 & 4 Crossovers *(Completed)*	07/13/09	09/11/13	06/30/14	07/13/09	09/11/13	06/30/14	-	-	-
38901	SFPUC/EBMUD Intertie *(Completed)*	01/25/05	03/20/14	03/20/14	01/25/05	03/20/14	03/20/14	-	-	-
39301	BDPL No. 4 Condition Assessment PCCP Sections *(Completed)*	N/A	N/A	02/06/09	N/A	N/A	02/06/09	-	-	-
BDP0101	WSIP Closeout – Bay Division (2)	07/01/16	06/20/19	12/20/19	07/01/16	11/19/19	06/30/20	-	5 (Late)	6 (Late)

Project No.	Project Name	January 2017 (1)			March 2018			Variance (in months)		
		Construction NTP (2)	Construction Phase Completion	Project Completion	Construction NTP (2)	Construction Phase Completion	Project Completion	Construction NTP (2)	Construction Phase Completion	Project Completion
Peninsula Region										
35401	Lower Crystal Springs Dam Improvements *(Completed)*	01/31/11	05/01/12	12/28/12	01/31/11	05/01/12	12/28/12	-	-	-
35601	New Crystal Springs Bypass Tunnel *(Completed)*	12/01/08	08/17/12	08/17/12	12/01/08	08/17/12	08/17/12	-	-	-
35701	Adit Leak Repair - Crystal Springs/Calaveras *(Completed)*	04/09/07	03/05/08	07/31/08	04/09/07	03/05/08	07/31/08	-	-	-
36101	Pulgas Balancing - Inlet/Outlet Work *(Completed)*	N/A	02/02/06	05/11/06	N/A	02/02/06	05/11/06	-	-	-
36102	Pulgas Balancing - Discharge Channel Modifications *(Completed)*	04/02/09	12/07/09	07/30/10	04/02/09	12/07/09	07/30/10	-	-	-
36103	Pulgas Balancing - Structural Rehabilitation and Roof Replacement *(Completed)*	11/30/09	09/01/11	12/28/12	11/30/09	09/01/11	12/28/12	-	-	-
36105	Pulgas Balancing - Modifications of the Existing Dechloramination Facility *(Completed)*	09/22/10	10/25/12	03/20/13	09/22/10	10/25/12	03/20/13	-	-	-
36501	Cross Connection Controls *(Completed)*	07/31/08	11/26/08	04/30/09	07/31/08	11/26/08	04/30/09	-	-	-
36601	HTWTP Short-Term Improvements (Demo Filters) *[Completed]*	09/14/05	02/27/06	11/14/06	09/14/05	02/27/06	11/14/06	-	-	-
36603	HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters *(Completed)*	07/10/08	03/31/10	07/28/10	07/10/08	03/31/10	07/28/10	-	-	-
36701	HTWTP Long-Term Improvements *(Completed)*	03/16/11	09/30/16	12/30/16	03/16/11	09/30/16	12/30/16	-	-	-
36702	Peninsula Pipelines Seismic Upgrade *(Completed)*	04/28/14	02/29/16	07/06/16	04/28/14	02/29/16	07/06/16	-	-	-
36901	Capuchino Valve Lot Improvements *(Completed)*	01/29/07	03/05/08	08/19/08	01/29/07	03/05/08	08/19/08	-	-	-
37101	Crystal Springs/San Andreas Transmission Upgrade *(Completed)*	12/01/10	06/30/15	06/30/15	12/01/10	06/30/15	06/30/15	-	-	-

Project No.	Project Name	January 2017 [1]			March 2018			Variance (in months)		
		Construction NTP [2]	Construction Phase Completion	Project Completion	Construction NTP [2]	Construction Phase Completion	Project Completion	Construction NTP [2]	Construction Phase Completion	Project Completion
37801	Crystal Springs Pipeline No. 2 Replacement *(Completed)*	03/07/11	03/30/13	12/31/14	03/07/11	12/31/14	12/31/14	-	21 (Late)	-
37901	San Andreas Pipeline No. 3 Installation *(Completed)*	08/27/09	06/30/11	08/30/12	08/27/09	06/30/11	08/30/12	-	-	-
39101	Baden and San Pedro Valve Lots Improvements *(Completed)*	04/08/09	12/30/11	03/29/13	04/08/09	12/30/11	03/29/13	-	-	-
PWI0101	WSIP Closeout - Peninsula [2]	07/01/16	06/20/19	12/20/19	07/24/18	11/20/20	05/19/21	25 (Late)	17 (Late)	17 (Late)
San Francisco Regional Region										
30103	Regional Groundwater Storage and Recovery [2]	01/30/12	01/31/19	07/30/19	01/30/12	06/30/21	12/30/21	-	29 (Late)	29 (Late)
35801	Sunset Reservoir - North Basin *(Completed)*	10/10/06	11/09/09	09/10/10	10/10/06	11/09/09	09/10/10	-	-	-
37201	University Mound Reservoir - North Basin *(Completed)*	08/03/09	08/23/11	03/29/13	08/03/09	08/23/11	03/29/13	-	-	-
Support Projects										
36302	System Security Upgrades [2]	11/13/06	09/30/17	03/31/18	11/13/06	03/31/18	09/28/18	-	6 (Late)	6 (Late)
38801	Programmatic EIR *(Completed)* [3]	N/A	N/A	06/30/09	N/A	N/A	06/30/09	-	-	-
38802	Bioregional Habitat Restoration [2]	06/27/11	03/07/18	05/31/18	06/27/11	05/31/18	09/30/21	-	3 (Late)	40 (Late)
38803	Vegetation Restoration of WSIP Construction Sites *(Completed)*	N/A	N/A	06/30/16	N/A	N/A	06/30/16	-	-	-
38804	Long Term Mitigation Endowment [4]	N/A	N/A	08/31/18	N/A	N/A	09/30/21	-	-	37 (Late)
39201	Program Management Project [3]	N/A	N/A	12/20/19	N/A	N/A	12/30/21	-	-	24 (Late)
39401	Watershed and Environmental Improvement Program [5]	N/A	N/A	04/26/19	05/06/19	07/06/20	01/08/21	-	-	20 (Late)

[1] Schedule approved as part of the March 2016 and January 2017 Revised WSIP, plus any additional schedule changes approved by the Commission as part of additional contingencies on construction contracts.

(2) For projects with multiple construction contracts, the NTP date reported is that of the earliest contract.

(3) Program activities managed and tracked separately but not included in 52 regional project count.

(4) The Long Term Mitigation Endowment (LTME) fund is to provide a secure source of funds for perpetual monitoring and maintenance of the Bioregional Habitat Restoration sites constructed in the SFPUC watershed. The LTME fund does not involve construction activities.

(5) The Watershed and Environmental Improvement Program (WEIP) is a program-wide effort to permanently protect watersheds and other lands through perpetual conservation easements and/or fee title purchase of property from willing landowners, and includes funding for construction of educational/outreach facilities.

 Completed Projects

6. BUDGET CHANGES

The project budgets in the March 2018 WSIP reflect the latest available information on each active project based on the status of ongoing implementation efforts as of early March 2018. It is standard practice to refine project budgets as more knowledge is gained about project-specific needs and challenges. The recent budget forecasting and review efforts have led to more accurate and realistic project-specific budgets. With only four (4) WSIP projects remaining in pre-construction (Alameda Creek Recapture, WSIP Closeout – Sunol Valley, WSIP Closeout – Peninsula, and Watershed and Environmental Improvement Program), most of the budget changes are related to issues encountered in the field during construction.

TABLE 6-1: March 2018 Revised WSIP – Summary of Budget Changes, compares the March 2016 and March 2018 Revised WSIP project budgets allocated for Construction Costs, Delivery Costs, Other Costs, and Total Costs for all WSIP regional projects. Provided below is an explanation as to why the March 2018 Revised WSIP project budgets for certain active projects are different than the March 2016 project budgets. Note that this document does not provide explanations for the thirty-nine (39) projects that have been completed and the three (3) active projects that have no budget variances (i.e., projects where the March 2016 Budget was the same as the March 2018 Revised WSIP Project Budget or the change less than $100,000).

In their April 3, 2018 letter, BAWSCA requested clarification of the "Finance" cost category. The WSIP financing costs are currently under review. By August 31, 2018 a memorandum will be provided documenting the assumptions associated with the WSIP "Finance" cost category, the actual financing costs for WSIP, and the resulting impact on the "Finance" cost category moving forward.

Projects with Budget Decreases

New Irvington Tunnel (-$6.7M Change):
The budget revision is due to unused construction contingencies and lower than expected project delivery costs. The March 2016 Project Budget was $347.1M and the March 2018 Revised WSIP Project Budget is $340.4M, which represents a $6.7M (or 1.9%) decrease. This project recently completed the project administrative closeout phase on March 31, 2018.

Seismic Upgrade of BDPL Nos. 3 & 4 (-$3.4M Change):
The budget revision is due to unused construction contingencies and lower than expected project delivery costs. The March 2016 Project Budget was $77.0M and the March 2018 Revised WSIP Project Budget is $73.6M which represents a $3.4M (or 4.4%) decrease. This project is currently in the final construction and project administrative closeout phases.

Projects with Budget Increases Less than $2 Million

Bioregional Habitat Restoration (+$1.5M Change):
The budget revision is due to: (1) the eradication of pathogens and drought conditions that added an extra year of maintenance and watering at San Antonio Creek project site; and (2) the mitigation of naturally occurring asbestos and the paving at Sawyer Camp Trail added to the Peninsula Vegetation Removal contract. The March 2016 Project Budget was $91.8M and the March 2018 Revised WSIP Project Budget is $93.3M, which represents a $1.5M (or 1.6%) increase.

Projects with Budget Increases of $2 to 5 Million

WSIP Closeout - San Joaquin (+$2.7M)

The budget revision is due to change in scope for the Supplemental Solar Panel Installation sub-project. Due to the shadows cast by the new microwave towers at the three (3) sites, additional construction funding has been allocated to increase the power capacity if necessary. Cost increases also include additional delivery cost to evaluate the changes in conditions. The March 2016 Project Budget was $1.6M and the March 2018 Revised WSIP Project Budget is $4.4M, which represents an increase of $2.7M (or 167%).

WSIP Closeout - Sunol Valley (+$2.7M)

The budget revision is due to the addition of three (3) sub-projects including 1) Miscellaneous Work at Alameda West Portal (AWP), Irvington Portal (IVP) and San Antonio Backup Pipeline 2) New Irvington Tunnel (NIT) Water Quality Equipment Relocation, and 3) San Antonio Backup Pipeline Carrier Water System Modifications. Cost increases include the addition of construction and delivery cost for these new sub-projects. For the SVWTP Polymer Feed Facility, there is no change in the project cost under WSIP for Basin 5; the additional scope of work for Basins 1 to 4 will be funded under the Water Enterprise 10-Year CIP. The March 2016 Project Budget was $3.2M and the March 2018 Revised WSIP Project Budget is $6.0M, which represents an increase of $2.7M (or 84.3%).

WSIP Closeout - Bay Division (+$3.3M Change)

The budget revision is due to the addition of a new sub-project, Ventilation and Sump Pump Systems Installation, and scope refinements for several sub-projects including the Caltrans V-Ditch Across SFPUC ROW (renamed Site Drainage and Pipe Coating Repairs), Bay Tunnel Warranty Inspection and BDPL Nos. 1 & 2 EIR Mitigation, and Corrosion Protection for Valve E50U. Cost increases include both construction and delivery (soft) costs for these sub-projects. The March 2016 Project Budget was $1.1M and the March 2018 Revised WSIP Project Budget is $4.4M, which represents an increase of $3.3M (or 300%).

Alameda Creek Recapture (+$4.6M Change):

The budget revision is due to project delivery cost increases associated with re-circulating a section of the EIR, redesigning and repackaging the bid documents, re-advertisement for bids, extended construction management and support, and construction cost increases due to design changes related to the Pond F2 access road and barge system. The March 2016 Project Budget was $29.4M and the March 2018 Revised WSIP Project Budget is $34.0M, which represents a $4.6M (or 15.6%) increase. This project is currently in Environmental and Design phase. In their April 3, 2018 letter to the Commission, BAWSCA requested a detailed breakdown of the increased budget request, which is accordingly included in Appendix K.

Projects with Budget Increases of $5 to 10 Million

WSIP Closeout - Peninsula (+$8.7M Change):

The budget revision is due to scope additions for the LCSD Stilling Basin Modifications and Valve H53/Pipeline Investigation, and the addition of two (2) sub-projects, including the Harry Tracy Water Treatment Plant Improvements, and Crystal Springs / San Andreas Pipeline Erosion Repairs. The March 2016 Project Budget was $4.9M and the March 2018 Revised WSIP Project Budget is $13.6M, which represents an increase of $8.7M (or 178%).

Projects with Budget Increases Greater than $10 Million

Calaveras Dam Replacement (+$13.1M Change)**:**
There are two (2) parts for this change. The first part is for the new dam replacement (main project) and the second part is for the Fish Passage Facilities at Alameda Creek Diversion Dam (ACDD), a sub-project to the Calaveras Dam Replacement.

For the main project, the budget revision is due to construction change orders related to the repair of the landslide on Calaveras Road and restoration of the West Haul Road. These change orders also include costs for accelerating the schedule so that the current approved construction schedule for the start of the embankment placement can be maintained and the embankment dam can be completed by Fall 2018, with the goal of allowing the reservoir to begin filling in the winter of 2018-19 as previously planned. Extension of the construction schedule has also increased the forecasted delivery (soft) costs. The main project is currently in Construction and is over 90 percent complete.

For the Fish Passage Facilities at ACDD sub-project, the budget revision is due to construction cost increases related to various change orders, potential change orders, and trends identified during construction and forecast delivery (soft) cost increases due to additional design, environmental monitoring and inspection, and construction management support required to complete the project. The project is currently in construction and is over 80 percent complete.

The March 2016 Project Budget for both the main dam replacement project and the ACCD subproject was $810.0M and the March 2018 Revised WSIP Project Budget is $823.1M, which represents a $13.1M (or 1.6%) increase.

Regional Groundwater Storage and Recovery (+$25.2 Change):
The budget revision is due to both construction cost and delivery cost increases for Phase 1 and Phase 2 work of the project. The cost for Phase 1 covers the modification of the sodium hydroxide chemical system, installation of remote automated sampling analyzers at seven well stations, modifications to the utility connections, improvements to address access issues at three well stations, and execution of the system-wide startup and testing. As a result of the delay, extended overhead costs will continue to be incurred until the construction completion. The budget revision is also to provide funding for Phase 2 work, which includes drilling of up to three (3) additional test wells in Millbrae and South San Francisco, design and construction of a well station to be connected to an existing Cal Water service station, and carryover work from Phase 1 that will be completed as part of Phase 2. The carryover work includes construction of permanent power connections to remote analyzers, modification of piping and the support pedestal for the chemical tank, and installation of sump pits. The March 2016 Project Budget was $113.6M and the March 2018 Revised WSIP Project Budget is $138.7M, which represents an increase of $25.2M (or 22.1%). The Phase 1 project is currently in the final Construction Phase and is 98% complete. In their April 3, 2018 letter to the Commission, BAWSCA requested a detailed breakdown of the increased budget request, which is accordingly included in Appendix K.

TABLE 6-1: March 2018 Revised WSIP – Summary of Budget Changes

PROJECT NO.	Project Name	CONSTRUCTION COSTS (1)			DELIVERY COSTS (2)			OTHER COSTS (3)			TOTAL PROJECT COSTS		
		March 2016	March 2018	Variance	March 2016	March 2018	Variance	March 2016	March 2018	Variance	March 2016	March 2018	Variance
San Joaquin Region		**$221,319,724**	**$222,552,903**	**($1,233,179)**	**$115,766,229**	**$117,461,543**	**($1,695,314)**	**$8,099,209**	**$8,184,486**	**($85,278)**	**$345,185,162**	**$348,198,932**	**($3,013,770)**
CUW36401	Lawrence Livermore Water Quality Improvement *(Completed)*	$1,481,801	$1,481,801	-	$2,716,679	$2,716,446	`	-	-	-	$4,198,480	$4,198,247	$233
CUW37301	San Joaquin Pipeline System *(Completed)*	$125,715,747	$125,965,937	($250,190)	$73,823,584	$73,780,110	$43,474	$3,346,690	$3,431,968	($85,278)	$202,886,020	$203,178,014	($291,994)
CUW37302	Rehabilitation of Existing San Joaquin Pipelines *(Completed)*	$11,434,658	$11,434,583	$75	$9,694,780	$9,695,039	($259)	$24,000	$24,000	-	$21,153,438	$21,153,622	($184)
CUW38401	Tesla Treatment Facility *(Completed)*	$81,277,518	$81,277,518	-	$27,219,909	$27,205,570	$14,339	$4,728,519	$4,728,519	-	$113,225,946	$113,211,607	$14,339
CUW38701	Tesla Portal Disinfection Station *(Combined with CUW38401)*	-	-	-	$2,081,278	$2,081,278	-	-	-	-	$2,081,278	$2,081,278	-
CUWSJI01	WSIP Closeout - San Joaquin	$1,410,000	$2,393,064	($983,064)	$230,000	$1,983,100	($1,753,100)	-	-	-	$1,640,000	$4,376,164	($2,736,164)
Sunol Valley Region		**$1,109,731,249**	**$1,124,510,895**	**($14,779,646)**	**$338,588,109**	**$359,409,638**	**($20,821,529)**	**$27,697,960**	**$5,528,648**	**$22,169,312**	**$1,476,017,317**	**$1,489,449,181**	**($13,431,864)**
CUW35201	Alameda Creek Recapture Project	$13,600,000	$15,402,000	($1,802,000)	$14,499,447	$18,550,006	($4,050,559)	$1,311,553	$48,000	$1,263,553	$29,411,000	$34,000,006.44	($4,589,006)
CUW35501	Standby Power Facilities - Various Locations *(Completed)*	$9,602,901	$9,602,901	-	$3,347,665	$3,347,665	-	-	-	-	$12,950,566	$12,950,566	-
CUW35901	New Irvington Tunnel	$276,836,895	$272,130,689	$4,706,206	$64,775,956	$65,812,902	($1,036,946)	$5,515,172	$2,462,767	$3,052,404	$347,128,023	$340,406,358	$6,721,664
CUW35902	Alameda Siphon #4 *(Completed)*	$41,479,253	$41,479,253	-	$23,352,351	$23,209,275	$143,076	$261,978	$261,978	-	$65,093,582	$64,950,507	$143,075
CUW37001	Pipeline Repair & Readiness Improvements *(Completed)*	$2,763,325	$2,763,325	-	$2,432,056	$2,432,056	-	-	-	-	$5,195,381	$5,195,381	-
CUW37401	Calaveras Dam Replacement	$626,666,833	$644,509,688	($17,842,855)	$163,228,691	$176,296,031	($13,067,340)	$20,128,900	$2,286,046	$17,842,854	$810,024,424	$823,091,765	($13,067,341)
CUW37402	Calaveras Reservoir Upgrades *(Completed)*	$1,274,600	$1,274,600	-	$415,953	$415,953	-	-	-	-	$1,690,552	$1,690,552	-
CUW37403	San Antonio Backup Pipeline *(Completed)*	$33,339,396	$33,339,396	-	$20,349,054	$20,255,287	$93,767	-	-	-	$53,688,450	$53,594,683	$93,767
CUW38101	SVWTP Expansion & Treated Water Reservoir *(Completed)*	$94,121,180	$94,121,180	-	$35,002,637	$35,002,638	($1)	$469,856	$469,856	-	$129,593,674	$129,593,674	-
CUW38102	SVWTP Calaveras Road *(Eliminated)*	-	-	-	$34,654	$34,654	-	-	-	-	$34,654	$34,654	-
CUW38201	SVWTP Treated Water Reservoir *(Combined with CUW38101)*	-	-	-	$5,056,596	$5,056,596	-	-	-	-	$5,056,596	$5,056,596	-

PROJECT NO.	Project Name	CONSTRUCTION COSTS (1)			DELIVERY COSTS (2)			OTHER COSTS (3)			TOTAL PROJECT COSTS		
		March 2016	March 2018	Variance	March 2016	March 2018	Variance	March 2016	March 2018	Variance	March 2016	March 2018	Variance
CUW38601	San Antonio Pump Station Upgrade *(Completed)*	$7,516,865	$7,516,865	-	$5,378,050	$5,377,727	$323	$10,500	-	$10,500	$12,905,415	$12,894,592	$10,823
CUWSVI01	WSIP Closeout - Sunol Valley	$2,530,000	$2,370,998	$159,002	$715,000	$3,618,848	($2,903,848)	-	-	-	$3,245,000	$5,989,845	($2,744,845)
Bay Division Region		**$469,801,064**	**$462,880,470**	**$6,920,594**	**$172,199,870**	**$176,186,163**	**($3,986,293)**	**$9,847,603**	**$8,763,089**	**$1,084,514**	**$651,848,538**	**$647,829,723**	**$4,018,815**
CUW35301	BDPL Nos. 3 & 4 Crossover/Isolation Valves *(Completed)*	$20,649,650	$20,649,649	$1	$6,395,977	$6,389,500	$6,477	-	-	-	$27,045,627	$27,039,149	$6,478
CUW35302	Seismic Upgrade of BDPL Nos. 3 & 4	$46,434,104	$43,114,117	$3,319,987	$28,969,853	$30,435,863	($1,466,010)	$1,576,478	$73,316	$1,503,162	$76,980,435	$73,623,296	$3,357,139
CUW36301	SCADA System - Phase II *(Completed)*	$5,390,903	$5,390,903	-	$4,061,569	$4,061,569	-	$18,450	$18,450	-	$9,470,922	$9,470,922	-
CUW36801	BDPL Reliability Upgrade - Tunnel *(Completed)*	$224,703,858	$220,454,710	$4,249,148	$49,224,590	$50,077,878	($853,288)	$2,003,096	$1,831,502	$171,594	$275,931,544	$272,364,089	$3,567,455
CUW36802	BDPL Reliability Upgrade - Pipeline*(Completed)*	$146,131,835	$145,692,701	$439,134	$65,420,170	$65,477,542	($57,372)	$5,710,670	$5,700,912	$9,758	$217,262,675	$216,871,156	$391,519
CUW36803	BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2 *(Completed)*	$2,363,367	$2,363,367	-	$683,615	$683,615	-	-	-	-	$3,046,981	$3,046,981	-
CUW38001	BDPL Nos. 3 & 4 Crossovers *(Completed)*	$14,794,660	$14,794,660	-	$14,576,880	$14,576,880	-	$538,909	$538,909	-	$29,910,448	$29,910,449	($1)
CUW38901	SFPUC/EBMUD Intertie *(Completed)*	$8,489,689	$8,489,689	-	$677,617	$677,617	-	-	-	-	$9,167,306	$9,167,306	-
CUW39301	BDPL No. 4 Condition Assessment PCCP Sections *(Completed)*	-	-	-	$1,937,599	$1,937,599	-	-	-	-	$1,937,599	$1,937,599	-
CUWBDP01	WSIP Closeout - Bay Division	$843,000	$1,930,675	($1,087,675)	$252,000	$1,868,100	($1,616,100)	-	$600,000	($600,000)	$1,095,000	$4,398,775	($3,303,775)
Peninsula Region		**$542,262,283**	**$547,050,940**	**($4,788,657)**	**$256,006,908**	**$255,133,493**	**$873,415**	**$6,270,639**	**$2,940,047**	**$3,330,592**	**$804,539,830**	**$805,124,480**	**($584,650)**
CUW35401	Lower Crystal Springs Dam Improvements *(Completed)*	$20,357,966	$20,357,967	($1)	$14,451,073	$14,451,073	-	$50,000	$50,000	-	$34,859,039	$34,859,040	($1)
CUW35601	New Crystal Springs Bypass Tunnel *(Completed)*	$57,409,887	$57,409,887	-	$23,933,121	$23,933,121	-	$92,603	$123,725	($31,122)	$81,435,610	$81,466,732	($31,122)
CUW35701	Adit Leak Repair - Crystal Springs/Calaveras *(Completed)*	$1,706,478	$1,706,478	-	$1,080,845	$1,080,845	-	-	-	-	$2,787,322	$2,787,322	-
CUW36101	Pulgas Balancing - Inlet/Outlet Work *(Completed)*	$638,020	$638,020	-	$1,127,918	$1,127,918	-	-	-	-	$1,765,938	$1,765,938	-

PROJECT NO.	Project Name	CONSTRUCTION COSTS (1)			DELIVERY COSTS (2)			OTHER COSTS (3)			TOTAL PROJECT COSTS		
		March 2016	March 2018	Variance	March 2016	March 2018	Variance	March 2016	March 2018	Variance	March 2016	March 2018	Variance
CUW36102	Pulgas Balancing - Discharge Channel Modifications ***(Completed)***	$903,240	$903,240	-	$1,942,236	$1,942,236	-	$64,531	$64,531	-	$2,910,007	$2,910,007	-
CUW36103	Pulgas Balancing - Structural Rehabilitation and Roof Replacement ***(Completed)***	$13,276,548	$13,283,050	($6,502)	$6,804,183	$6,804,183	-	$151,483	$151,483	-	$20,232,215	$20,238,716	($6,501)
CUW36104	Pulgas Balancing - Laguna Creek Sedimentation ***(Eliminated)***	-	-	-	$503,928	$503,928	-	-	-	-	$503,928	$503,928	-
CUW36105	Pulgas Balancing - Modifications of the Existing Dechloramination Facility ***(Completed)***	$2,054,696	$2,054,696	-	$3,285,334	$3,285,334	-	$50,000	$50,000	-	$5,390,031	$5,390,031	-
CUW36501	Cross Connection Controls ***(Completed)***	$1,835,224	$1,835,224	-	$2,090,210	$2,090,210	-	$23,509	$23,509	-	$3,948,944	$3,948,944	-
CUW36601	HTWTP Short-Term Improvements (Demo Filters) ***(Completed)***	$1,683,042	$1,683,042	-	$1,384,862	$1,384,862	-	-	-	-	$3,067,903	$3,067,903	-
CUW36602	HTWTP Short-Term Improvements - Remaining Filters ***(Combined with CUW36603)***	-	-	-	$1,424,510	$1,424,510	-	-	-	-	$1,424,510	$1,424,510	-
CUW36603	HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters ***(Completed)***	$15,214,291	$15,214,291	-	$3,390,647	$3,390,646	$1	-	-	-	$18,604,938	$18,604,937	$1
CUW36701	HTWTP Long-Term Improvements ***(Completed)***	$198,358,927	$196,615,628	$1,743,299	$77,767,573	$76,482,504	$1,285,069	$4,111,837	$983,837	$3,128,000	$280,238,337	$274,081,969	$6,156,368
CUW36702	Peninsula Pipelines Seismic Upgrade *(Completed)*	$23,527,142	$23,097,596	$429,546	$15,975,952	$15,165,614	$810,338	$795,850	$562,136	$233,714	$40,298,944	$38,825,346	$1,473,598
CUW36901	Capuchino Valve Lot Improvements ***(Completed)***	$1,576,733	$1,576,733	-	$1,226,420	$1,226,420	-	-	-	-	$2,803,153	$2,803,153	-
CUW37101	Crystal Springs/San Andreas Transmission Upgrade ***(Completed)***	$133,915,522	$133,915,522	-	$56,688,511	$56,257,341	$431,170	$136,590	$136,590	-	$190,740,623	$190,309,453	$431,170
CUW37801	Crystal Springs Pipeline No. 2 Replacement ***(Completed)***	$34,750,123	$34,750,123	-	$21,014,026	$20,932,509	$81,517	$387,877	$387,877	-	$56,152,026	$56,070,509	$81,517
CUW37901	San Andreas Pipeline No. 3 Installation ***(Completed)***	$17,087,803	$17,087,803	-	$10,001,396	$10,001,396	-	$406,359	$406,359	-	$27,495,558	$27,495,558	-
CUW39101	Baden and San Pedro Valve Lots Improvements ***(Completed)***	$15,646,639	$15,646,639	-	$9,344,164	$9,344,164	-	-	-	-	$24,990,803	$24,990,803	-
CUWPWI01	WSIP Closeout - Peninsula	$2,320,000	$9,275,000	($6,955,000)	$2,570,000	$4,304,680	($1,734,680)	-	-	-	$4,890,000	$13,579,680	($8,689,680)

PROJECT NO.	Project Name	CONSTRUCTION COSTS (1)			DELIVERY COSTS (2)			OTHER COSTS (3)			TOTAL PROJECT COSTS		
		March 2016	March 2018	Variance	March 2016	March 2018	Variance	March 2016	March 2018	Variance	March 2016	March 2018	Variance
San Francisco Regional Region		**$150,016,354**	**$161,056,403**	**($11,040,049)**	**$63,806,718**	**$69,910,196**	**($6,103,478)**	**$7,448,498**	**$15,363,993**	**($7,915,495)**	**$221,271,570**	**$246,330,591**	**($25,059,021)**
CUW30103	Regional Groundwater Storage and Recovery	$66,077,951	$77,118,000	($11,040,049)	$40,053,551	$46,311,321	($6,257,770)	$7,448,498	$15,363,993	($7,915,495)	$113,580,000	$138,793,314	($25,213,314)
CUW35801	Sunset Reservoir - North Basin *(Completed)*	$52,777,386	$52,777,386	-	$11,494,184	$11,493,339	$845	-	-	-	$64,271,570	$64,270,725	$845
CUW37201	University Mound Reservoir - North Basin *(Completed)*	$31,161,017	$31,161,017	-	$12,258,983	$12,105,535	$153,448	-	-	-	$43,420,000	$43,266,552	$153,448
Support Projects		**$6,216,651**	**$6,166,652**	**$49,999**	**$165,360,283**	**$171,592,696**	**($6,232,413)**	**$90,626,310**	**$88,373,406**	**$2,252,904**	**$262,203,244**	**$266,132,754**	**($3,929,510)**
CUW36302	System Security Upgrade	$6,216,651	$6,166,652	$49,999	$8,634,660	$9,034,659	($399,999)	$350,000	-	$350,000	$15,201,312	$15,201,311	$1
CUW38801	Programmatic EIR *(Completed)*	-	-	-	$10,730,307	$10,730,684	($377)	-	-	-	$10,730,307	$10,730,684	($377)
CUW38802	Bioregional Habitat Restoration	-	-	-	$33,264,419	$35,381,866	($2,117,447)	$58,536,799	$57,960,117	$576,682	$91,801,218	$93,341,983	($1,540,765)
CUW38803	Vegetation Restoration of WSIP Construction Sites *(Completed)*	-	-	-	$1,265,447	$1,177,223	$88,224	$934,553	$934,323	$230	$2,200,000	$2,111,546	$88,454
CUW38804	Long Term Mitigation Endowment	-	-	-	-	-	-	$12,000,000	$12,000,000	-	$12,000,000	$12,000,000	-
CUW39201	Program Management Project	-	-	-	$109,247,229	$112,747,230	($3,500,001)	$1,023,178	-	$1,023,178	$110,270,407	$112,747,230	($2,476,823)
CUW39401	Watershed Environmental Improvement Program	-	-	-	$2,218,220	$2,521,034	($302,814)	$17,781,781	$17,478,966	$302,815	$20,000,000	$20,000,000	-
Regional Program Sub-Total		**$2,499,347,326**	**$2,524,218,263**	**($24,870,937)**	**$1,111,728,117**	**$1,149,693,729**	**($37,965,612)**	**$149,990,219**	**$129,153,669**	**$20,836,550**	**$3,761,065,661**	**$3,803,065,661**	**($42,000,000)**
San Francisco Local Program													
All Original Local Projects		$237,839,875	$238,000,793	($160,918)	$92,325,257	$92,164,339	**$160,918**	$1,240,344	$1,240,344	-	$331,405,476	$331,405,476	-
Water Supply Projects		$186,792,234	$186,792,234	-	$91,502,404	$91,502,404	**-**	$3,017,895	$3,017,895	-	$281,312,533	$281,312,533	-
Local Program Sub-Total		**$424,632,109**	**$424,793,027**	**($160,918)**	**$183,827,661**	**$183,666,743**	**$160,918**	**$4,258,240**	**$4,258,240**	**-**	**$612,718,010**	**$612,718,010**	**-**
Regional + Local Programs Sub-Total		**$2,923,979,434**	**$2,949,011,290**	**($25,031,856)**	**$1,295,555,778**	**$1,333,360,472**	**($37,804,694)**	**$154,248,459**	**$133,411,908**	**$20,836,551**	**$4,373,783,671**	**$4,415,783,671**	**($42,000,000)**
Program Management Reserve											**-**	**-**	**-**
Financing Cost (4)											**$471,700,000**	**$371,991,469**	**$99,708,531**
PROGRAM TOTAL											**$4,845,483,671**	**$4,787,775,140**	**$57,708,531**

(1) **Construction Costs** include the Construction Base Bid, Construction Contingency and owner provided equipment/material.

(2) **Delivery Costs** include program and 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 transactions.

(4) **Financing Costs** are currently under review. A memorandum will be prepared and submitted to the Commission and BAWSCA by September 1, 2018 documenting the assumptions associated with the WSIP "Finance" cost category, the actual financing costs for the WSIP, and the resulting impact on the "Finance" cost category moving forward.

7. LEVEL OF SERVICE GOALS

7.1 WSIP Goals and Objectives

The goals and objectives for the March 2018 Revised WSIP are the same as for the March 2016 Revised WSIP and the approved PEIR. Table 7-1 provides a summary of these goals and objectives.

Table 7-1: WSIP Goals and Objectives

Program Goal	System Performance Objective
WATER QUALITY *Maintain high water quality*	• *Design improvements to meet current and foreseeable future federal and state water quality requirements.* • *Provide clean, unfiltered water originating from Hetch Hetchy Reservoir and filtered water from local watersheds.* • *Continue to implement watershed protection measures.*
SEISMIC RELIABILITY *Reduce vulnerability to earthquakes*	• *Design improvements to meet current seismic standards.* • *Deliver basic service to the three regions in the service area (East/South Bay, Peninsula, and San Francisco) within twenty four (24) hours after a major earthquake. Basic service is defined as average winter-month usage, and the performance objective for design of the regional system is 229 mgd. The performance objective is to provide delivery to at least 70 percent of the turnouts in each region, with 104, 44, and 81 mgd delivered to the East/South Bay, Peninsula, and City of San Francisco, respectively.* • *Restore facilities to meet average-day demand of up to 300 mgd within thirty (30) days after a major earthquake.*
DELIVERY RELIABILITY *Increase delivery reliability and improve ability to maintain the system*	• *Provide operational flexibility to allow planned maintenance shutdown of individual facilities without interrupting customer service.* • *Provide operational flexibility to minimize the risk of service interruption due to unplanned facility upsets or outages.* • *Provide operational flexibility and system capacity to replenish local reservoirs as needed.* • *Meet the estimated average annual demand of up to 300 mgd under the conditions of one planned shutdown of a major facility for maintenance concurrent with one unplanned facility outage due to a natural disaster, emergency or facility failure/upset.*

Program Goal	System Performance Objective
WATER SUPPLY *Meet customer water needs in non-drought and drought periods*	• *Meet average annual water demand of 265 mgd from the SFPUC watersheds for retail and wholesale customers during non–drought years for system demands through 2018.* • *Meet dry-year delivery needs through 2018 while limiting rationing to a maximum 20 percent system-wide reduction in water service during extended droughts.* • *Diversify water supply options during non-drought and drought periods.* • *Improve use of new water sources and drought management, including groundwater, recycled water, conservation and transfers.*
SUSTAINABILITY *Enhance sustainability in all system activities*	• *Manage natural resources and physical systems to protect watershed ecosystems.* • *Meet, at a minimum, all current and anticipated legal requirements for protection of fish and wildlife habitat.* • *Manage natural resources and physical systems to protect public health and safety.*
COST-EFFECTIVENESS *Achieve a cost-effective, fully operational system*	• *Ensure cost-effective use of funds.* • *Maintain gravity-driven system.* • *Implement regular inspection and maintenance program for all facilities.*

Note that the first four (4) goals, Water Quality, Seismic Reliability, Delivery Reliability, and Water Supply, are the goals that are used to determine project design criteria. The last two (2) goals, Sustainability and Cost-Effectiveness, are overarching program goals that are not applied to specific criteria at the project level. Thus, these last two (2) goals are infrequently referred to in project and program documents.

7.2 Progress Towards Meeting LOS Goals

The scope of the WSIP is based on the first four (4) LOS goals described above – Seismic Reliability, Delivery Reliability, Water Quality and Water Supply. Each project that reaches construction substantial completion, contributes to increasing the overall reliability of the system and achieving progress towards meeting the LOS goals. The SFPUC remains committed to achieving all the LOS goals established for the system.

Table 7-2 lists the projects with their individual contribution to LOS goals, and indicates which projects have been substantially completed. This tabulation demonstrates the incremental progress that has been achieved on the WSIP to meet these goals since the last programmatic revision of the WSIP in 2016. As of March 2018, 40 of the 43 Regional WSIP projects with specific LOS goals have achieved their LOS goals to date. The other 9 Regional WSIP projects (Support projects and WSIP closeout projects) do not have specific LOS goals.

Table 7-2: Progress Towards Meeting LOS Goals

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	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[2] (B) WD-2729 Alameda Creek Diversion Dam	(A) 10/12/18 (B) 09/17/18		S	P	S		(A) 92% (B) 83%
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%
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	10/26/15		P			06/20/14	100%
CUW36301	SCADA System - Phase II *(Completed)*	11/29/10			P		11/29/10	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								
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.

7.3 Impacts of Project Delays on LOS Goals

This section addresses the impact, if any, the most recent project delays have on the WSIP LOS goals and objectives.

Delivery Reliability

To meet the system performance objectives of the delivery reliability goal, modeling and analysis was conducted in 2006, to address three (3) key areas:

Delivery during maintenance conditions: System capacity and operational flexibility to allow scheduling of planned maintenance of facilities, and delivery of average day demand. The assumption for a maintenance condition consists of a planned shutdown of any facility combined with an unplanned outage of one reach of either a BDPL or SJPL. The full list of assumptions is detailed in the 2005 Water System Improvement Program Assessment Report.

Delivery during a Hetch Hetchy water quality event: Delivery of average day demand to customers while the water from Hetch Hetchy is either filtered or removed from the system.

Delivery impacts due to unplanned outages: This objective is to achieve a system-wide delivery capacity of average day demand with one water source unavailable.

None of the projects that have delivery reliability as a primary LOS goal are delayed in the March 2018 Revised WSIP; thus the Delivery Reliability LOS goal and objectives will not be impacted.

Seismic Reliability

There are no projects delayed in the March 2018 Revised WSIP that have seismic reliability as a primary LOS goal that are not already in service. The four month delay to the administrative closeout of the Seismic Upgrades of BDPL Nos 3 & 4 has been in service since 2014. Thus the

Seismic Reliability LOS goal and objectives are not impacted due to any of the delays that are forecast in the March 2018 Revised WSIP. Furthermore, the last project that is required to fully accomplish the Seismic Reliability Goal and objectives (Phase 3 of the Peninsula Pipelines Seismic Upgrades) completed all physical construction work in December 2017 and the project is now in service. The contractor is currently working on the remaining as-built drawings and other documents for administrative closeout of the project. Once all closeout documents are provided by the contractor the final construction completion will be issued, anticipated by July 31, 2018.

Water Supply

Two projects in the March 2018 Revised WSIP are delayed that have water supply as their primary LOS goal: The Alameda Creek Recapture Project (ACRP) and the Regional Groundwater Storage and Recovery Project (RGSRP).

At the time the water Supply LOS goals and objectives were being established for the Regional Water System, the SFPUC service area demand was approximately 265 mgd. Current demand is substantially lower after the effects of the economic downturn of 2008-2009 and the recent drought of 2012-2016. Average annual demand in FY2009-2010 was 224 mgd. Current demand is about 200 mgd. Therefore, the delays to these two projects should not impact the SFPUC's ability to meet projected water demands and the drought reliability LOS goal of no more that 20 percent system-wide rationing in any single year.

The 28-month delay in the ACRP will result in a delay in the timing to begin the recapture of flows released from Calaveras Reservoir and the Upper Alameda Creek Diversion Dam (ACDD). Specifically, any flow releases made after the completion of the Calaveras Dam Replacement Project (CDRP) in 2019 until the ACRP is scheduled to be complete in 2021 would not be recaptured into the Regional Water System.

The RGSRP, which has a total delay of 29 months, is being implemented in two phases. Phase 1, consisting of thirteen (13) new deep groundwater wells, is anticipated to produce approximately 6.2 mgd of dry year supply. Twelve of the thirteen Phase 1 wells will be available for service by early 2019.

The project includes a storage component that allows the groundwater basin to recharge when the wells are not operating. The current storage phase started in May 2016 and will continue through at least April 2019. Water that is being stored will be available for recovery during times of drought. Wells should be ready to recover stored groundwater as a dry year supply if 2019/2020 is determined to be a drought period.

Phase 2, which includes completion of up to three test wells, completion of the South San Francisco Main well and pipeline, and completion of other Phase 1 scope items, including chemical system monitoring, sampling and storage at various sites will be completed in 2021. The test wells will allow for determination as to whether the identified sites could be viable production wells, and will provide valuable information related to water quality and potential pumping capacities that can be used for future planning and decision making. The test wells would not be converted to production wells at this time.

The potential impact to the Water Supply LOS due to the changes implemented to the RGSRP would be the availability of 1 mgd of supply in a drought scenario. Given current demand levels, this relatively small reduction in supply availability will have negligible impact on SFPUC's ability to meet projected water demands and the drought reliability LOS goal of no more that 20% system-wide rationing in any single year.

Nevertheless, based on the extended pumping tests to be implemented in 2018 and early 2019, the SFPUC will provide an updated yield estimate for the RGSRP, and will provide schedule, cost estimates and funding considerations for how to modify the RGSRP's scope to make one or more of the test wells into permanent wells if deemed appropriate to do so based on updated yield estimates.

Water Quality

All projects with water quality as the primary goal have been completed. Thus, the most recent project delays do not have any impact to the Water Quality LOS goal and objectives.

APPENDIX A

MARCH 9, 2018 NOTICE OF PUBLIC HEARING

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

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San Francisco, CA 94102
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NOTICE OF PUBLIC HEARING
(Posted on Friday, March 9, 2018)

NOTICE OF PUBLIC HEARING FOR CONSIDERATION OF REVISIONS TO THE SAN FRANCISCO PUBLIC UTILITIES COMMISSION (SFPUC) WATER SYSTEM IMPROVEMENT PROGRAM (WSIP)

Tuesday, April 10, 2018
1:30 P.M.
City Hall, Room 400
1 Dr. Carlton B. Goodlett Place
San Francisco, California

SUBJECT OF PUBLIC MEETING

Notice is hereby given that the San Francisco Public Utilities Commission (SFPUC) will hold a public hearing as part of its regularly scheduled meeting on Tuesday, April 10, 2018 for the purpose of considering proposed revisions to the Water System Improvement Program (WSIP), referred to as the "March 2018 Proposed Revised WSIP."

COMMENTS ON PROPOSED REVISIONS

All interested parties are invited to attend the public hearing and provide public comment on the proposed revisions. Individuals who are unable to attend the public hearing may submit to the SFPUC, by the time the hearing begins on April 10, 2018, written comments regarding the subject of the hearing. These comments will be brought to the attention of the Commission and will become part of the official public record. Written comments should be sent to:

Donna Hood, Commission Secretary
San Francisco Public Utilities Commission
525 Golden Gate Avenue (13th Floor)
San Francisco, CA 94102
Email: Commission@sfwater.org

BACKGROUND

The Wholesale Regional Water System Security and Reliability Act (Water Code § 73500 et seq.) requires that the SFPUC provide notification of certain program changes. Specifically, the SFPUC is required to provide an advance 30-day written notice if the SFPUC is to consider the adoption of program changes that would delay WSIP projects and/or result in the construction of different projects.

The SFPUC last adopted program-wide revisions to the WSIP, including revised program scope, schedule and budget, on April 26, 2016. Subsequently, the SFPUC adopted revisions to the schedule, but not the budget or scope, of three (3) WSIP projects on February 14, 2017. None of the February 14, 2017 adopted revisions affected the approved WSIP completion date of December 20, 2019, which is the current WSIP completion date.

During the first few months of 2018, the SFPUC undertook a comprehensive assessment of all remaining WSIP delivery efforts to completion of the program. The objectives of this wide-ranging internal review of all active projects are to (1) validate all project schedules and cost forecasts at completion; (2) make an accurate determination of the overall cost and schedule status of the program; and (3) put in place specific measures to further control costs and schedules as the program ramps down. The final outcome of this detailed review is the proposed project revisions documented in the various attachments to this notice.

CHANGE SUMMARY

The most significant proposed changes to the WSIP are (1) the extension of the overall program completion date from December 20, 2019 to December 30, 2021, and (2) the increase of the forecast cost of regional projects from $4,373.8M to $4,415.8M ($42M increase, or 1.0%). However, the program finance cost is forecast to be less than previously reported (decrease from $471.7M to $372.0M). Therefore, the overall program cost forecast is a decrease from $4,845.5M to $4,787.8M, or a decrease of $57.7M (1.2%).

Of the fifty-two (52) existing regional projects in the WSIP, thirty-nine (39) have been completed, three (3) have no schedule variance, and ten (10) have been extended.

The project with the longest forecast schedule extension is the Bioregional Habitat Restoration (BHR) Project at forty (40) months. The last project forecast to complete in the March 2018 Proposed Revised WSIP is the Regional Groundwater Storage and Recovery (RGWSR) project.

The budget revisions proposed for adoption involve a mix of cost increases and cost savings at the project level. The project with the largest cost increase is the RGWSR. The projected cost variance of the RGWSR is $25.2M from the 2016 approved project budget.

The SFPUC is undertaking a number of steps to reduce and control the remaining costs of the WSIP. For example, we have significantly reduced the regional management structure of the program and we have reduced significantly the City and Consultant resources at the program level. Furthermore, we have substantially transitioned much of the work from Consultants to City staff and will continue to do so where practicable.

No regional projects were deleted from the WSIP since program-wide revisions were last approved in 2016 and there are no project name changes, although there are several sub-projects with name changes in the WSIP Closeout Projects. Most project scopes remain the same as those previously approved by the SFPUC. Seven (7) projects have scope modifications that are considered significant enough to be documented separately.

SUPPORTING DOCUMENTS

This notice and the attached documents focus on the WSIP regional projects (all local projects are excluded). The eleven (11) following attachments are included with this notice to explain the proposed changes to the schedule, scope and budget of various WSIP projects to be considered for adoption by the Commission at the public hearing on April 10, 2018.

Attachment 1: March 2018 Revised WSIP - General Project Changes and Additions
Attachment 2: March 2018 Revised WSIP - Project Status
Attachment 3: March 2018 Revised WSIP - Summary of Proposed Scope Changes
Attachment 4: March 2018 Revised WSIP - Summary of Proposed Schedule Changes
Attachment 5: March 2018 Revised WSIP - Summary of Proposed Budget Changes
Attachment 6: March 2018 Revised WSIP - Explanation of Proposed Schedule Changes
Attachment 7: March 2018 Revised WSIP - Explanation of Proposed Budget Changes
Attachment 8: March 2018 Revised WSIP - Project Descriptions
Attachment 9: March 2018 Revised WSIP - Proposed Project-Level Schedules
Attachment 10: March 2018 Revised WSIP - Proposed Phase-Level Schedules
Attachment 11: March 2018 Revised WSIP - Proposed Project-Level Cost Summary

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APPENDIX B

BAWSCA COMMENT LETTER AND SFPUC RESPONSE

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BAWSCA
Bay Area Water Supply & Conservation Agency

April 3, 2018

The Honorable Ike Kwon, President
San Francisco Public Utilities Commission
525 Golden Gate Avenue, 13th Floor
San Francisco, CA 94102

SUBJECT: Comments on the Proposed March 2018 Revised Water System Improvement Program (WSIP)

Dear President Kwon:

On March 9, 2018, the San Francisco Public Utilities Commission (SFPUC) notified the Bay Area Water Supply and Conservation Agency (BAWSCA) that it would be considering proposed changes to the Water System Improvement Program (WSIP) in accordance with the Wholesale Regional Water System Security and Reliability Act (AB 1823, Water Code Section 73500 *et seq.*) BAWSCA performed a thorough review of Notice of Public Hearing and associated documents and met several times with SFPUC staff.

Overall, BAWSCA has two key concerns with the proposed changes:

- The proposed scope change for the Regional Groundwater Storage and Recovery Project (RGSR) would reduce the drought year yield of the project. In adopting the proposed scope change, the Commission would be taking action that may reduce the SFPUC's ability to meet its contractual obligations regarding water supply Level of Service.
- The WSIP "Finance" cost category forecast has been reduced from $471.7M to $372.0M. BAWSCA appreciates the SFPUC's prudent and cost-effective WSIP financing efforts, however, it is important that it is clear to the public and the water customers that this forecast reduction is not a result of project cost savings. Rather, it is due to the release of debt service reserve funds resulting from changes in the SFPUC's bond indenture requirements. The SFPUC's March 9, 2018 proposed WSIP revisions documentation should have made this point more clearly to avoid confusion.

BAWSCA presents the following eleven findings and seven recommendations for consideration by the Commission in the categories of proposed scope, schedule, and budget changes based on its review of the referenced documents.

Scope: What is the impact of the proposed revisions on the individual project scopes as compared to the currently adopted scopes? Do the projects, as proposed, continue to meet the WSIP Level of Service (LOS) goals?

Finding 1. The proposed scope changes for RGSR delete the installation of two permanent production wells and instead propose installation of up to three test wells.

Test well production estimates will be prepared under Phase 2. Decisions, if any, to install additional permanent wells would not be made under this WSIP project. The proposed RGSR scope changes are likely to result in a reduced project yield, thereby directly impacting the ability to meet the WSIP LOS goals.

Finding 2: Scope changes are proposed for the Calaveras Dam Replacement Project and its Alameda Creek Diversion Dam subproject to address issues that have arisen during construction since March 2016. The proposed scope changes do not impact the ability of the project to meet the WSIP LOS goals and objectives. Although project construction has advanced significantly for both efforts during calendar year 2017, risks remain that could negatively impact ongoing construction and call for scope changes if realized.

Finding 3: No scope changes are proposed for the Alameda Creek Recapture Project (ACRP). However, the project Environmental Impact Report (EIR) is currently being revised in response to questions and issues raised during the review of the first Draft EIR. Project scope changes may be necessary based on possible future CEQA related recommendations, resulting in impacts to not only the project scope, but also the schedule, budget, and the project's ability to meet the WSIP LOS goals.

***Scope Recommendations:* BAWSCA recommends that the Commission direct staff to:**

1. **Provide a written report to the Commission in January 2019 on the RGSR that includes the following:**
   a. **An updated yield estimate for the RGSR, informed by the extended pump tests for Phase 1 wells and Phase 2 test well production estimates; and**
   b. **Schedule, cost estimates, and funding considerations for how to modify the RGSR's scope to make one or more of the test wells into permanent wells as part of WSIP completion, if it is deemed appropriate to do so based on updated yield estimates.**
   c. **An update on the RGSR's ability under the current scope AND any proposed scope modification as a result of the upcoming project activities.**
2. **Following the completion of the ACRP's revised environmental effort, provide a written report to the Commission on the need, if any, to revise the project's scope and the possible impact of scope changes on the project's ability to meet the WSIP LOS goals.**

Schedule: Have the completion dates for individual WSIP projects been extended and if so, why? Is there an increased risk to public health and safety for any schedule extension?

Finding 4: The SFPUC is proposing schedule extensions for six individual WSIP projects currently in construction or preconstruction phases and four other support projects. The completion for the Program Management project is also extended to match the proposed completion of the overall WSIP in December 2021.

Extensions are proposed for two projects critical to fully meeting the WSIP water supply LOS goal: ACRP (28-month extension) and RGSR (29-month extension). The proposed delays in these drought year supply projects extend the time over which water customers are exposed to increased level of dry-year and/or emergency water supply shortages.

Finding 5: The schedule for the RGSR is proposed to be extended by 29 months. In calendar year 2018 under the RGSR scope, an extended pump test will be conducted and up to three test wells will be drilled. That work will enable SFPUC to prepare production estimates for the test wells by December 2018. The proposed schedule does not include any further well construction activity on the project in response to the results from the extended pump test and installation of up to three test wells.

Finding 6: The schedule for the ACRP is proposed to be extended by 28 months to accommodate ongoing revisions to the project's environmental documentation. Project revisions may be necessary based on the outcome of the revised environmental work. The proposed schedule extension for the ACRP may not be sufficient to accommodate any project modifications if warranted by the revised environmental analysis, resulting in an increased uncertainly associated with the adequacy of the ACRP schedule as proposed.

Finding 7: The proposed extensions for the three regional closeout projects and the Seismic Upgrade of BDPL Nos. 3 & 4 (not including support projects) is acknowledged to have minimal impact on LOS as remaining work on these projects is associated with facilities that are already in service or can be quickly placed in service if the need arises.

Schedule Recommendations: **BAWSCA recommends that the Commission direct staff to:**

3. **Include in the required AB 1823 documentation justification for the extended schedule for RGSR, given that the revised scope is smaller than the 2016 scope and deletes the installation of two permanent wells.**

Budget: What is the impact of the proposed revisions on the individual project budgets and overall WSIP budget as compared to the currently adopted budget?

Finding 8: The SFPUC is proposing a $42M increase in the Regional WSIP budget. To fund this proposed cost increase, savings are available from expected underruns from various Regional WSIP projects and additional WSIP allocations in the Water Enterprise 10-Year CIP ($42M).

Finding 9: The "Finance" cost category forecast has been reduced from $471.7M to $372.0M. This forecast reduction is not a result of cost savings, but rather, is due to the release of debt service reserve funds resulting from changes in the SFPUC's bond indenture requirements.

Finding 10: As part of the March 2016 WSIP revisions, SFPUC committed to providing an accounting of the actual financing costs for WSIP prior to any future budget

adjustments for WSIP. Such an accounting is not provided in this 2018 Notice of Change or any supporting documents.

Finding 11: The Director's Reserve fund has been replenished and is sufficient to cover the remaining risks at the 80% confidence level.

Budget Recommendations: **BAWSCA recommends that the Commission direct staff to:**

4. **Provide clarification in the AB 1823 materials and documents to BAWSCA that the forecast reduction in the "Finance" cost category is not a result of project cost savings, but rather is due to the release of debt service reserve funds resulting from changes in the SFPUC's bond indenture requirements.**
5. **By May 1, provide to the Commission and BAWSCA a written report documenting the assumptions associated with the WSIP "Finance" cost category, the actual financing costs for WSIP, and the resulting impact on the "Finance" cost category moving forward.**
6. **Include in the required BA 1823 documentation a detailed breakdown of the increased budget request for both the RGSR and ACRP.**
7. **Provide the following additional information in the regular WSIP Quarterly Reports: use of the contingency and documentation of sufficiency of the contingency to deliver WSIP within budget; and documentation regarding work force reduction and other efficient practices and procedures to control soft costs as program is completed.**

BAWSCA urges the Commission to consider BAWSCA's nine recommendations and, in particular, to revisit the scope changes proposed for the RGSR. The proposed changes to the RGSR, in effect, mean that the SFPUC is walking away from a potential dry-year water supply opportunity.

The efforts of Mr. Wade and his staff in meeting with BAWSCA representatives to discuss the proposed changes and providing supporting documentation for the recommendations under consideration are much appreciated. BAWSCA continues to support the SFPUC's efforts to implement the WSIP on time, on budget, and within scope for the protection of the 2.6 million residents and associated businesses that rely on the San Francisco Regional Water System for a reliable supply of high quality water.

Sincerely,

Nicole Sandkulla
Chief Executive Officer/General Manager

cc: Harlan L. Kelly, Jr., SFPUC General Manager
Kathy How, SFPUC AGM – Infrastructure
Steve Ritchie, SFPUC AGM – Water Enterprise
Eric Sandler, SFPUC CFO
Dan Wade, SFPUC Program Director, WSIP
BAWSCA Board of Directors
BAWSCA Water Management Representatives
The Honorable Assembly Member Al Muratsuchi, Chair, California State Assembly - Joint Legislative Audit Committee
The Honorable Senator Richard D. Roth, Vice-Chair, California State Senate - Joint Legislative Audit Committee
Stefan Cajina, SWRCB-Division of Drinking Water
Bruce Burton, SWRCB-Division of Drinking Water
Dick McCarthy, California Seismic Safety Commission
Fred Turner, California Seismic Safety Commission
Allison Schutte, Hanson Bridgett

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MEMORANDUM

DATE: June 26, 2018

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

THROUGH: Harlan L. Kelly, Jr., General Manager HK
Kathryn How, AGM for Infrastructure

FROM: Daniel L. Wade, WSIP Director DLW

RE: Response to BAWSCA's Recommendations on the Proposed March 2018 Revised WSIP

This memorandum provides response to the seven recommendations provided by the Bay Area Water Supply and Conservation Agency (BAWSCA) in BAWSCA's letter to the SFPUC dated April 3, 2018, regarding the then proposed March 2018 Revised Water System Improvement Program (WSIP).

SFPUC's Response to BAWSCA Recommendations dated April 3, 2018

BAWSCA Scope Recommendation (1): Provide a written report to the Commission in January 2019 on the RGSR [Regional Groundwater Storage and Recovery Project] that includes the following:

a. ***An updated yield estimate for the RGSR, informed by the extended pump tests for Phase 1 wells and Phase 2 test well production estimates; and***
b. ***Schedule, cost estimates, and funding considerations for how to modify the RGSR's scope to make one or more of the test wells into permanent wells as part of the WSIP completion, if it is deemed appropriate to do so based on updated yield estimates.***
c. ***An update on the RGSR's ability under the current scope AND any proposed scope modification as a result of the upcoming project activities.***

SFPUC Response:
The SFPUC will provide a written report to the Commission in January 2019 on the Regional Groundwater Storage and Recovery Project to contain updated yield estimates informed by tests on Phase 1 and Phase 2 wells. The current yield estimates informing the March 2018 Revised WSIP are that the two Phase 2 wells that have not yet started construction represent approximately 1 mgd of the 7.5 mgd originally planned for the RGSR project. If it has been deemed appropriate based on the updated yield estimates to modify the scope of the project to make one or more of the test wells into permanent wells as part of the WSIP completion, then scope, schedule, cost, and funding considerations for such action would also be included in this written report on the RGSR in January 2019, although these may still be preliminary.

BAWSCA Scope Recommendation (2): Following the completion of the ACRP's [Alameda Creek Recapture Project] revised environmental effort, provide a written report to the Commission on the need, if any, to revise the project's scope and the possible impact of scope changes on the project's ability to meet the WSIP LOS goals.

SFPUC Response:
If following the completion of the ACRP's revised environmental effort, there is a need to revise the project's scope, a written report will be provided to the Commission regarding such need, including the possible impact of such scope revision on the project's ability to meet the WSIP LOS goals. This project has been identified as having a primary LOS goal of Water Supply, and no Secondary LOS goals.

BAWSCA Schedule Recommendation (3): Include in the required AB 1823 documentation justification for the extended schedule for RGSR [Regional Groundwater Storage and Recovery], given that the revised scope is smaller than the 2016 scope and deletes the installation of two permanent wells.

SFPUC Response:
The SFPUC will include justification for the extended schedule for Regional Groundwater Storage and Recovery in the March 2018 Revised WSIP Notice of Change (NOC) Report.

BAWSCA Budget Recommendation (4): Provide Clarification in the AB 1823 materials and documents to BAWSCA that the forecast reduction in the "Finance" cost category is not a result of project cost savings, but rather is due to the release of debt service reserve funds resulting from changes in the SFPUC's bond indenture requirements.

SFPUC Response:
The SFPUC will provide clarification regarding the WSIP "Finance" cost category in a memorandum to be provided to the Commission and BAWSCA by August 31, 2018. Reference will be made to this forthcoming memorandum in the March 2018 Revised WSIP NOC Report.

BAWSCA Budget Recommendation (5): By May 1, provide to the Commission and BAWSCA a written report documenting the assumptions associated with the WSIP "Finance" cost category, the actual financing costs for WSIP, and the resulting impact on the "Finance" cost category moving forward.

SFPUC Response:
The SFPUC will provide a memorandum documenting the assumptions associated with the WSIP "Finance" cost category, the actual financing costs for WSIP, as currently known, and any currently known or anticipated resulting impact on the "Finance" cost category moving forward. The SFPUC has informed both the Commission and BAWSCA that this written memorandum will be provided by August 31, 2018.

BAWSCA Budget Recommendation (6): Include in the required AB 1823 documentation a detailed breakdown of the increased budget request for both the RGSR [Regional Groundwater Storage and Recovery] and ACRP [Alameda Creek Recapture Project].

SFPUC Response:
The SFPUC will include in the March 2018 Revised WSIP NOC Report a detailed breakdown of the increased budget request for both the RGSR and the ACRP.

BAWSCA Budget Recommendation (7): Provide the following additional information in the regular WSIP Quarterly Reports: use of the contingency and documentation of the sufficiency of the contingency to deliver WSIP within budget; and documentation regarding work force reduction and other efficient practices and procedures to control soft costs as program is completed.

SFPUC Response:
The SFPUC will add a section to the cover letter for the WSIP Quarterly Report to highlight the use of contingency and documentation on the sufficiency of the contingency to deliver WSIP within budget, and will also highlight in the cover letter documentation regarding work force reduction and other efficient practices and procedures to control soft costs as the program is completed.

cc: Steven Ritchie, Assistant General Manager – Water
Eric Sandler, Assistant General Manager – Business Services / CFO

APPENDIX C

MARCH 2018 REVISED WSIP COMMISSION RESOLUTION

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PUBLIC UTILITIES COMMISSION
City and County of San Francisco

RESOLUTION NO. 18-0052

WHEREAS, On May 28, 2002, per Resolution No. 02-0101, this Commission approved a Long-Term Strategic Plan for Capital Improvements, a Long-Range Financial Plan and a Capital Improvement Program (CIP); and

WHEREAS, On November 5, 2002, San Francisco residents voted to approve Proposition A (Water System Improvement Revenue Bonds and Imposition of Surcharge on Retail Water Customers), a revenue bond measure to fund the CIP approved by the Commission on May 28, 2002; and

WHEREAS, On February 26, 2003, pursuant to the requirements of California Assembly Bill (AB) 1823, the San Francisco Public Utilities Commission (SFPUC) submitted to the California Department of Health Services (now the California Department of Public Health) a report outlining the projects, schedule and implementation plan for the CIP; and

WHEREAS, On November 29, 2005, per Resolution No. 05-0176, this Commission approved project-level changes to the CIP and by doing so endorsed the revised scope, schedule and budget of individual projects and renamed the program the Water System Improvement Program (WSIP) ("December 2005 WSIP"); and

WHEREAS, On February 26, 2008, per Resolution No. 08-0024, this Commission approved project-level changes to the WSIP and by doing so endorsed the revised scope, schedule and budget of individual projects ("December 2007 Revised WSIP"); and

WHEREAS, On July 28, 2009, per Resolution No. 09-0125, this Commission approved project-level changes to the WSIP and by doing so endorsed the revised scope, schedule and budget of individual projects ("June 2009 Revised WSIP"); and

WHEREAS, On July 12, 2011, per Resolution No. 11-0109, this Commission approved project-level changes to the WSIP and by doing so endorsed the revised scope, schedule and budget of individual projects ("June 2011 Revised WSIP"); and

WHEREAS, On June 12, 2012, per Resolution No. 12-0099, this Commission approved budget and schedule changes for three individual WSIP projects – New Irvington Tunnel, Bay Division Pipeline (BDPL) Reliability Upgrade – Pipeline ("BDPL No. 5") and Pulgas Balancing – Modification of the Existing Dechloramination Facility; and

WHEREAS, On October 9, 2012, per Resolution No. 12-0181, this Commission approved budget changes for four individual WSIP projects – San Joaquin Pipeline (SJPL) System, Tesla Treatment Facility, Vegetation Restoration of WSIP Construction Sites (new project), and Program Management; and

WHEREAS, On January 22, 2013, per Resolution No. 13-0020, this Commission approved budget and schedule changes for one individual WSIP project – Calaveras Dam Replacement (CDRP), after reviewing and considering the California Environmental Quality Act (CEQA) Findings and statement of overriding considerations that it previously adopted for the WSIP and CDRP approvals, along with the CEQA Findings contained in Addendum No.1 to the CDRP EIR issued by the Planning Department on December 13, 2012, and this Commission adopted those additional CEQA Findings for the CDRP modifications, which findings are incorporated in this Resolution by this reference; and

WHEREAS, On April 23, 2013, per Resolution No. 13-0060, this Commission approved project-level changes to the WSIP and by doing so endorsed the revised scope, schedule and budget of individual projects ("March 2013 Revised WSIP"); and

WHEREAS, On April 22, 2014, per Resolution No. 14-0065, this Commission approved project-level changes to the WSIP and by doing so endorsed the revised scope, schedule and budget of individual projects ("March 2014 Revised WSIP"); and

WHEREAS, On December 8, 2015, per Resolution No. 15-0263, this Commission approved schedule changes for six individual WSIP projects – San Joaquin Pipeline System, San Antonio Backup Pipeline, Seismic Upgrade of BDPL Nos. 3&4, BDPL Reliability Upgrade – Pipeline (BDPL No. 5), and Vegetation Restoration of WSIP Construction Sites; and

WHEREAS, On April 26, 2016, per Resolution No. 16-0071, this Commission approved scope, schedule, and budget changes to four WSIP projects – Alameda Creek Recapture, Calaveras Dam Replacement, Bioregional Habitat Restoration, and Watershed Environmental Improvement Program, and the addition of Closeout Projects to four WSIP regions – San Joaquin, Sunol Valley, Bay Division, and Peninsula ("March 2016 Revised WSIP"); and

WHEREAS, On February 14, 2017, per Resolution No. 17-0026, this Commission approved schedule changes to three WSIP projects – New Irvington Tunnel, Seismic Upgrade of BDPL Nos. 3&4, and Security System Upgrade; and

WHEREAS, A Final Programmatic Environmental Impact Report ("PEIR") was prepared for the WSIP and certified by the Planning Commission on October 30, 2008 by Motion No. 17734, and thereafter, this Commission approved the WSIP and adopted findings and a Mitigation Monitoring and Reporting Program (MMRP), as required by the CEQA on October 30, 2008 per Resolution No. 08-0200, which findings are incorporated in this Resolution by this reference; and

WHEREAS, The PEIR and SFPUC Resolution No. 08-0200 have been made available for review by the SFPUC and the public, and those files are part of the record before this Commission; and

WHEREAS, This Commission has reviewed and considered the information contained in the PEIR, the findings contained in SFPUC Resolution No. 08-0200, and all written and oral information provided by the Planning Department, the public, relevant public agencies, SFPUC and other experts; and

WHEREAS, The SFPUC has completed environmental review of all but one of the individual WSIP projects, and is proceeding to complete the environmental review process for the remaining project, as authorized by and in accordance with CEQA; and

WHEREAS, Water Code Section 73502(d)(2) requires that the City provide written notice, not less than 30 days prior to the date of a meeting of the City Agency responsible for management of the Bay Area Regional Water System, that a change in the program is to be considered, and that all Bay Area wholesale customers shall be permitted to testify or otherwise submit comments at such meeting; and

WHEREAS, On March 9, 2018, the SFPUC notified the Bay Area wholesale customers through the Bay Area Water Supply & Conservation Agency (BAWSCA) in writing that this Commission would be considering changes to the WSIP at a public hearing on April 10, 2018; and

WHEREAS, The SFPUC completed a comprehensive assessment of all remaining WSIP delivery efforts to (1) validate all schedule and cost forecasts at completion; (2) make an accurate determination of the overall cost and schedule status of the program; and (3) and put in place specific measures to further control costs and schedules as the program continues to ramp down, and the outcome of this assessment is the proposed program revisions documented in the Notice of Public Hearing dated March 9, 2018; and

WHEREAS, The proposed revisions to the WSIP set forth in the Notice of Public Hearing (referred to herein as the "March 2018 Proposed Revised WSIP") contain scope changes to seven projects (Regional Groundwater Storage and Recovery, Calaveras Dam Replacement, Watershed and Environmental Improvement Program, WSIP Closeout - San Joaquin Region, WSIP Closeout – Sunol Valley Region, WSIP Closeout – Bay Division Region, WSIP Closeout – Peninsula Region); and

WHEREAS, The overall program schedule for the March 2018 Proposed Revised WSIP is proposed to be extended from December 20, 2019 (last approved by the Commission on April 26, 2016) to December 30, 2021; and

WHEREAS, The cost for the regional projects in the March 2018 Proposed Revised WSIP is proposed to be increased by $42 million from $4,373,800,000 to $4,415,800,000, with an overall forecast program decrease from $4,845.5M to $4,787.8M, or a forecast decrease of $57.7M, due to a reduced forecast of finance costs; and

WHEREAS, During the 30-day public review period, the WSIP Director met with representatives of the BAWSCA to discuss the March 2018 Proposed Revised WSIP; now, therefore, be it

RESOLVED, That this Commission finds that since the PEIR was finalized, there have been no substantial project changes and no substantial changes in project circumstances that would require major revisions to the PEIR due to the involvement of new significant environmental effects or an increase in the severity of previously identified significant impacts,

and there is no new information of substantial importance that would change the conclusions set forth in the PEIR; and be it

FURTHER RESOLVED, That this Commission hereby approves the revised scopes of the March 2018 Proposed Revised WSIP, together with the schedule and budget changes contained therein, all of which are documented in the Notice of Public Hearing dated March 9, 2018 attached hereto and incorporated herein by reference; and be it

FURTHER RESOLVED, That this Commission hereby directs staff to send a Notice of Change Report to State Water Resources Control Board and the Alfred E. Alquist Seismic Safety Commission in compliance with Water Code Section 73502(d)(3); and be it

FURTHER RESOLVED, That this Commission hereby directs staff to implement the seven (7) recommendations set forth in the letter dated April 3, 2018 from the Bay Area Water Supply and Conservation Agency, attached hereto, provided that the deadline for implementing Recommendation No. 5 shall be June 1, 2018, rather than May 1, 2018.

I hereby certify that the foregoing resolution was adopted by the Public Utilities Commission at its meeting of April 10, 2018.

Donna Wood

Secretary, Public Utilities Commission

APPENDIX D

STATE OF CALIFORNIA COMMENTS AND SFPUC RESPONSES

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CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board
Division of Drinking Water

October 7, 2016

PWS# 3810001

The Honorable Assemblymember Freddie Rodriguez, Chair
Joint Legislative Audit Committee
1020 N Street, Room 107
Sacramento, CA 95814

Mr. Harlan L. Kelly, Jr., General Manager
San Francisco Public Utilities Commission
525 Golden Gate Avenue, 13th Floor
San Francisco, CA 94102

Re: Response to June 30, 2016 Wholesale Regional Water System Security and Reliability Act Notice of Changes to Water System Improvement Program

Dear Assemblymember Rodriguez and Mr. Kelly:

In accordance with the 2002 Wholesale Regional Water System Security and Reliability Act (AB 1823), 2008 amendments (AB 2437), 2014 amendments (SB 1345), and 2015 amendments (AB 731), the State Water Resources Control Board (Board) has completed its review of the June 30, 2016 Notice of Changes to the 2005 Water System Improvement Program (WSIP) for the San Francisco Public Utilities Commission Regional Water System (SFPUC RWS). These changes were adopted by the SFPUC on April 26, 2016. The Board received the Notice of Changes on July 13, 2016.

Section 73502 (d)(3) of the Water Code requires the Board to comment on changes to the WSIP (referred to in statute as the "capital improvement program") within 120 days of notification and to provide those comments to the Joint Legislative Audit Committee and the City and County of San Francisco. The Board's review is carried out by the Division of Drinking Water (Division). The June 30, 2016 Notice of Changes is the ninth change notice that the Division has reviewed. The Division's review focuses on the adequacy of the Notice of Changes in describing project changes and the reasons for these changes, and their significance with respect to the protection of public health – in particular, the safety and reliability of the drinking water supply. The Division's review also considers the comments and recommendations issued by the California Seismic Safety Commission (CSSC) and the Bay Area Water Supply and Conservation Agency (BAWSCA).

The June 30, 2016, Notice of Changes results in a seven-month extension of the WSIP completion date from May 24, 2019 to December 20, 2019.

All but six (6) projects (Calaveras Dam Replacement, Alameda Creek Recapture, Regional Groundwater Storage and Recovery, Long-Term Mitigation Endowment, Bioregional Habitat Restoration, and Watershed Environmental Improvement Program) will be completed by the end of 2016. Thirty-two projects have been completed, six projects have no schedule variance, and ten projects have been extended. In addition, four projects have been added to address various issues that need to be addressed in order to fully meet Level of Service (LOS) goals in each of the San Joaquin, Sunol Valley, Bay Division and Peninsula regions.

The overall scope of the WSIP essentially remains unchanged, and no projects were deleted from the program. The scopes of four projects were refined to facilitate their implementation, but these changes will not impact the LOS goals to be achieved by the WSIP. According to the Notice of Changes cover letter, none of these changes will impact the LOS goals established for the program.

The following items express the Division's comments and concerns regarding this most recent Notice of Changes, in addition to the previous eight change notices.

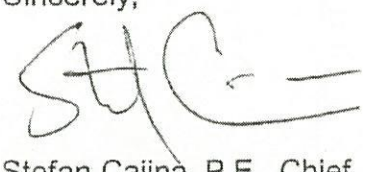
- The Division notes that the SFPUC has made significant progress towards the implementation of the WSIP. The SFPUC Commission last adopted program-wide revisions to the scope, schedule, and budget of the program in March 2014. The June 30, 2016 change notice extends the WSIP schedule. The Division recognizes that some project delays are inevitable due to the complexity of the program. However, the Division, as indicated in our comments to the previous change notices, urges SFPUC to continue taking all reasonable measures to facilitate timely completion of the WSIP projects while maintaining fiscal responsibility to Regional Water System's users.

- The Alameda Creek Recapture Project (ACRP) is provided in response to the Water Supply LOS goal. Reportedly, the purpose of this project is to recapture water diverted from Calaveras Reservoir or bypassed around Alameda Creek Diversion Dam for fisheries habitat enhancement in Alameda Creek and return it to the Regional Water System through facilities in the Sunol Valley. As currently conceived, the project would recapture water that naturally infiltrates from Alameda Creek into existing quarry pond F2. We note that under the previous design, the project had the ability to allow for sources of water from Pond F2 and Calaveras Reservoir to be blended and sent to San Antonio Reservoir. The alternative under the 2016 Notice of Changes refined the project to eliminate that flexibility. SFPUC has informed us that there will be no changes to the pumping scenarios and the recapture flow paths since the 35% design reviewed and accepted by the Division in 2015. Taking into account the complexity of SFPUC facilities and the combination of different water sources in the Sunol Valley,

SFPUC should ensure that the treated water supply will be protected under all anticipated flow scenarios. For Pond F2 to be permitted as a new RWS active water source, SFPUC must provide the Division with all appropriate information to facilitate a sanitary evaluation of the new source.

If you have any questions regarding this letter please contact me at (510) 620-3474 or by email at stefan.cajina@waterboards.ca.gov.

Sincerely,



Stefan Cajina, P.E., Chief
North Coastal Section
Division of Drinking Water

Cc: The Honorable Richard Roth
Member, California State Senate
Vice-Chair, Joint Legislative Audit Committee
1020 N Street, Room 107
Sacramento, CA 95814

The Honorable Richard S. Gordon
Member, California State Assembly
State Capitol, Room 3103
Sacramento, CA 95814

Tim Strack, Chairman
California Seismic Safety Commission
1755 Creekside Oaks Drive, Suite 100
Sacramento, CA 95833

Fred Turner, Senior Structural Engineer
California Seismic Safety Commission
1755 Creekside Oaks Drive, #102
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Nicole Sandkulla, Chief Executive Officer/General Manager
Bay Area Water Supply and Conservation Agency
155 Bovet Road, Suite 650
San Mateo, CA 94402

Michael Carlin, Deputy General Manager
San Francisco PUC
525 Golden Gate Avenue
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Andrew DeGraca, Water Quality Division Director
San Francisco PUC
1657 Rollins Road
Burlingame, CA 94010

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

525 Golden Gate Avenue, 13th Floor
San Francisco, CA 94102
T 415.554.3155
F 415.554.3161
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November 23, 2016

Mr. Stefan Cajina, P.E., Chief
North Coastal Section
Division of Drinking Water
State Water Resources Control Board
850 Marina Bay Parkway, Bldg. P, Fl. 2
Richmond, CA 94804-6403

Subject: Response to October 7, 2016 SWRCB Comments on SFPUC's June 30, 2016 Wholesale Regional Water System Security and Reliability Act Notice of Changes to Water System Improvement Program

Dear Mr. Cajina:

Thank you for your letter of October 7, 2016 regarding the Notice of Changes (NOC) to the Water System Improvement Program (WSIP) dated June 30, 2016. Following is the San Francisco Public Utilities Commission's (SFPUC) response to each of the State Water Resources Control Board's (SWRCB) bulleted comments and concerns.

SWRCB Comment 1:
The Division notes that the SFPUC has made significant progress towards the implementation of the WSIP. The SFPUC Commission last adopted program-wide revisions to the scope, schedule, and budget of the program in March 2014. The June 30, 2016 change notice extends the WSIP schedule. The Division recognizes that some project delays are inevitable due to the complexity of the program. However, the Division, as indicated in our comments to the previous change notices, urges SFPUC to continue taking all reasonable measures to facilitate timely completion of the WSIP projects while maintaining fiscal responsibility to Regional Water System's users.

SFPUC Response:
The SFPUC continues to proactively and aggressively work towards timely completion of the WSIP in a fiscally responsible manner. As of the end of FY2015-2016, construction was in progress on eight Regional projects valued at $2,072 million, while construction had been completed on 37 Regional projects valued at $1,616 million. The largest of the remaining projects, Calaveras Dam Replacement, will continue construction to the end of the program in 2019. The WSIP Level of Service (LOS) goals and objectives have been achieved on 40 of the 43 WSIP Regional Projects with specific LOS goals to date. The three projects that remain are: Calaveras Dam Replacement,

Alameda Creek Recapture, and Regional Groundwater Storage and Recovery, the latter two of which are scheduled to achieve LOS by late 2018.

With the completion of several large Regional projects this past year, we are very pleased to report that we have completed a seismically-designed lifeline that carries water from the Sunol Valley in the East Bay to the mid-Peninsula. That lifeline involves six segments, and construction activities have now been substantially completed on all six of these segments, with final punch list and administrative closeout in progress on several of the contracts. Furthermore, Phases 1 and 2 of the Peninsula Pipelines Seismic Upgrade project (PPSU) are complete, and Phase 3 has kicked off construction and is on track for construction completion in Fall 2017, with final administrative closeout to be in June 2018. Phase 3 of PPSU is a non-WSIP project within San Francisco that makes a relatively small contribution to seismic LOS goals; nevertheless, completion of Phase 3 of PPSU will mean 100 percent completion of the Regional and Local seismic reliability LOS goals and objectives under WSIP.

Only one Regional project remains in pre-construction, the Alameda Creek Recapture Project (ACRP). The public draft Environmental Impact Report (EIR) for this water supply project is scheduled to be released on November 30, 2016, and will be the last major EIR required for the WSIP. Another water supply project, the Regional Groundwater Storage and Recovery Project, has 13 well sites under construction; however, 2 additional wells still need to be sited in the San Bruno area in order to meet the water supply LOS goals and objectives under WSIP. Discussions with property owners (including the City of San Bruno) regarding potential sites for these additional wells are ongoing.

SWRCB Comment 2:
The Alameda Creek Recapture Project (ACRP) is provided in response to the Water Supply LOS goal. Reportedly, the purpose of this project is to recapture water diverted from Calaveras Reservoir or bypassed around Alameda Creek Diversion Dam for fisheries habitat enhancement in Alameda Creek and return it to the Regional Water System through facilities in the Sunol Valley. As currently conceived, the project would recapture water that naturally infiltrates from Alameda Creek into existing quarry pond F2. We note that under the previous design, the project had the ability to allow for sources of water from Pond F2 and Calaveras Reservoir to be blended and sent to San Antonio Reservoir. The alternative under the 2016 Notice of Changes refined the project to eliminate that flexibility. SFPUC has informed us that there will be no changes to the pumping scenarios and the recapture flow paths since the 35% design reviewed and accepted by the Division in 2015. Taking into account the complexity of SFPUC facilities and the combination of different water sources in the Sunol Valley, SFPUC should ensure that the treated water supply will be protected under all anticipated flow scenarios. For Pond F2 to be permitted as a new RWS active water source, SFPUC must provide the Division with all appropriate information to facilitate a sanitary evaluation of the new source.

SFPUC Response:
The SFPUC recognizes the SWRCB's concern regarding the possibility of a cross-connection between raw and treated water supplies under the anticipated flow scenarios. We will continue to work with the SWRCB to provide the required information to facilitate a sanitary evaluation of the new source.

The SFPUC plans on using its existing air gap system in the Sunol Valley to protect the treated water supply from raw water transfers. The new Regional Water System Operations Plan (May 2016) submitted to the Division of Drinking Water on June 24, 2016 (Operations Plan), discusses SFPUC's approach. Specifically, Section 4.3.3 of the Operations Plan addresses air gap operations related to the San Antonio Pipeline, San Antonio Backup Pipeline, and the Alameda Siphons. Air gaps #2 and #3 are now opened via a gap in the blind flange of each. The cross-connect valves for each are closed and now subject to lock-out/tag-out procedures as discussed in the Operations Plan.

Closing
We appreciate your review comments and look forward to continue to work closely with your staff. If you have any questions or comments regarding this letter, please contact either me, at (415) 554-0740, or the WSIP Director, Daniel L. Wade, P.E., at (415) 554-1853.

Sincerely,

Harlan L. Kelly, Jr.
General Manager
San Francisco Public Utilities Commission

cc: The Honorable Assembly Member Freddie Rodriguez, Chair
Joint Legislative Audit Committee
1020 N. Street, Room 107
Sacramento, CA 95814

The Honorable Senator Richard Roth
Member, California State Senate
Vice-Chair, Joint Legislative Audit Committee
1020 N. Street, Room 107
Sacramento, CA 95814

The Honorable Richard S. Gordon
Member, California State Assembly
State Capitol, Room 3103
Sacramento, CA 95814

Tim Strack, Chairman
California Seismic Safety Commission
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San Francisco Public Utilities Commission
1000 El Camino Real
Millbrae, CA 94030

State Of California

ALFRED E. ALQUIST SEISMIC SAFETY COMMISSION

GOVERNOR EDMUND G. BROWN, JR.

November 13, 2017

The Honorable Assemblyman Al Muratsuchi, Chairman
Joint Legislative Audit Committee
1020 N St. Room 107
Sacramento, CA 95814

Dear Assemblyman Muratsuchi,

On behalf of the Seismic Safety Commission, I am pleased to provide you the attached comments on the significance of delays to the San Francisco Public Utilities Commission's Water System Improvement Program.

Should you or your staff have questions regarding our comments, please do not hesitate to contact Fred Turner on the Seismic Safety Commission staff at 916-263-5506.

Sincerely,

Richard McCarthy
Executive Director

cc: Mr. Harlan L. Kelly Jr., SFPUC
Mr. Daniel Wade, PE, SFPUC
Ms. Nicole Sandkulla, PE, BAWSCA
Mr.Stefan Cajina, PE SWRCB
Dr. Karen Smith, MD MPH, Director CDPH

1755 Creekside Oaks Drive, Suite 100 □ Sacramento, CA 95833 □ 916-263-5506 □ *fax* 916-263-0594 □ *email* Michael.Orille@ssc.ca.gov □ www.seismic.ca.gov

cc:

The Honorable Senator Richard Roth, Vice-Chairman
Joint Legislative Audit Committee
1020 N St. Room 107
Sacramento, CA 95814

Mr. Harlan L. Kelly Jr.
General Manager
San Francisco Public Utilities Commission
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Mr. Vladimir Rakhamimov, PE
Division of Drinking Water
State Water Resources Control Board
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Dr. Karen Smith, MD, MPH, Director
CA Dept of Public Health
PO Box 997377, MS0500
Sacramento, CA 95899-7377

State of California

ALFRED E. ALQUIST SEISMIC SAFETY COMMISSION

Governor Edmund G. Brown, Jr.

Comments on the Significance of Changes in the San Francisco Public Utilities Commission's (SFPUC's) Water System Improvement Program (WSIP) With Respect to Seismic Hazards

November 9, 2017

Introduction

The SFPUC's water transmission system serves 26 wholesale customers in addition to delivering water to the San Francisco City Distribution Division's retail system to benefit approximately 2.6 million users. In 2002, the state enacted the Wholesale Regional Water System Security and Reliability Act (Section 73502 of the State Water Code). The Act:

- Requires the City and County of San Francisco to adopt a "program of capital improvement projects designed to restore and improve the Bay Area regional water system that are described in the capital improvement program report prepared by the SFPUC dated February 25, 2002"; and,
- Lists nine key improvement projects for the regional water system commonly known as the "Hetch Hetchy" system; and,
- States: "If the city adopts a change in the program that deletes one or more projects from the program, or postpones the scheduled completion dates, the city shall promptly furnish a copy of that change and the reasons for that change to the California Department of Public Health and the California Seismic Safety Commission"; and,
- Requires the SFPUC to produce a Program schedule by 2003 showing that "...projects representing 100 percent of the total program cost be completed on or before 2015." The Act specifically allows the SFPUC to modify the schedule if necessary; and,
- Requires the California Seismic Safety Commission (CSSC) to "submit written comments with regard to the significance of that change with respect to public health and safety" within 120 days of receiving a notice of changes to the scope or schedule of the previously proposed 2002 SFPUC Capital Improvement Program (CIP) and subsequent changes (later renamed the Water System Improvement Program (WSIP)). The purpose of the CSSC's review is to assess the level of risk to the public health and safety associated with potential interruption of the water supply from seismic events that any such delays may present.

On September 1, 2017, the CSSC received another notice of changes from the SFPUC. This is the CSSC's tenth review of changes to the WSIP. Prior CSSC reviews occurred in 2006, 2008, 2010, 2011, 2012, May and September 2013, 2014, and 2016.

1755 Creekside Oaks Drive, Suite 100 □ Sacramento, CA 95833 □ 916-263-5506 □ *fax* 916-263-0594 □ *email* Michael.Orille@ssc.ca.gov □ www.seismic.ca.gov

Scope and Limitations of these Comments

The CSSC considered changes to the WSIP that the SFPUC made between June 2016 and September 2017 when generating the comments below. In addition, the CSSC considered construction progress to date.

CSSC staff prepared this report and made a presentation to the CSSC at its November 9, 2017 meeting.

As required by the Act, the CSSC has prepared comments that address schedule delays in the regional WSIP. The Act's comment period only allows for limited review and comment by CSSC staff and commissioners. In addition, although some Commissioners and staff are licensed professionals who are familiar with certain technical aspects of the seismic design of water systems, in their roles of serving the public as Commissioners and staff, they do not perform engineering or other licensed work. Rather the CSSC's primary mandate is to provide policy advice to the Governor, the Legislature, and the public. Consequently, this effort does not constitute work by licensed professionals on the Commission or its staff. In generating the comments below, the CSSC does not assume responsibility for the integrity or reliability of any aspect of the WSIP. The Commission also does not regulate, certify, approve, or disapprove of the WSIP or any of its changes.

Please refer to the Commission's prior comments for a summary of past program changes and progress.

Comments within the Scope of the Act

Schedule Changes

The Commission finds that seismic safety is not adversely impacted by the latest changes to the WSIP as described in the SFPUC's September 1, 2017 notification. 15 months of additional administrative delays have occurred on the following operational projects: New Irvington Tunnel, Seismic Upgrade of Bay Division Pipelines Nos. 3 & 4, and Security System Upgrades. All schedule delays are intended to meet administrative project closeout requirements on projects that are already operational, in service, and meeting seismic safety levels of service goals. The overall completion date of December 2019 for the Program is unchanged.

Notification

The Commission finds that the SFPUC had not promptly furnished a copy of the schedule delays.

Conclusions and Recommendations

The SFPUC continues to make progress and refinements to its Water System Improvement Program which is over 94% complete. However, it is behind the SFPUC's original 2002 program schedule submitted to the State in 2003 that showed 100 percent completion of the seismic portions of the projects by 2015. The CSSC recognizes that the SFPUC has the authority to delay progress, that projects have been added, and the scope of the Program has evolved since then. Major schedule delays on projects that are still under construction that have been reported since 2003 continue to adversely impact the Program with respect to public health and safety should major earthquakes occur before completion of the Program.

APPENDIX E

REVISED PROJECT DESCRIPTIONS

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HETCH HETCHY
WATER SYSTEM IMPROVEMENT PROGRAM

March 2018 Revised WSIP - Project Descriptions

Hetch Hetchy Regional Water System
Services of the San Francisco Public Utilities Commission

San Francisco Public Utilities Commission

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Contents

Introduction

This document includes updated descriptions for all of the Water System Improvement System (WSIP) regional projects which are part of the March 2018 Revised WSIP.

The project descriptions each include the three (3) following sections:

1) The Project Background section discusses the purpose of the project and the Level of Service (LOS) goals the project is designed to achieve;
2) The Description section summarizes the project's major scope elements; and
3) The Scope Refinements section highlights the changes made to the project's scope since publication of the March 2016 Notice of Change to WSIP report.

Note that only seven (7) projects have scope refinements since these descriptions were last published in March 2016. These projects are:

- Project CUW30103: Regional Groundwater Storage and Recovery
- Project CUW37401: Calaveras Dam Replacement Project (Including ACDD which is a subproject to Calaveras Dam Replacement Project)
- Project CUW39401: Watershed and Environmental Improvement Program
- Project CUW39601: WSIP Closeout - San Joaquin
- Project CUW39602: WSIP Closeout – Sunol Valley
- Project CUW39603: WSIP Closeout – Bay Division
- Project CUW39604: WSIP Closeout – Peninsula

San Joaquin Region

36401, Lawrence Livermore Water Quality Improvement

Background
This project is provided in response to the Water Quality LOS goals. Water services to the Lawrence Livermore National Laboratory are located at the Thomas Shaft and Mocho Shaft on the Coast Range Tunnel. At the Thomas Shaft, water does not reliably comply with either current or anticipated disinfection requirements. This will be the case even after completion of the Tesla Treatment Facility Project. However, water from the Mocho Shaft will meet current and anticipated standards after completion of the Tesla Treatment Facility Project. The purpose of this project is to provide facilities at Thomas Shaft to reliably disinfect the water and ensure compliance at both service locations.

Description
The project consists of:

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

Scope Refinements
There are no scope refinements to this project.

37301, San Joaquin Pipeline System

Background
The project is provided in response to the Delivery Reliability LOS goals. The San Joaquin Pipeline (SJPL) system spans the San Joaquin Valley, nearly 48 miles, to link the Oakdale Portal of the Foothill Tunnel to the Tesla Portal of the Coast Range Tunnel. The system includes three (3) large-diameter pipes that range in age from 43 to 79 years. The original 300 million gallons per day (mgd) design capacity of the system has decreased due, in part, to general deterioration of pipe linings. Also, as the system is now configured, shutdowns for inspection or maintenance require that an entire length of pipeline be removed from service, which greatly reduces the system's hydraulic capacity. The purposes of this project are to reduce the outage time and lost capacity associated with having to take an entire length of pipe out of service, and to increase the design capacity of the SJPL system to 313 mgd.

Description
This project consists of:

- Pipeline crossover facilities at Emery Road (including 10 valves) and Pelican Road (including 12 valves).
- Installation of a portion of new pipeline, the Western Segment, from the San Joaquin River to the Tesla Portal. The pipeline will be 78-inches in diameter, approximately 10.3 miles in

length and will include tunneled crossings of several highways, railroads, and irrigation canals. The pipeline will cross over the top of the California Aqueduct.

- Installation of a portion of new pipeline, the Eastern Segment, from the Oakdale Portal to a new connection point approximately 6.7 miles downstream on SJPL No. 3. This segment will also be 78-inches in diameter.
- Installation of valve facilities on SJPL Nos. 3 and 4 along the Eastern Segment to provide for operational needs to divide and isolate segments of these lines for maintenance and to regulate flow and control pressure in the system.
- Security-related site improvements at Oakdale Portal.

Scope Refinements
There are no scope refinements to this project.

37302, Rehabilitation of Existing San Joaquin Pipelines

Background
This project is provided in response to the Delivery Reliability LOS goals. The three (3) existing SJPLs are each approximately 48 miles long and range in age and size from 43 to 79 years old, and 56 to 78-inches diameter. Due to the age of the system, certain segments are experiencing deterioration that will likely result in increased unplanned outages, potentially impacting overall system reliability. The purpose of this project is to establish a program of intensified condition assessment, monitoring, and rehabilitation that will increase reliability and minimize unplanned outages.

Description
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.

Scope Refinements
- There are no scope refinements to this project.

38401, Tesla Treatment Facility

Background

This project, which is a combination of the originally identified Tesla Portal Disinfection Facility Project and the Advanced Disinfection Project, is provided in response to the Water Quality, Seismic Reliability and Delivery Reliability LOS goals. Planning studies have determined that the advanced disinfection facilities should be constructed at the Tesla Portal site. Facilities for advanced disinfection to comply with the United States Environmental Protection Agency's Long Term 2 Enhanced Surface Water Treatment Rule must be implemented by April 2012. The Tesla Treatment Facility Project will ensure compliance by providing a new 315 mgd treatment facility using ultra-violet (UV) disinfection and new chemical feed facilities. The new chemical storage and feed facilities will replace the functions of the existing Tesla Portal Disinfection Facility, eliminating the need to rehabilitate that facility.

Description

The project consists of:

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

Scope Refinements

There are no scope refinements to this project.

SJI, WSIP Closeout – San Joaquin Region

Background

A new WSIP Closeout Project for the San Joaquin Region was added in the March 2016 Revised WSIP in response to miscellaneous identified needs and/or improvements that are needed to supplement the scope of WSIP regional projects to ensure that WSIP Level of Service (LOS) goals are fully achieved. The scopes of work of the individual sub-projects that are included within the WSIP Closeout Project for the San Joaquin Region are described below.

Description

- **Supplemental Solar Panel Installations –** The CUW37301 San Joaquin Pipeline System, including the western segment, eastern segment and facilities, and crossover pipeline projects achieved final completion in 2013, 2014 and 2015, respectively. During the initial course of operations, it was noted the solar panel arrays designed to provide power for the facility equipment were not sufficient to meet all modes of operational demands. This sub-project will provide additional solar panels to cover power shortfalls

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

- Minor site preparation and grading work
- Furnishing and installing new supplemental solar arrays mounted on concrete pads within security fence enclosures
- Connections and integration of the new solar panels into the existing power system and controls
- Installation of batteries for solar power storage on-site
- Minor site preparation and grading work

- **Tesla Portal Facility Interior Floor Slab –** The Tesla Portal Facility, a sub-project of the CUW38401 Tesla Treatment Facility, was completed in January 2015. During construction, the concrete interior floor slab was deleted from the project construction documents to allow easier access to repair corrosion of the existing pipelines discovered during construction beneath the new Tesla Portal Facility. Due to drainage issues at the site, the Operations staff at the facility has now requested the interior slab be incorporated into the structure with a small access opening for future maintenance and corrosion repairs of the existing buried pipelines. As noted in the March 2016 Notice of Change, this sub-project will be constructed through use of a job order contract including:
  - A new interior concrete slab slope to drain to a new catch basin
  - A new catch basin with grating and sump
  - A small sump pump and drain through the slab or existing concrete wall to a discharge point

Scope Refinements

Supplemental Solar Panel Installations – This sub-project was originally scoped to provide additional solar panels to cover power shortfalls observed under certain operational conditions. Since the March 2016 Revised WSIP was approved, the Hetch Hetchy Water and Power (HHWP) Division installed new microwave towers at Oakdale, Knight Ferry Throttling Station, and San Joaquin Junction No. 4 in the summer of 2016. These towers have cast additional shadows on the existing solar panels, which further reduced the power generated from these arrays. The scope refinements are to re-evaluate the existing photo-voltaic systems at these three (3) locations before proceeding with modifications to the existing arrays. The results could potentially require an increase in power output at each of the sites.

Sunol Valley Region

35201, Alameda Creek Recapture Project

Background

The Alameda Creek Recapture (ACR) Project, formerly known as Upper Alameda Creek Filter Gallery (UACFG) project is provided in response to the Water Supply LOS goals. The purpose of this project is to recapture water diverted from Calaveras Reservoir or bypassed around Alameda Creek Diversion Dam for fisheries habitat enhancement in Alameda Creek and return it to the SFPUC water system through facilities in the Sunol Valley. The original project involved

recapturing water released from the upstream dams via use of an in-stream infiltration gallery that would allow the water to flow by gravity to a new pump station, thereby returning the water to the SFPUC system. The re-scoped project (March 2013) is being planned to recapture water that naturally infiltrates from Alameda Creek into an existing quarry pond. A new pump station and pipeline would be constructed to return flows captured in the pond to the SFPUC system.

Description

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

Scope Refinements

There are no scope refinements to this project.

35501, Standby Power Facilities – Various Locations

Background

The project is provided in response to both the Seismic Reliability and Delivery Reliability LOS goals. The project provides for standby power at six (6) critical facilities to allow these facilities to remain in operation during power outages and other emergencies.

Description

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

The facilities at the six (6) sites include:

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

- San Pedro Valve Lot: standby power improvements include installing a permanent 20-kW emergency generator in a sound-attenuated masonry wall enclosure.
- Capuchino Valve Lot: standby power improvements include providing an electrical receptacle for a portable 30-kW engine generator.
- The project will also provide the trailer mounted engine generator that will be stored at the Millbrae Yard.

Scope Refinements
There are no scope refinements to this project.

35901, New Irvington Tunnel

Background
This project is provided in response to both the Seismic Reliability and Delivery Reliability LOS goals. Unlike the other transmission facilities upstream of the Alameda East Portal which transmit water only from Hetch Hetchy, the existing Irvington Tunnel carries water from two (2) supply sources: Hetch Hetchy and the SVWTP. The tunnel cannot be taken out of service for inspection or maintenance without severely reducing delivery of water to customers. Additionally the Irvington Tunnel is located close to both the seismically active Hayward and Calaveras Fault Zones. The New Irvington Tunnel (NIT) provides a redundant tunnel and new seismically reinforced Alameda West and Irvington Portals.

Description
The NIT alignment will be located just to the south of the existing tunnel. It will be 18,660 feet long and have a horseshoe shape with excavated dimensions of approximately 13 feet by 14 feet. The final tunnel lining will be mortar-lined, welded steel pipe, resulting in a finished diameter of 8.5 feet. Extra thick steel liner segments will also be used at low cover areas near the portals and beneath Interstate 680, and where it intersects inactive fault zones or in locations of poor ground conditions.

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

- Conventional mining methods were used for excavation in a westward direction from the Alameda West Portal, in both an eastward and westward direction from an intermediate shaft located near Vargas Road, just off Interstate 680, and in an eastward direction from Irvington Portal. Tunneling was completed by multiple road header tunneling machines, and limited, controlled detonation in areas of hard rock. Spoils disposal was taken to fill sites just north of the San Antonio Pump Station (SAPS) near the intersection of Calaveras Road and Interstate 680. The completed spoils fills will create a visual barrier to new quarry operation located near Calaveras Road. Potentially contaminated spoils were screened, separated, and if found to contain contaminants, hauled to a permitted landfill.
- At the Irvington Portal, tunnel connections were made to Bay Division Pipeline (BDPL) Nos. 1, 2, and 5 and to BDPL Nos. 3 and 4. Control valves were directly buried with instrumentation and electrical gear in a small control building. At the Alameda West Portal, the tunnel was connected to the discharge of the new mixing manifold to be constructed as part of the Alameda Siphons # 4 Project and to the existing overflow shaft. The project includes a new isolation valve between the mixing manifold and the portal.

- A new access bridge was constructed across Alameda Creek to accommodate temporary construction traffic and on-going SFPUC Alameda West Portal operations.
- A Groundwater Management Program was developed that includes two (2) years of pre-construction monitoring of wells, springs, creeks, ponds, and wetlands; environmental habitat construction mitigation measures; and two (2) years of monitoring after construction to minimize the impact to the local groundwater.
- At both the existing Irvington and Alameda West Portal facilities, other security-related site improvements were constructed, including undergrounding of portal structures and new card access controlled gates and security fences.
- In the March 2014 Notice of Change, simplifications were made to the design of the new security structure for the existing Alameda West Portal. The design changes included a more secure structure with a smaller footprint and removal of pipe manifolds that will no longer be in service.

Scope Refinements
There are no new scope refinements to this project.

35902, Alameda Siphon #4

Background
This project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals. The three (3) existing Alameda Siphons extend approximately 3,000 feet across the Sunol Valley. They cross the Calaveras Fault and are vulnerable to a major earthquake on that fault. The primary purpose of this project is to provide a seismically reliable pipeline that will withstand a major earthquake on the Calaveras Fault.

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

The project primarily consists of:

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

- Relocation and extension of the existing overflow pipe from the Alameda East Portal about 500 feet to an existing quarry, and site fencing at Alameda East Portal. The overflow to the existing quarry includes a grouted rock riprap channel down the side of the quarry for erosion protection.
- Road improvements at the intersection with Calaveras Road for construction access.

Scope Refinements
There are no scope refinements to this project.

37001, Pipeline Repair and Readiness Improvements

Background
This project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals. These goals, in part, require that facilities be repaired in the 30 days following a major seismic event to restore the ability to meet system average day demand. The facilities provided in this project are intended to facilitate the repair and replacement of damaged (damage resulting from seismic activity and other causes) sections of the system pipelines.

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

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

Scope Refinements
There are no scope refinements to this project.

37401, Calaveras Dam Replacement

Background
This project is provided in response to the Seismic Reliability, Delivery Reliability and Water Supply LOS goals. The dam was originally designed to store up to 96,850 acre-feet of water in the Calaveras Reservoir. Water from the reservoir is treated at the SVWTP before delivery to customers. The California Department of Water Resources Division of Safety of Dams (DSOD) has, however, mandated that the maximum reservoir level be significantly reduced because the dam is located near the active Calaveras Fault and has been determined to be seismically vulnerable. The storage volume associated with the reduced level is approximately 38,100 acre-feet (39% of original capacity). The replacement dam will restore the original reservoir

capacity, and it will be designed such that it can be raised to accommodate a potential reservoir enlargement in the future.

In addition, the Alameda Creek Diversion Dam (ACDD), which diverts water from Alameda Creek to the Calaveras Reservoir, will be modified with a new fish ladder and new flow bypass tunnel and valve to allow for downstream flows below the ACDD. Fish screens will be added at the inlet to the existing Alameda Creek Diversion Tunnel (ACDT), immediately upstream of the ACDD, to prevent entrainment of fish into the tunnel. The bypass flows at ACDD, together with flow releases from new low-flow capacity valves installed at the base of the replacement Calaveras Dam, will provide water downstream of these facilities to support native aquatic resources and future populations of steelhead trout that are being restored to the Alameda Creek Watershed. Fish screens that are compliant with current criteria of the California Department of Fish and Wildlife (CDFW) will also be added on to the existing intake adits of the intake tower at Calaveras Dam.

Description

Project elements primarily include:

- Constructing a new 210-foot-high earth and rock fill dam designed to accommodate a maximum credible earthquake on the Calaveras Fault. The dam will be constructed immediately downstream of the existing dam and will have a crest length of 1,210 feet, a base thickness of 1,180 feet, and a crest thickness of 80 feet. The total volume of the dam will be approximately 2.8 million cubic yards.
- The materials for construction will primarily originate from onsite sources, while surplus excavated material will be placed at disposal sites around the rim of the Calaveras Reservoir, including two (2) in-water disposal sites and several upland disposal sites.
- The existing spillway will be removed, and a new spillway and stilling basin will be constructed. The overflow weir of the new spillway will be 307 feet long. The spillway will vary from 60 to 80 feet wide and will be 1,100 feet long. The stilling basin below the spillway will be 80 feet wide and 155 feet long.
- A new intake tower and shaft will be constructed. The drain line and three (3) adits from the existing facility will be connected to the new shaft. The existing outlet conduit from the tower will be extended 1,250 feet downstream (beneath the replacement dam) and will be equipped with a high capacity fixed-cone discharge valve (relocated from the existing facility) to accommodate water releases from the reservoir. Fish screens will be added to the existing adits of the intake tower.
- The existing dam will largely remain in place. The downstream face will, however, be partially removed and re-graded and a channel will be excavated through the dam to form the approach to the new spillway.
- A new 525-foot long fish ladder and flow bifurcation systems at ACDD will be used in conjunction with new low-flow capacity valves to be added at the base of the replacement Calaveras Dam to provide flows downstream of these facilities to support native aquatic resources and future populations of steelhead trout that are being restored to the Alameda Creek Watershed.
- The fish ladder and a total of four (4) new fish protection screens will be added on the right abutment (looking downstream) of the ACDD. In addition, conveyance pipes will be installed to allow water from Alameda Creek to be delivered to the Calaveras Reservoir via the ACDT.

- Landslide A removal beneath the northern half of the left abutment slope located on the left side of the valley (when looking downstream) as well as other associated changes as previously noted in the March 2013 Notice of Change.
- Landslide B removal within the lower left abutment slope as well as other associated changes as previously noted in the March 2014 Notice of Change.
- Additional slope reinforcement in Borrow Area B and import of offsite rockfill as noted in the March 2016 Notice of Change.
- Repairs to the landslide portion of Calaveras Road and restoration of the West Haul Road as noted in the scope refinements listed below for this March 2018 Notice of Change.
- For the ACDD fish ladder, to address the potential landslide hazard and further protect the fish passage structure, as noted in the scope refinements listed below for this March 2018 Notice of Change, an extension to the contract landslide stabilization wall and an additional reinforced concrete panel wall with tie-backs to reinforce a section of the soil nail wall.

Scope Refinements

After approval of the Calaveras Dam Replacement Project (CDRP) revisions in the March 2016 Revised WSIP, severe and unusual precipitation events occurred between October 2016 and March 2017 that have impacted the project construction schedule. The severe weather triggered landslides on Calaveras Road, which made the road impassable and required that it be shut down for several months. This portion of Calaveras Road is the major access to the construction site and is needed for the import of sands and gravels used to construct the filter and drain zones within the dam embankment as well as the downstream blanket filter and drain zones. In addition, the West Haul Road along the rim of the reservoir was flooded. This impacted the ability to import clay materials used to build the core of the dam from the clay borrow source on the south side of the reservoir. Scope refinements include repairs to the landslide portion of Calaveras Road and restoration of the West Haul Road.

There have been several differing site conditions identified on the Fish Passage Facilities Project at Alameda Creek Division Dam (ACDD), a subproject to the CDRP project, and they are in various phases of completion and negotiation. The largest differing site condition relates to a deep seated landslide in the hillside adjacent to the project site that resulted in an increase in contract scope and costs.

The project geotechnical data report (GDR) indicates multiple shallow landslide deposits and debris-flows along the right abutment and immediately upstream of the existing dam structure. Additionally, it is noted that these geologic features are underlain by large, deep-seated landslides. The GDR provides multiple cross section profiles, interpreting sub-surface geologic conditions that exist. Five (5) known landslides were mapped in the GDR, all of which occur upstream of the existing dam structure. However, two (2) of these known landslides on the right bank have the potential to affect the intake/diversion structure which extends upstream of the dam. The contract drawings include a landslide stabilization wall along a portion of the right abutment to shore these known hazards.

During the installation of a contractor-designed soil nail wall used for excavation support downslope of the landslide stabilization wall, movement was noted in two (2) locations along a previously installed section of the soil nail wall. One of the movement locations is downstream of the existing dam structure, and the other is directly adjacent to the crest of the dam. Four (4) inclinometers were installed along the right abutment, and verification of movement was

recorded. Additionally, the contractor's geotechnical consultant mapped observed geologic contacts during the excavation of the soil nail wall. These newly mapped geologic contacts show a slip plane that extends further downslope than the contract landslide stabilization wall, extending into the soil nail wall.

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

37402, Calaveras Reservoir Upgrades

Background

This project, which was originally included as a sub-project to the Calaveras Dam Replacement Project, is provided in response to the Water Quality LOS goals. As a result of restricted reservoir operating levels, the reservoir experienced algal blooms that can adversely impact raw water quality and subsequently limited the ability of the SVWTP to deliver water of suitable quality. The purpose of the project is to enhance interim operations and improve raw water quality prior to completion of the replacement dam.

Description

The project consists of installing a hypolimnetic oxygenation system and associated cryogenic (oxygen generation) equipment near the dam. The addition of oxygen into the reservoir will limit the negative effects of algal blooms and may promote a healthier fish habitat. The system will continue to be usable following completion of the replacement Calaveras Dam. The project primarily consists of the new cryogenic equipment, two (2) diffuser systems in the reservoir, and miscellaneous site work.

Scope Refinements

There are no scope refinements to this project.

37403, San Antonio Backup Pipeline

Background

This project is provided in response to the Delivery Reliability LOS goals. The purpose of the San Antonio Backup Pipeline (SABPL) is to provide a means of discharging up to 313 mgd of Hetch Hetchy flow that does not meet water quality requirements due to a treatment failure or raw water quality event. This discharge can also be used in the event of an emergency shutdown of the transmission system downstream of the Alameda East Portal. The pipeline allows discharge of the Hetch Hetchy flow while simultaneously pumping water from San Antonio Reservoir to the SVWTP through the existing San Antonio Pipeline (SAPL). This new pipeline will enable the SVWTP to serve 160 mgd of treated local reservoir water while the Hetch Hetchy water is being discharged; since the Calaveras Reservoir supply to the SVWTP is limited to only 90 mgd (San Antonio needs to supply the additional 70 mgd). This function meets the LOS goals for providing average day demand to the system during an unplanned outage of the Hetch Hetchy supply. The SABPL will also serve as a partial redundant facility to the existing SAPL, which is aging and is constructed of PCCP.

Description

The SABPL consists of 6,600 feet of 66-inch-diameter steel pipe and extends from the Alameda Siphons at the SAPS to Sunol quarry, SMP-24, near the intersection of Calaveras Road and San Antonio Creek. There are three (3) tie-in facilities with air gap provisions from the SABPL: one connecting to Alameda Siphon No. 3, a second to the SAPL near SAPS, and a third to the SAPL on the west side of Calaveras Road before the SAPL alignment turns and heads west to quarry SMP-24. The alignment of the SABPL parallels that of the existing SAPL, terminating with a control valve and concrete energy dissipation structure to quarry SMP-24. The project includes new chemical storage, feed and water quality monitoring facilities for de-chlorination and pH adjustment of any discharges through the SABPL, the existing SAPL, and the Alameda East Portal overflow pipe. Water discharged into the SMP-24 quarry pond will be recovered with two submersible pumps and a short section of 24-inch diameter steel pipe which will connect to the existing SAPL to convey water to San Antonio Reservoir. Power to the water recovery pumps will be supplied from the nearby Calaveras Substation, which is owned and operated by Hetch Hetchy Water & Power. Construction of a slurry wall is included around the quarry pond to minimize groundwater intrusion and to ensure slope stability.

Scope Refinements

There are no scope refinements to this project.

38101, SVWTP Expansion & Treated Water Reservoir

Background

This project is provided in response to the Delivery Reliability LOS goals. It includes two major components that were formerly separate projects. The plant expansion, which was originally included in the Additional 40 mgd Treated Water Supply Project, is provided to increase the plant's sustainable capacity (capacity with the largest unit out of service) to 160 mgd to meet the LOS goal that requires delivery of the average day demand during an outage of the Hetch Hetchy supply. The treated water reservoir (TWR), which was originally included in the Sunol Valley Treated Water Reservoir Project, is provided to meet the Water Quality LOS goals and is required in response to a California Department of Public Health compliance order. The project will significantly increase plant sustainable capacity and reliability, and system operational flexibility.

Description

The project primarily consists of:

- The expansion improvements, which increase the sustainable capacity to 160 mgd, include the addition of a new flocculation/sedimentation basin and the retrofit of six (6) of the twelve (12) existing filters. Design of improvements to the remaining six (6) filters was performed under the project, and was included as an optional bid item in the construction contract. As a result, upgrades to all 12 filters were able to be performed under the construction contract, providing an additional factor of safety for reliable and sustainable production of 160 mgd required to meet the LOS goals established for the system.
- A single 17.5-million-gallon (mg) circular TWR which was constructed along with a new 3.5-MG rectangular chlorine contact tank on the northern portion of the existing plant site. Roughly 400,000 cubic yards of excavated material was hauled to a disposal site immediately east of the plant for disposal.

- New chemical storage and feed facilities for disinfection are constructed including sodium hypochlorite and ammonia. New fluoride facilities were also added.
- Construction of approximately 2,700 feet of 78-inch-diameter pipe that connects the new TWR to the existing plant discharge pipeline. This included a tunneled crossing of Alameda Creek.
- Nine (9) existing chemical tanks and associated electrical and instrumentation components were replaced under the construction contract. The existing chemical tanks and the associated electrical and instrumentation had reached the end of their useful life and were in jeopardy of failure.
- Miscellaneous plant improvements include a new emergency generator and improvements to the plant electrical system, substation, electrical panels, and motor control centers; an upgrade of the instrumentation and controls; a new filter washwater recovery basin; improvements to the flow distribution structure and associated facilities; replacement of the plant's existing boiler; improvements to the influent chemical mixing system; and repaving of the existing plant access road.

Scope Refinements
There are no scope refinements to this project.

38601, San Antonio Pump Station Upgrade

Background
This project is provided in response to the Delivery Reliability LOS goals. The SAPS pumps water from the San Antonio Reservoir to the SVWTP when it cannot flow by gravity; and it pumps Hetch Hetchy transmission system water to either the San Antonio Reservoir or the SVWTP when it does not meet water quality standards for delivery or is required for reservoir replenishment. The SAPS is required to have a 160 mgd sustainable capacity including during periods of power outages.

Description
The project consists of:

- Replacement of the three (3) 1,000-horsepower electrical pumps.
- Addition of two (2) 1.5-megawatt emergency generators. The generators are sized to power the three (3) electric pumps.
- Seismic retrofit of the pump station, including reinforcement of the walls, foundation improvements, and connection of the roof to the walls.

Scope Refinements
There are no scope refinements to this project.

SVI, WSIP Closeout – Sunol Region

Background

This WSIP Closeout Project for the Sunol Region was added in the March 2016 Notice of Change in response to miscellaneous identified needs and/or improvements that are needed to supplement the scope of WSIP regional projects to ensure that WSIP Level of Service (LOS) goals are fully achieved. The scopes of work of the individual sub-projects that are included within the WSIP Closeout Project for the Sunol Region are described below.

Description

- **AS4 Carrier Water System Modifications –** The CUW35902 Alameda Siphon No. 4 Project was completed in 2013. Since that time, new facilities that have been brought on-line as well as other changes have occurred in water operations, have resulted in an apparent drop in water pressures and volumes at the Sunol Valley Chloramination Facility. This has reduced the available water needed for the current carrier water system to pump the necessary water treatment chemicals into the system. This new sub-project is designed to resolve the deficiency and allow the facility to better meet its water delivery reliability LOS goal. This sub-project will be constructed by a job order contract including:
    - Modifications of the current chemical injection system of overcome lack of water system pressure and volume
    - New supplemental water facilities, including possible new storage tanks, and monitoring and regulating equipment as needed
    - Plumbing and control connections between the new facilities and the current system

- **Erosion Repair at Pond F3 East –** The completed CUW37403 San Antonio Backup Pipeline Project included drainage improvements on the east side bank of Quarry Pond F3 East. After completion of construction, it was noted that the rock riprap below a 12-inch drainage pipe had eroded away and undermined the downstream section of the pipe. This sub-project will repair the erosion and restore the drainage pipe through a job order contract including:
    - New rockfill on the east back of the quarry pond from the current drain pipe to the toe of the bank
    - Excavation and grading to remove loose bank debris and prepare the subgrade slope to receive new rockfill
    - Extension of the existing drain pipe downslope to the water line of the pond
    - Temporary access improvements at the side bank of the pond for a crane and other equipment to deliver to, and place new rockfill and other materials into, the repair area

- **Sunol Valley Water Treatment Plant Basin 5 Optimization** – The new name of this sub-project is **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 Notice of Change 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:

- Addition of new flocculant aid polymer to Basin 5
- Water testing to develop a range of polymer doses for the range of different water quality expected at the plant
- Construction of new structures and facilities to store, monitor and control the application of the new polymer
- Possible extension of the new polymer to optimize water production from the four (4) older basins

- **Miscellaneous Work at AWP, IVP and SABPL (new sub-project addition in 2018)** – The CUW 35901 New Irvington Tunnel (NIT) was completed in 2017, and the CUW 37403 San Antonio Backup Pipeline (SABPL) was completed in 2016. This subproject will include the following work:

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

- **NIT Water Quality Equipment Relocation (new sub-project addition in 2018)** – 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 (new sub-project addition in 2018)** – 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.

Scope Refinements

- **Erosion Repair at Pond F3 East** –Scope refinements include use of new rockfill rather than grouted riprap for erosion repairs.

- **Sunol Valley Water Treatment Plant Basin 5 Optimization** – The new name of this sub-project is **Sunol Valley Water Treatment Plant Polymer Feed Facility**. This sub-project was originally scoped to change the flocculation aid composition for Basin 5. The 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.

- **Miscellaneous Work at AWP, IVP and SABPL** – The scope described above is added as a new sub-project as part of the March 2018 Revised WSIP.

- **NIT Water Quality Equipment Relocation** – The scope described above is added as a new sub-project as part of the March 2018 Revised WSIP.

- **San Antonio Backup Pipeline Carrier Water System Modifications** – The scope described above is added as a new sub-project as part of the March 2018 Revised WSIP.

Bay Division Region

35301, BDPL Nos. 3 & 4 Crossover/Isolation Valves

Background

This project is provided in response to the Seismic Reliability LOS goals. The project consists of two (2) new crossover/isolation valve vaults located on either side of the Hayward Fault in Fremont. The purpose of the facilities is to automatically and/or remotely be able to shut down flow in either or both pipelines should damage occur as a result of a seismic event or other emergency and to divert flow into one pipeline in the event one survives the earthquake.

Description

The project consists of:

- Two (2) large vaults that are primarily below-ground installations with only the top 30 inches of the structure exposed. Above-ground facilities include security fencing and satellite communication dishes. The vaults are approximately 2,400 feet apart along the BDPL Nos. 3 and 4.
- Each vault includes four (4) mainline isolation valves and a crossover valve. The isolation valves are hydraulically operated, while the crossover valves are electrically operated.
- The existing BDPL No. 3 is a 78-inch-diameter reinforced concrete pipe, and BDPL No. 4 is a 96-inch-diameter PCCP. At each vault, approximately 170 feet of each pipeline will be replaced with welded steel pipe.
- Each facility will be equipped with connections for portable electric generators, and a battery system will provide immediate emergency power to operate the hydraulic system.

- Valve actuators will have remote monitoring and operating capability through the SFPUC SCADA system.

Scope Refinements
There are no scope refinements to this project.

35302, Seismic Upgrade of BDPL Nos. 3 & 4

Background
This project provides a seismically resistant pipeline crossing of the Hayward Fault in response to the Seismic Reliability LOS goals. BDPL Nos. 3 and 4 cross the Hayward Fault near the intersection of Mission Blvd and Interstate 680 (I-680). In fact, one of the traces of the fault intersects the pipelines under I-680. The maximum credible seismic event will cause a strike-slip displacement that will result in probable failure of both pipelines. This project provides a seismically reliable conduit between the two (2) crossover/isolation valve vaults constructed under the BDPL Nos. 3 & 4 Crossover/Isolation Valves Project for transmission of water following a maximum credible seismic event to meet LOS goals.

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

The project primarily consists of:

<u>BDPL No. 3</u>:

- A new 300-foot-long concrete vault will be constructed under Mission Boulevard near the I-680 Interchange where Fault Trace B is located. A new 300-foot segment of 72-inch welded steel BDPL No. 3 will be installed inside the vault. Within the vault and on either end of the fault trace zone, 72-inch-diameter ball joints and slip joints will be installed that will accommodate pipeline displacement during a seismic event.
- For the crossing under I-680 at Trace A, about 400 feet of 78-inch-diameter welded steel pipe will be installed in an existing, unused corrugated metal pipe.
- About 1,450 feet of additional new 78-inch diameter welded steel pipe will connect the existing and new segments between the two (2) vaults, and will be buried.

BDPL No. 4:

- About 400 feet of new 80-inch steel liner will be installed inside BDPL No. 4 at Hayward Fault Trace C.
- BDPL No. 4 will be encased with concrete outside the existing slip joint vault at Hayward Fault Trace B.
- Modifications to the existing slip joint vault will be made including enlarging BDPL No. 4 pipe penetrations in the vault, new drainage systems, new roof panels and adjustments to the existing slip joint.
- Modifications to the existing BDPL No. 3 (to be abandoned in place) to collect and divert water from the area and prevent the undermining of the new BDPL No. 3.
- About 400 feet of new 90-inch diameter welded steel pipe will be installed at Trace A of the Hayward Fault.
- Relocation of the following utilities: two (2) Alameda County Water District water pipelines, one (1) Union Sanitary District sewer pipeline, one (1) conduit of AT&T phone lines, and one (1) six-inch diameter PG&E gas pipeline.

Scope Refinements
There are no scope refinements to this project.

36301, SCADA System – Phase II

Background
This project is provided in response to the Delivery Reliability LOS goals. In addition, the California Department of Public Health mandated improvements to remote monitoring and operating capabilities in a compliance order to the SFPUC. The purpose of this project is to upgrade the SCADA system to allow for system-wide monitoring and control of remote facilities. The upgraded system, as well as additional monitoring and control facilities at several sites, will reduce the risks associated with unplanned outages, improve the efficiency of making planned outages, and generally improve the ability to remotely monitor and control system pressure and flow from a centralized location.

Description
The project primarily consists of:

- Establish a common software platform and migrate all elements to this platform.
- Connect existing flow meters and new pressure transmitters, and provide communication to SCADA master station at five (5) major Bay Area Water Supply and Conservation Agency (BAWSCA) customer sites.
- Install pressure transmitters, perform piping modifications, and provide communication to SCADA master station at seven (7) existing regulating valves in the City of San Francisco distribution system.
- Install new flow and pressure monitoring devices at 23 key locations in the City distribution system.

Scope Refinements
There are no scope refinements to this project.

36801, BDPL Reliability Upgrade – Tunnel

Background
This project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals. Previously the project included both the tunnel and pipelines at both ends in a single project. The two (2) components were separated because they each represent a significant amount of work that may best be constructed by contractors with different skill sets. The pipeline portion is included in the - BDPL Reliability Upgrade - Pipeline Project. The tunnel links the existing segments of BDPL Nos. 1 and 2 and the future BDPL No. 5 in the East Bay with those on the Peninsula. The existing portions of BDPL Nos. 1 and 2 in this very environmentally sensitive marsh location are a combination of submarine pipe and pipe on a trestle-support (the pipe and the trestle are in a deteriorated condition). The tunnel is being utilized, in part, because construction in the marsh is not environmentally acceptable.

Description
The tunnel extends 5 miles under San Francisco Bay and is adjacent to the marshlands between the vicinity of the Ravenswood Valve Lot and the Newark Valve Lot. The tunnel will be constructed with a Tunnel Boring Machine (TBM). The final tunnel lining will consist of a 9-foot-diameter welded steel pipeline. The tunnel will terminate on each end with vertical shafts and a connection to the BDPL Nos. 1, 2, and 5 piping manifolds. The two (2) piping manifolds are provided under the BDPL Reliability Upgrade - Pipeline Project. The tunnel spoils are anticipated to be used as part of the conversion of adjacent salt ponds to marshland. The portion of the existing BDPL Nos. 1 and 2 that are replaced by the tunnel will be capped on each end and will be abandoned in place.

Two (2) facilities were added to the original scope of work as part of the March 2014 Revised WSIP and are necessary to ensure the project will meet LOS goals:

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

- 42–inch diameter Bay Division Pipeline No. 2 (BDPL2) Bypass - The supply from the Newark Valve Lot to the City of Hayward is currently being fed from both Bay Division Pipelines (BDPL) No. 1 and No. 2. Upon the completion of the Bay Tunnel Project, Hayward supply will be fed only by BDPL2. BDPL2, built in the mid-1930s, is a mixture of reinforced concrete cylinder pipe and wrought steel pipe. Thus, with the original scope of the Bay Tunnel project, the reliability of the Hayward service line could be reduced when the project is completed. The scope of work for this change provides for the installation 640 lineal feet of new 42-inch diameter welded steel pipe, replacing a portion of BDPL2, thereby increasing the reliability of the Hayward service.

Scope Refinements
There are no scope refinements to this project.

36802, BDPL Reliability Upgrade – Pipeline

Background

This project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals. This project was originally combined with the BDPL Reliability Upgrade - Tunnel Project. A critical component of the upgrade to the Bay Division transmission system is the addition of this BDPL No. 5. This new large-diameter pipeline to be built parallel to BDPL Nos. 1 and 2 in the SFPUC ROW will provide redundancy and improve seismic reliability to the transmission system. The BDPL No. 5 will include two segments: one in the East Bay and one on the Peninsula, with the new Bay Tunnel linking them.

Description

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.

Scope Refinements

There are no scope refinements to this project.

36803, BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2

Background
The project is provided in response to the Delivery Reliability LOS goals. BDPL Nos. 1 and 2 are located above-ground near their crossing with the Bay Area Rapid Transit (BART) system in Fremont and are enclosed in a concrete culvert under the adjacent railroad. The objectives of this project are to reduce the risk of unplanned outages and improve system reliability in conjunction with other development in this area by relocating facilities below-ground.

Description
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.

Scope Refinements
There are no scope refinements to this project.

38001, BDPL Nos. 3 & 4 Crossovers

Background
This project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals. BDPL Nos. 3 and 4 extend approximately 34 miles around the south end of San Francisco Bay. While there are currently two (2) isolation/crossover points on these pipelines, the distance between them is approximately 8 miles. This relatively large distance makes it difficult to take segments of pipe out of service for planned inspection and maintenance, and results in a large number of customers that may be impacted by an emergency outage of a pipeline. The purpose of this project is to add three (3) additional isolation/crossover facilities so that the distance between them will be approximately 4 miles, making the system easier to maintain and repair, and increasing the number of customers that would be likely to receive water within 24 hours following a major seismic event.

Description
The three (3) proposed crossover facilities are located near the Guadalupe River in Santa Clara, near Barron Creek in Palo Alto, and near Bear Gulch in Atherton. The facilities include vaults that are largely below-ground, with only the top 30 inches exposed. They are very similar to one another, consisting of four (4) mainline valves and a crossover valve. Emergency engine generators will be included as an optional bid item.

Scope Refinements
There are no scope refinements to this project.

38901, SFPUC/EBMUD Intertie

Background

This project is provided in response to the Delivery Reliability LOS goals. The purpose of the project is to inter-connect the SFPUC and the East Bay Municipal Utility District (EBMUD) systems. The connection uses existing water system piping in the City of Hayward with connections to EBMUD and SFPUC systems on each end. The connection allows up to 30 mgd of water to flow between the two water systems in the event of critical shutdowns for emergency repairs, maintenance and/or construction activities.

Description

The project primarily consists of:

- Providing new 36-inch-diameter piping and valving at the Newark Turnout to provide an additional connection between BDPL Nos. 1 and 2 to the existing City of Hayward system.
- Using the existing City of Hayward system for conveyance and providing six (6) new valves for isolation.
- Providing 1.3 miles of new 36-inch-diameter pipe to connect the City of Hayward system to the EBMUD system and providing a new pump station along this alignment.

Scope Refinements

There are no scope refinements to this project.

39301, BDPL No. 4 Condition Assessment PCCP Sections

Background

This project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals. An alternatives analysis and a partial condition assessment of the BDPLs were performed as part of the BDPL Reliability Upgrade - Pipeline Project. The study raised concerns about the two (2) pipeline reaches of BDPL No. 4 that are constructed of PCCP. It is recognized that PCCP has a potential for sudden failures, and the SFPUC has experienced two major failures prior to 2003. The original condition assessment, which included a desktop study and limited field investigations, identified potential for both seismic risks (associated with the gasketed joints) and questionable life expectancy (due to concerns for corrosion of the pre-stressed wires).

Description

This project is 100% complete and has been closed out. This project includes a detailed condition assessment of the two PCCP segments along BDPL No. 4. The first reach of concern (Reach 1) is 8.6 miles long and 96-inches in diameter. The second reach of concern (Reach 4) is 8.0 miles long and 84-inches in diameter. The condition assessment consists of an electromagnetic survey, seismic risk analysis, corrosion survey, visual inspection, and field investigations.

The assessment identified six (6) reaches of pipe (144 feet total out of 16 miles) that are potentially distressed. During initial investigations, the condition of one (1) distressed pipe segment (Pipe 1558) was determined visually to be particularly deteriorated, and immediate emergency repair was recommended. The project funded and completed emergency repair,

using post-tension exterior tendon repair, for this segment. For the other five (5) potentially distressed pipe segments that were identified using electromagnetic survey, and determined to be of lower priority, recommendations were made for future excavation to confirm pipe condition in these areas, and repair if needed. A number of future follow-up investigations were recommended, including monitoring of groundwater acidity for a period of one (1) year in the area of Edgewood Road, and additional excavations of lower priority pipe pieces. Any additional required repairs will be scheduled based on urgency and funded through the Water Enterprise's Repair and Replacement (R&R) Program.

Scope Refinements
There are no scope refinements to this project.

BDP, WSIP Closeout – Bay Division Region

Background
This WSIP Closeout Project for the Bay Division Region was added in March 2016 Notice of Change in response to miscellaneous identified needs and/or improvements that are needed to supplement the scope of WSIP regional projects to ensure that WSIP Level of Service (LOS) goals are fully achieved. The scopes of work of the individual sub-projects that are included within the WSIP Closeout Project for the Bay Division Region are described below.

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

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

- **Hydro-seeding at Bay Tunnel Project** - Due to the drought conditions and timing of hydro-seeding performed for the Bay Tunnel Project outside of the typical seasonal window, it may not be possible to file the Notice of Termination (NOT) to close out the storm water permit prior to the Bay Tunnel Project closeout date, as the 70% growth take requirement, with less than 10% noxious weeds, may not be achieved by that time. Accordingly, the scope of this sub-project provides for monitoring of the hydro-seeded areas, removal of noxious weeds and potentially re-seeding some of the areas at the tunnel portals in Menlo Park and Newark if the storm water performance objectives are not met.

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

- **Corrosion Protection for Valve 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 potential delays to the Bay Tunnel Project, at high cost, if leaks were to occur after the solution was implemented. Accordingly, this sub-project includes excavating and shoring the area around the valve, and removal of one bolt at a time for testing and replacing of the bolts (if necessary). A gasket will be purchased and may be installed if there are leaks that develop after the bolts are removed, cleaned and replaced. The work on the valve will be done during the shutdown of the Bay Tunnel for warranty inspection in Winter 2016/2017.

- **Ventilation and Sump Pump Systems Installation (new sub-project in 2018)** - This sub-project provides improvements for inspection, monitoring and maintenance associated with the construction of the CUW35302 Seismic Upgrades of BDPL Nos. 3 and 4. The BDPL No. 3 pipe, slip joint, ball joints and pipe supports and seismic monitoring equipment inside the articulated vault require on-going inspection, monitoring and maintenance. The type and frequency of inspection and maintenance were not well defined during the design phase; it is now clear that a fixed ventilation system is required for the BDPL No. 3 vault. Furthermore, the BDPL No. 4 expansion joint vault also requires access for inspection and monitoring; installation of a sump pump is required to remove water from the vault prior to inspections. Accordingly, the scope of this sub-project is to install a fixed ventilation system and a sump pump system to eliminate the need for removing access hatches and installing temporary fans and sump pump prior to accessing the vaults for frequent inspection and maintenance needs.

Scope Refinements

- **Caltrans V-Ditch Across SFPUC Right-of-Way -** The new name of this sub-project is **Site Drainage and Pipe Coating Repairs**. The original scope of this sub-project was to coordinate with Caltrans on an agreement and design for a drainage system across SFPUC ROW between the Caltrans storm-water invert and an open field associated with the construction of the CUW35302 Seismic Upgrades of BDPL Nos. 3 & 4. However, coordination efforts with Caltrans were unsuccessful, so this sub-project now will focus on providing a drainage system solely within SFPUC Right-of-Way. 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.

- **Bay Tunnel Warranty Inspection and BDPL 1 & 2 EIR Mitigation –** The original scope of this sub-project included warranty inspection of the new Bay Tunnel and mitigation

required by the Bay Tunnel Environmental Impact Report (EIR) to decommission the existing Bay Division Pipelines (BDPLs) Nos. 1 and 2 by punching holes in the pipe to prevent buoyancy during extreme future high tides and storm events and covering those holes with wire mesh to prevent entrapment of wildlife, and installation of historical panels for public education. Since that time, the SFPUC has established a project under the Water 10-Year Capital Improvement Program (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. Accordingly, the scope refinement for this sub-project is to eliminate the physical work of punching holes in the existing pipelines, and utilize the funding to advance the planning for the decommissioning study until such time that the funding for the new CIP project becomes available in FY2020-21.

- **Ventilation and Sump Pump Systems Installation** – The scope described above is added as a new sub-project as part of the March 2018 Revised WSIP.

Peninsula Region

35401, Lower Crystal Springs Dam Improvements

Background

The project is provided in response to the Delivery Reliability and Water Supply LOS goals. The Lower Crystal Springs Reservoir System (Upper and Lower Crystal Springs Reservoirs) is the primary impoundment facility on the San Francisco Peninsula. Water stored in this reservoir is pumped to the San Andreas Reservoir, which subsequently provides raw water to the Harry Tracy Water Treatment Plant (HTWTP). In 1983, the California DSOD dictated that the maximum allowable water surface elevation of the reservoir be lowered by 8 feet because the dam's spillway was inadequate to safely pass a Probable Maximum Flood event. The lower maximum operating elevation reduces the storage capacity of the reservoir by 2.6 billion gallons. The purpose of this project is to make the necessary improvements to the dam so that it can safely pass the Probable Maximum Flood event, thereby allowing the ability to restore the maximum operating elevation of the reservoir.

Description

The project consists of:

- Spillway modifications that include widening the spillway, constructing two (2) bridge piers within the spillway to accommodate rebuilding of a San Mateo County Bridge, removing the existing timber stop-log system, constructing a new weir system within the spillway, installing access cat-walks for operation and maintenance, and eliminating water ponding on top of the dam.
- Parapet wall modifications that include raising the wall that is located on top of the upstream face of the dam and raising the approach walls to the spillway.
- Stilling basin modifications at the base of the spillway that include removing the existing basin, constructing a new larger basin, and adding downstream riprap protection at the toe of the basin.

Scope Refinements

There are no scope refinements to this project.

35601, New Crystal Springs Bypass Tunnel

Background

The project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals. The New Crystal Springs Bypass Tunnel (NCSBT) is being constructed to provide redundancy to the existing Crystal Springs Bypass Pipeline (CSBPL). This pipeline is a critical link in the transmission system, transmitting all of the water from the East Bay to the Peninsula and City of San Francisco. The CSBPL is a PCCP and is located below a hillside along Polhemus Road in the unincorporated area of San Mateo County. The soils in this area are vulnerable to landslides and subject to failure in a major seismic event.

Description

The project consists of:

- A 4,200-foot-long tunnel with an 8-foot-diameter welded steel liner.
- Vertical shafts on each end of the tunnel to accommodate the TBM and future maintenance.
- The southern shaft will include a connection to the existing CSBPL near the north end of the existing Crystal Springs Bypass Tunnel; the existing pipeline has been determined to be seismically reliable in this area.
- The northern shaft of the new tunnel will tie into the southern ends of both the Crystal Springs Pipeline (CSPL) No. 2 and the Sunset Supply Pipeline (SSPL). The connecting segment and tie-in to the SSPL will be provided by this project. However, the connecting segment and a blind flange for CSPL No. 2 will be provided by the Crystal Springs Pipeline No. 2 Replacement Project, and this project will tie into the blind flange. This contractual arrangement is used to prevent two (2) shutdowns of the CSPL No. 2.
- New isolation valves and valve vaults.
- Standby power near valve vault G40.
- The existing pipeline will remain in service to provide redundancy for inspection of the tunnel.

Scope Refinements

There are no scope refinements to this project.

35701, Adit Leak Repair - Crystal Springs/Calaveras

Background

The project is provided in response to the Delivery Reliability LOS goals. The adit structures function as the outlet facilities from the reservoirs; as such they are critical links in the water supply system. The adit structures in the Lower Crystal Springs, Calaveras, and San Antonio Reservoirs have been damaged by leakage. These facilities contain the valves and piping used

to control withdrawal of water from the reservoirs through horizontal tunnels. Leakage into the structures makes access difficult and unsafe and also results in deterioration of equipment. The purpose of this project is to repair the adit structures.

Description
The project consists of:

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

Scope Refinements
There are no scope refinements to this project.

36101, Pulgas Balancing - Inlet/Outlet Work

Background
The project is provided in response to the Water Quality and Delivery Reliability LOS goals. Originally this was a single project with multiple phases of work. The phases have subsequently been allocated to separate projects to facilitate construction scheduling and work by contractors with different skill sets. The Pulgas Balancing Reservoir is a 60-mg facility that helps the transmission system meet daily peak demands and dampens fluctuations of the water level in the Pulgas Tunnel. Because of its relatively large size and configuration, the water is not mixed well. The inadequate mixing results in some water remaining in the reservoir significantly longer than other water. This condition tends to degrade water quality.

Description
The project includes new inlet and outlet piping designed to direct the path of the water in such a manner as to promote better mixing. The shutdowns associated with construction of these improvements also provided an opportunity to perform a condition assessment of the reservoir interior that has been used to help identify work associated with the Pulgas Balancing - Structural Rehabilitation & Roof Replacement Project.

Scope Refinements
There are no scope refinements to this project.

36102, Pulgas Balancing - Discharge Channel Modifications

Background
The project is provided in response to the Delivery Reliability LOS goals. As previously noted the original project has been divided into separate projects to facilitate construction. The Pulgas Balancing Reservoir includes a discharge channel to convey water from the transmission

system to the Upper Crystal Springs Reservoir. The channel is over 70 years old, does not have sufficient capacity to accommodate peak flow rates, and is in need of repair.

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

Scope Refinements
There are no scope refinements to this project.

36103, Pulgas Balancing - Structural Rehabilitation & Roof Replacement

Background
The project is provided in response to the Water Quality and Delivery Reliability LOS goals. As previously noted, the original project has been divided into separate projects to facilitate construction. The Pulgas Balancing Reservoir is seismically vulnerable, requires improvements for sanitary protections, and requires general rehabilitation of miscellaneous structural, mechanical and electrical systems. During the shutdown to enable inlet/outlet construction associated with the Pulgas Balancing – Inlet/Outlet Work Project, a general condition assessment was conducted that documented areas of general structural deterioration on the interior of the reservoir.

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

Scope Refinements
There are no scope refinements to this project.

36105, Pulgas Balancing - Modification of the Existing Dechloramination Facility

Background
The project is provided in response to the Water Quality and Delivery Reliability LOS goals. Water in the transmission system is chloraminated for disinfection and pH adjusted for corrosion control. The Dechloramination Facility removes chlorine and ammonia and adjusts the pH of the drinking water prior to the water being discharged to Upper Crystal Springs Reservoir to maintain compliance with Regional Water Quality Control Board requirements and to reduce nutrient loading to the reservoir. The flow rate of water that is discharged to the reservoir is

affected by the continuing changes in system demand that occur throughout the day. Therefore, the flows through the existing Dechloramination Facility change frequently, causing added complexity to the process control requirements. The facility has experienced difficulty in treatment due to the flow fluctuations and process complexity. This project is intended to, at a minimum, modify the pH and dechlorination systems to provide more reliable compliance with existing regulations.

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

Scope Refinements
There are no scope refinements to this project.

36501, Cross Connection Controls

Background
The project is provided in response to the Water Quality LOS goals. The Cross Connection Controls Project addresses requirements of the California Department of Public Health. Throughout the transmission system there are 304 sites, such as air valves and blow-off points, where potential cross connections exist.

Description
The project consists of providing improvements at the 304 sites identified to address potential cross connections. The work varies from site to site due to specific site conditions. The major work elements typically include:

- Install air gaps at blow-off locations and at air valves
- Install backflow protection devices
- Reconstruct or raise existing vaults
- Install new vault covers
- Replace existing air valves
- Modify, relocate, or remove existing blow-off facilities

Scope refinements
There are no scope refinements to this project.

36601/02/03, Harry Tracy Water Treatment Plant Short-Term Improvements

Background

These three (3) projects are provided in response to the Seismic Reliability and Delivery Reliability LOS goals. The HTWTP treats surface water supplies from the Peninsula reservoirs for delivery to customers in Northern San Mateo County and the City of San Francisco. These projects include process and seismic improvements to the existing coagulation, flocculation, and filtration systems to facilitate the ability to reliably deliver treated water. The work has been divided into three (3) projects to facilitate full-scale performance testing and subsequent construction of the improvements.

Description

The projects consist of:

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

Scope Refinements

There are no scope refinements to this project.

36701, Harry Tracy Water Treatment Plant Long-Term Improvements

Background

The project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals, and also addresses maintaining regulatory compliance in the Water Quality LOS goals. The purpose of the HTWTP Long-Term Improvements Project is to improve delivery reliability and provide seismic upgrades to achieve a sustained capacity of 140 mgd for at least 60 days, and

to provide 140 mgd within 24 hours following a seismic event on the San Andreas Fault. The raw water quality from the Peninsula reservoirs, while typically of very high quality, can vary significantly and may occasionally be relatively poor due to sporadic filter-clogging algae blooms and high turbidity events. Planning studies for this project concluded that the direct filtration process can adequately treat poor raw water quality and meet all water quality requirements, but that the plant capacity may be diminished since the filters clog more rapidly. In order to assure capacity under all raw water quality conditions, implementation of a clarification process was recommended. During the planning process, it was decided that the frequency of occurrence of poor raw water quality events was acceptable to continue employing the direct filtration process, but that new filters should be added to ensure capacity under most water quality conditions. It was acknowledged that the plant may not be capable of achieving a sustained capacity of 140 mgd during some poor raw water quality conditions. The process design associated with this project will employ direct filtration (sedimentation basins are not included upstream of the filters). However, reliability will be added through the addition of new filters.

Description

The project consists of:

- Hydraulic improvements in the various treatment units to reduce headloss and increase capacity.
- Improvements to the disinfection process by upgrading the ozone generation system and backup oxygen supply.
- Expansion of the filtration process capacity by adding five (5) new filters.
- Improvements to the sludge handling system, including the addition of improved thickening and dewatering systems.
- Improvements to the washwater system, including the addition of a second washwater tank, associated equipment and piping.
- Seismic upgrade to all critical process units.
- Electrical upgrade, including a new substation, switchgear, and motor control center. New emergency generators are being provided as part of the Standby Power Facilities - Various Locations Project.
- Interim seismic response improvements, such as automated valves, to minimize seismic hazards until the long-term improvements are complete.
- New 11.0 mg TWR and subsequent abandonment of the existing 6.5 mg and 8.0 mg TWRs.
- New seismically reliable pipelines just east of the existing TWRs.
- Miscellaneous improvements to chemical feed systems, site piping, drainage, and roads.
- Addition of a third 2-megawatt generator set to satisfy emergency power needs of new facilities added as part of the project;
- Replacement of parallel switchgear and motor control center to accommodate addition of third generator set and to provide additional operational flexibility;
- Improvements to plant's recloser to increase reliability of PG&E power to the plant;
- Additional seismic anchorage of existing equipment; and
- Hydraulic modifications to coagulation and flocculation basins.

Scope Refinements
There are no scope refinements to this project.

36702, Peninsula Pipelines Seismic Upgrade

Background
This project was created in response to Seismic Reliability LOS goals. The San Andreas Pipeline No. 2 (SAPL2), San Andreas Pipeline No. 3 (SAPL3), and Sunset Supply Branch Pipelines (SSBPL) are three (3) drinking water transmission pipelines that deliver water from the HTWTP to customers within the Regional Water System and City and County of San Francisco. Portions of these pipelines traverse the Serra Fault, a "secondary" fault along the peninsula in San Mateo County that may experience fault rupture during a large seismic event on the San Andreas Fault. During geotechnical investigations performed for the HTWTP Long-Term Improvement Project, it was determined that fault offset on the Serra Fault during a design San Andreas event may be capable of causing pipeline failure at the fault crossings. Failure of these pipelines may prevent delivery of water required to meet post-seismic LOS goals.

Description
The scope of this project includes geotechnical investigations to characterize the Serra Fault in the vicinity of the pipelines and to confirm assumptions about sub-surface conditions along the length of the pipelines (SAPL2 and SAPL3 from HTWTP to San Pedro Valve Lot, SSBPL from HTWTP to Capuchino Valve Lot, and Sunset Supply Pipeline (SSPL) from Capuchino Valve Lot to San Pedro Valve Lot). In addition, hydraulic modeling has been performed to review system/facility requirements to meet system goals. The objectives of the investigations were: 1) to determine the potential fault offset at the Serra Fault crossings and the potential response from the three (3) pipelines to these offsets, and 2) to determine potential for pipeline rupture due to displacement from liquefaction, landslides, and other seismically-triggered hazards along the pipeline alignments.

The extensive geotechnical and modeling analyses performed to date have been carefully reviewed to identify specific project recommendations. The refined project scope currently includes the following components:

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

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

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

Phase 2 of the project will include installation of two (2) new isolation valves near the Baden Valve Lot on SAPL No. 2 and No. 3 in the City of South San Francisco.

The WSIP construction contract will include both Phases 1 and 2.

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

Scope Refinements
There are no scope refinements to this project.

36901, Capuchino Valve Lot Improvements

Background
The project is provided in response to the Delivery Reliability LOS goals. The Capuchino Valve Lot is a pressure reducing station that allows water to flow from the HTWTP high-pressure zone to the low-pressure supply zone. The station includes two (2) pressure-reducing valves located in a vault.

Description
This project is 100% complete and has been closed out. The project primarily consists of replacing two (2) existing isolation valves; providing new electric actuators for valve operation; performing concrete crack repair to prevent water leakage into the vault; providing new instrumentation and control systems for valve operation and pressure monitoring; and relocating the existing electrical and instrumentation systems outside the vault.

Scope Refinements
There are no scope refinements to this project.

37101, Crystal Springs/San Andreas Transmission System Upgrade

Background
The project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals. The project includes all facilities necessary to move water from the Upper Crystal Springs Reservoir, through the Lower Crystal Springs Reservoir to San Andreas Reservoir and, ultimately, to the HTWTP Raw Water Pump Station. All of these facilities are located in very close proximity to the San Andreas Fault. The purpose of the project is to improve system reliability so that raw water will be supplied to the HTWTP as necessary to meet its sustainable capacity requirements.

Description
Improvements will be made to the Upper Crystal Springs Dam discharge culverts, the Lower Crystal Springs outlet structures, the Crystal Springs Pump Station (CSPS), the CSSA Pipeline, and the San Andreas outlet structures.

The project primarily consists of:

- The Upper Crystal Springs Dam includes two (2) discharge culverts. During geotechnical investigations, it was confirmed that the lower culvert crosses the 1906 San Andreas Fault. Improvements will be made to the lower culvert to ensure its operation following a San Andreas Event. This will involve lining the culvert to provide operational and seismic protection and providing a second discharge riser on the east side of the San Andreas Fault.
- The Lower Crystal Springs Outlet Structures Nos. 1 and 2 improvements include removal of all equipment from the outlet towers and installation of new submerged adit valves; removal of the free standing portion of the towers and bridge to address seismic concerns; installation of reliable adit selection system; and installation of fish screens. Additionally, the tunnels and pipe systems leading from the outlet structures to the CSPS will be improved.
- A new CSPS, together with site piping and valving, will be constructed with increased capacity to meet LOS goals and other functionalities, similar to those provided by the existing pump station. Additionally, a new electrical substation; emergency backup electrical generators for emergency demands, yard valves and small auxiliary pump (but not for large pumps); and security-related site improvements will be provided.
- The emergency chlorination system at the existing CSPS will be replaced with a portable chlorination system to provide more reliable response during an emergency.
- The CSSA Pipeline improvements include improvements to the first 800 feet of pipeline (upstream end of pipeline) to provide reliable operation at a higher operating pressure; replacement of the last 1,400 feet of the pipeline (downstream end of pipeline) to address seismic hazards; replacement and refurbishment of all appurtenances and lining to provide a 50-year life and protect against surge and seismic hazards; improvements, installation, and repair to 31 drainages that cross the pipeline alignment; and road improvements to provide access for maintenance and emergency response.
- The San Andreas Reservoir Outlet Structure Nos. 2 and 3 improvements include seismic retrofit to the structures; construction of an approach channel; modifications to the adits; replacement of all equipment in the towers; and installation of emergency isolation valves, reliable adit selection systems, and fish screens.
- The pipe in the tunnel leading from the San Andreas Outlet Structure No. 2 to the raw water pump station at the HTWTP will be replaced with a tunnel liner system.
- The tunnel portal of San Andreas Outlet Structure No. 3 will be retrofitted to protect the pipeline from the Serra Fault crossing.
- The isolation valves at Upper Crystal Springs Dam were removed from the contract per direction from DSOD. The concern was that the installation of these valves would bring the Upper Crystal Springs Dam (Hwy 92) under DSOD's jurisdiction.
- Part of one segment of pipeline from the Crystal Springs Pipeline No. 2 project was added to this contract. This segment runs along the access road to the pump station and was added to avoid conflict between different Contractors.

Scope Refinements

There are no scope refinements to this project.

37801, Crystal Springs Pipeline No. 2 Replacement

Background

The project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals. Crystal Springs Pipeline (CSPL) No. 2 extends from a point near the CSPS in unincorporated San Mateo County to the University Mound Reservoir in San Francisco. The pipeline is primarily 60-inch-diameter pipe with a 3.2 mile section that is 54-inch-diameter pipe. The purpose of the project is to improve the seismic reliability of the pipeline.

Description

The major project elements consist of:

- Seismic reliability improvements, which include replacing or relocating a total of 1.7 miles of pipe at 12 different locations, sliplining 3.5 miles of pipe, retrofitting pipe bridge pier supports at two (2) creek crossings, providing a new connection at the CSPS, and providing a connecting segment with a blind flange for later connection to the NCSBT. The tie-in to the NCSBT will be performed under the NCSBT Project, eliminating the need for a second shutdown of the CSPL No. 2.
- Installing a new isolation valve near the CSPS area.
- Performing site improvements, including the installing fences and enclosures for exposed facilities, concealing exposed portions of pipe, and painting exposed portions of pipe.
- Upgrading the cathodic protection system along the length of the pipeline.

Scope Refinements

There are no scope refinements to this project.

37901, San Andreas Pipeline No. 3 Installation

Background

The project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals. The existing San Andreas Pipeline No. 3 (SAPL3) extends from the HTWTP to the San Pedro Valve Lot. The original extension of this pipeline to the Merced Manor Reservoir was provided by the Baden-Merced Pipeline. The Baden-Merced Pipeline is out of service and beyond repair. The purpose of this project is to replace the currently abandoned Baden-Merced Pipeline by extending the SAPL3 from the San Pedro Valve Lot in Daly City to the Merced Manor Reservoir in San Francisco.

Description

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

- Installation of 4.4 miles of 36-inch-diameter pipe with three (3) bore-and-jack street crossings along 19th Avenue and John Daly Boulevard.
- Installation of five (5) service connections.
- Installation of one (1) altitude valve at Merced Manor Reservoir, six (6) isolation valves, and a flow meter.

- Installation of a new cathodic protection system.
- Installation of three (3) connections to the San Andreas Pipeline No. 2 (SAPL2).

Scope Refinements
There are no scope refinements to this project.

39101, Baden and San Pedro Valve Lots Improvements

Background
The project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals. Both of these facilities are critical to the transmission of water in the northern portion of the Peninsula.

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

The major work elements at the various sites primarily include:

- The Baden Valve Lot improvements include installation of a new pressure-reducing valve to allow water to flow from the HTWTP high-pressure zone to the low-pressure supply zone, installation of five (5) new isolation valves, replacement of three (3) existing valves, seismic retrofit of eight (8) existing vaults, replacement of onsite piping segments, replacement of the existing electrical switchgear and transformer, replacement of three (3) pumps, installation of variable frequency drives, and other miscellaneous improvements
- The San Pedro Valve Lot improvements include seismic retrofit of two (2) valve vaults, modification of the electric valve operators, installation of a new air valve, and miscellaneous site drainage improvements
- The Pulgas Pump Station improvements include replacement of one (1) isolation valve
- The Pulgas Tunnel Air Shaft improvements include site work to stabilize slopes

Scope Refinements
There are no scope refinements to this project.

PNI, WSIP Closeout – Peninsula Region

Background
A new WSIP Closeout Project for the Peninsula Region was added in the March 2016 Notice of Change in response to miscellaneous identified needs and/or improvements that are needed to supplement the scope of WSIP regional projects to ensure that WSIP Level of Service (LOS) goals are fully achieved. The scopes of work of the individual sub-projects that are included within the WSIP Closeout Project for the Peninsula Region are described below.

Description

- **LCSD Stilling Basin Modifications & Dissipation Structure Riprap** – This sub-project is provided in response to concerns that fish may be "trapped" in the Lower Crystal Springs Dam (LCSD) stilling basin during low flow summer periods, and that high flow discharges from the new LCSD dissipation structure and potential high water levels in Pool 2 may cause erosion of the bank adjacent to the dissipation structure. The dissipation structure includes 60-inch diameter pipes with a maximum flow of 600 cubic feet per second (cfs) each and two (2) 8-inch diameter pipes with maximum flow of 7 cfs each. During flow testing of the dissipation structure, released water could be observed flowing over the dissipation structure, potentially eroding the bank adjacent to the structure. It was also observed that during summer periods, due to low flow in the channel downstream of the stilling basin, fish trapped in the basin were dying due to warm water temperatures. The purposes of this sub-project are to hydraulically connect the stilling basin with Pool 2 in order to allow fish to escape the basin in summer, and to add rip-rap behind the dissipation structure to prevent erosion. Specifically, this sub-project consists of:
    - A new deeper channel between the dissipation structure and the Pool 2, which would prevent fish from being trapped in the stilling basin
    - Installation of a new SCADA controls to the existing 8-in discharge pipeline and re-routing one (1) line to the stilling basin
    - Installation of additional rip-rap around the dissipation structure
    - Installation of a new 24-inch HDPE pipeline through an existing abandoned 60-inch pipe directed to the stilling basin
    - Coordination and facilitation of access for a piezometer drilling contractor during periods of concurrent work in the stilling basin
    - 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:
    - 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.
    - Depending on the verified condition, viable alternatives, including abandonment of the option to use H-53 pipeline, will be evaluated.
    - 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.
    - 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.
    - Replacement of leaking plug valves that discharge from an existing concrete vault to the stilling basin with new knife gate valves.

- Installation of new flow control valves, isolation valves and appurtenances for Pool 2.
- Connections to the existing 72-inch pipeline using hot taps.
- Construction of a new concrete walkway from the access road to the existing stairs at the flow dissipation structure adjacent to the stilling basin.

- **New Crystal Springs Bypass Tunnel Electrical Modifications** – The New Crystal Springs Bypass Tunnel (CUW35601) was commissioned in July 2011 and the project administratively closed in August 2012. Various inspections of the above ground facilities discovered excessive groundwater intrusion and resultant corrosion of equipment and electrical components. Preliminary inspections identified the following in the South Shaft: groundwater seepage into the venturi meter and valve G32 vaults through pipe/conduit wall penetrations, resulting in coating failure and localized corrosion. In the North Shaft, preliminary investigations identified surface runoff is entering electrical boxes. In addition, groundwater was seeping through wall penetrations into G36 and G38 vaults. Due to the high moisture, some electrical switches and two (2) actuators failed and required replacement. This sub-project developed a thorough documentation of the above ground facilities at the north and south shafts and designed and implemented repairs as warranted. Repairs included replacement of damaged equipment and electrical components, water proofing of the affected vaults, and rechanneling of surface runoff as necessary. This subproject is 100% complete and has been closed out.

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

- **Coordination with San Mateo County Bridge Construction over 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; and attendance of construction meetings

and participating in other activities concerning the water quality in Lower Crystal Springs Reservoir, security measures, and other aspects affecting SFPUC assets.

- **Harry Tracy Water Treatment Plant (HTWTP) Improvements (new sub-project in 2018)** - The Harry Tracy Long-Term Improvements Project (CUW36701) was completed in 2014. Since 2014, the following needs were identified to address construction issues and improve operations at the plant to fully meet the LOS goals and objectives:
    - 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
    - Modify Sludge Tank No. 1 piping to eliminate cavitation in the washwater pumps
    - 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
    - Repair leaks in the filter gallery channels where stainless steel angle plates were added to support several concrete walls
    - Automate flushing of the sludge transfer pumps and piping to eliminate the need for Operations to manually flush on a frequent basis
    - Replace and relocate failed variable frequency drives (VFDs) for the wash water and sludge transfer pumps to address an over-heating issue
    - Install double containment for the diesel fuel supply lines for the exterior generator to protect against leaks into the environment
    - Provide training and programming modifications to the Raw Water Pump Station switchgear equipment to enable remote SCADA control
    - Install vibration control monitoring system on the electrical panels at the Raw Water Pump Station to replace the existing obsolete system
    - Evaluate/Assess condition of failed mixers in the equalization basin

- **Crystal Springs/San Andreas Pipeline (CSSA) Erosion Repairs (new sub-project in 2018)** - The heavy winter storms of 2017 exacerbated erosion at two (2) watershed culvert locations, OW-13 and OW-18, along the CSSA Pipeline. Erosion has caused the CSSA Pipeline to be exposed and potentially undermined. The scope of this sub-project is to repair the erosion with systems consistent with the requirements of permitting agencies such as the State Water Resources Control Board.

Scope Refinements

- **Lower Crystal Springs Dam (LCSD) Stilling Basin Modifications & Dissipation Structure Riprap -** The following are scope refinements will be incorporated into the original scope of this project in the March 2018 Revised WSIP:
    - Installation of a new 24-inch HDPE pipeline through an existing abandoned 60-inch pipe directed to the stilling basin
    - Coordination and facilitation of access for a piezometer drilling contractor during periods of concurrent work in the stilling basin
    - Deletion of landscaping around the new Crystal Springs Pump Station
    - Addition of tree, shrub and grass plantings along the creek bank in accordance with the approved re-vegetation plan

- **LCSD Valve H-53 / Pipeline Investigation & Fisheries Release Valve** – The construction contract for this sub-project will be combined with the LCSD Stilling Basin

Modifications & Dissipation Structure Riprap contract. The following scope refinements will be incorporated into the original scope of this project :

- 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
- Replacement of leaking plug valves that discharge from an existing concrete vault to the stilling basin with new knife gate valves
- Installation of new flow control valves, isolation valves and appurtenances for Pool 2
- Connections to the existing 72-inch pipeline using hot taps
- Construction of a new concrete walkway from the access road to the existing stairs at the flow dissipation structure adjacent to the stilling basin

- **Harry Tracy Water Treatment Plant (HTWTP) Improvements** – The scope described above is added as a new sub-project as part of the March 2018 Revised WSIP.

- **Crystal Springs/San Andreas Pipeline (CSSA) Erosion Repairs** – The scope described above is added as a new sub-project as part of the March 2018 Revised WSIP.

San Francisco Regional Region

30103, Regional Groundwater Storage and Recovery

Background

The project is provided in response to the Water Supply LOS goals. The purpose of the project is to develop groundwater supply in the South Westside Basin for use during drought conditions. In normal and wet years, the SFPUC will supply supplemental surface water to Daly City, San Bruno, and the California Water Service Company (South San Francisco District) to be used in place of groundwater pumping. The reduced pumping during the normal and wet years will thereby increase the volume of groundwater in storage that can be pumped in dry years.

Description

The original scope of this project included construction of up to 16 groundwater wells with a total capacity of 7.2 mgd. Each of the wells would be connected to one of the following water systems: Daly City, California Water Service Company, San Bruno, or SFPUC. Treatment may be required at some of the wells for the removal of manganese. Additionally, the project includes about 10,000 feet of water distribution piping to make the necessary connections. Scope refinements to the project as part of the March 2018 Revised WSIP are described below.

Scope Refinements

The original scope of the Regional Groundwater Storage and Recovery (RGSR) project was planned to be constructed in two (2) phases. The original scope of Phase 1 included construction of 13 new deep groundwater wells, and the original scope of Phase 2 included construction of 2 to 3 additional wells, depending upon well yield.

Based on the modelling data inputs and results, it is projected that the 13 new wells constructed in Phase 1 would produce approximately 6.2 mgd of dry year supply over 7.5 years. Operating the RGSR Project during times of drought will provide data and insights into how much water can be reasonably expected to be produced by the project and if additional well stations are needed to reach the desired drought period pumping capacity.

In addition to the need for collecting operational data to determine the pumping capacity of the 13 new wells, the Daly City Recycled Water Expansion Project proposes to serve recycled water to existing irrigated properties (gold courses and cemeteries) in the Colma area for irrigation use. Replacing groundwater with recycled water for irrigation use will decrease or eliminate the cemeteries' use of the aquifer, creating more in lieu storage in the aquifer for water supply use. The SFPUC will identify potential benefits to the aquifer resulting from the Daly City Recycled Water Expansion Project during project planning and design, as well as monitor operation of the project.

Given the considerations noted above, the SFPUC has modified the scope of Phase 2 to install up to three (3) test wells (Ludeman North, Ludeman South, and Centennial Trail), complete the South San Francisco Main well and pipeline, and complete other Phase 1 scope items, including chemical system monitoring, sampling, and storage at various sites. The test wells will allow for determination as to whether the identified sites could be viable production wells, and will provide valuable information related to water quality and potential pumping capacities that can be used for future planning and decision making. The test wells would not be converted to production wells at this time.

Proceeding with these changes to Phase 2 will allow all 13 new Phase 1 RGSR wells to be operated to gain experience and insight into the pumping capacities of each individual well in addition to how the wells work in combination with each other and existing municipal and irrigation wells. Staff will gain valuable experience regarding the relationship of RGSR drought year pumping to the management of the groundwater basin. Operational experience will allow refinement of the modelled dry year water supply yield of the RGSR project.

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

35801, Sunset Reservoir Upgrades - North Basin

Background

The project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals. Sunset Reservoir is one of three (3) terminal reservoirs in the Regional Water System that is located in San Francisco. The reservoir, which was constructed in 1938, is seismically vulnerable and in need of general rehabilitation. This upgrade project will address both areas of need.

Description

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

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

Scope Refinements
There are no scope refinements to this project.

37201, University Mound Reservoir Upgrades - North Basin

Background
The project is 100% complete and has been closed out. The project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals. The University Mound Reservoir is one of three (3) terminal reservoirs of the Regional Water System that is located in San Francisco. The reservoir, which was constructed in 1885, is seismically vulnerable and in need of general rehabilitation. This upgrade project addresses both areas of need.

Description
The project primarily consists of:

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

Scope Refinements
There are no scope refinements to this project.

Support Projects

36302, System Security Upgrades

Background
This project is provided in response to the Delivery Reliability LOS goals. It is being implemented to reduce the risk of unplanned system outages associated with potential breaches of security.

Description
The purpose of this project is to develop and integrate security components at critical water system facilities including those identified in previous vulnerability assessments and to ensure

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

Scope Refinements
There are no scope refinements to this project.

38801, Programmatic Environmental Impact Report

This project includes the preparation of a Programmatic Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA). The WSIP establishes LOS goals and system performance objectives and includes a number of projects that will improve the Regional Water System in respect to water quality, seismic reliability, delivery reliability, and water supply to meet delivery needs through the year 2030. The PEIR will (1) identify and analyze, at a programmatic level, the potential environmental impacts of system improvements, (2) describe and evaluate feasible alternatives to the program, and (3) propose mitigation measures.

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

Phased WSIP Variant
At the request of the SFPUC, the San Francisco Planning Department studied the Phased WSIP Variant as part of the environmental analysis. The Phased WSIP Variant establishes a mid-term planning milestone in 2018 when the SFPUC will reevaluate water demands through 2030 in the context of then-current information, analysis and available water resources. The SFPUC currently delivers approximately 265 mgd from local watersheds (Peninsula and Alameda Creek) and the Tuolumne River Watershed. By 2030, demand on the SFPUC system is expected to increase to 300 mgd. The Phased WSIP Variant will meet the 2018 purchase requests of 285 mgd by capping purchases at 265 mgd. The remaining 20 mgd will be met through water conservation, recycling and groundwater use - 10 mgd by wholesale customers and 10 mgd in San Francisco. Before 2018, the SFPUC and its 26 wholesale customers will engage in a new planning process to reevaluate water system demands and supply options, including conducting additional studies and environmental reviews necessary to address water supply needs after 2018.

Scope Refinements
There are no scope refinements to this project.

38802, Bioregional Habitat Restoration Project

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

The project description includes development of compensation sites to preserve, enhance, restore, or create approximately 2,350 acres of tidal marsh, vernal pools, sycamore and oak riparian woodland, oak woodland and savannah, and serpentine and annual grasslands. The project includes design, environmental permitting, construction, construction management, maintenance and performance monitoring during a 3-year plant establishment period.

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

Scope Refinements
There are no scope refinements to this project.

38803, Vegetation Restoration of WSIP Construction Sites

Background
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.

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

Scope Refinements
There are no scope refinements to this project.

38804, Long Term Mitigation Endowment

Background
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.

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

Scope Refinements
There are no scope refinements to this project.

39401, Watershed and Environmental Improvement Program

The Watershed and Environmental Improvement Program (WEIP) includes the comprehensive identification and protection of critical watershed lands and ecosystem restoration needs within the hydrologic boundaries of the Alameda Creek, Peninsula (San Mateo and Pilarcitos Creeks) and Tuolumne River watersheds, and prioritizes the protection and/or restoration of these lands. Projects under this program will protect source water quality, native species and their habitat; and identify critical watershed lands for protection by purchasing fee title and/or perpetual conservation easements. The program also supports projects that enhance public awareness and provide education opportunities related to water quality, water supply, conservation, and environmental stewardship issues. These projects include construction of the Alameda Creek Watershed Center and improved public access (e.g., trail connections) compatible with watershed management plans and policies.

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

Scope Refinements
Consistent with the SFPUC Water Enterprise Environmental Stewardship Policy, the scope refinement is to allocate a portion of the funding under the WEIP 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 the remaining WEIP funds.

APPENDIX F

REVISED PROJECT-LEVEL SCHEDULES

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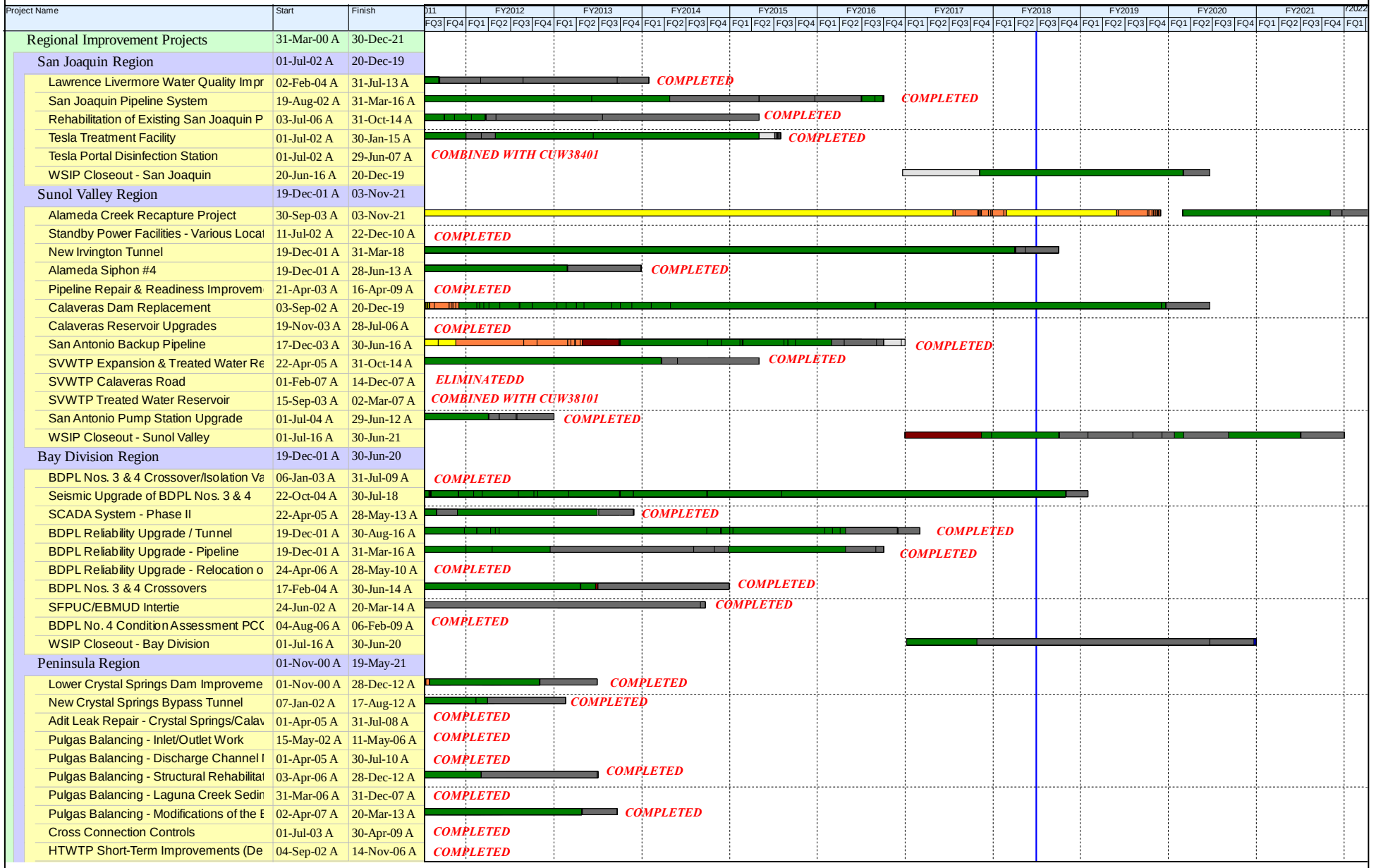
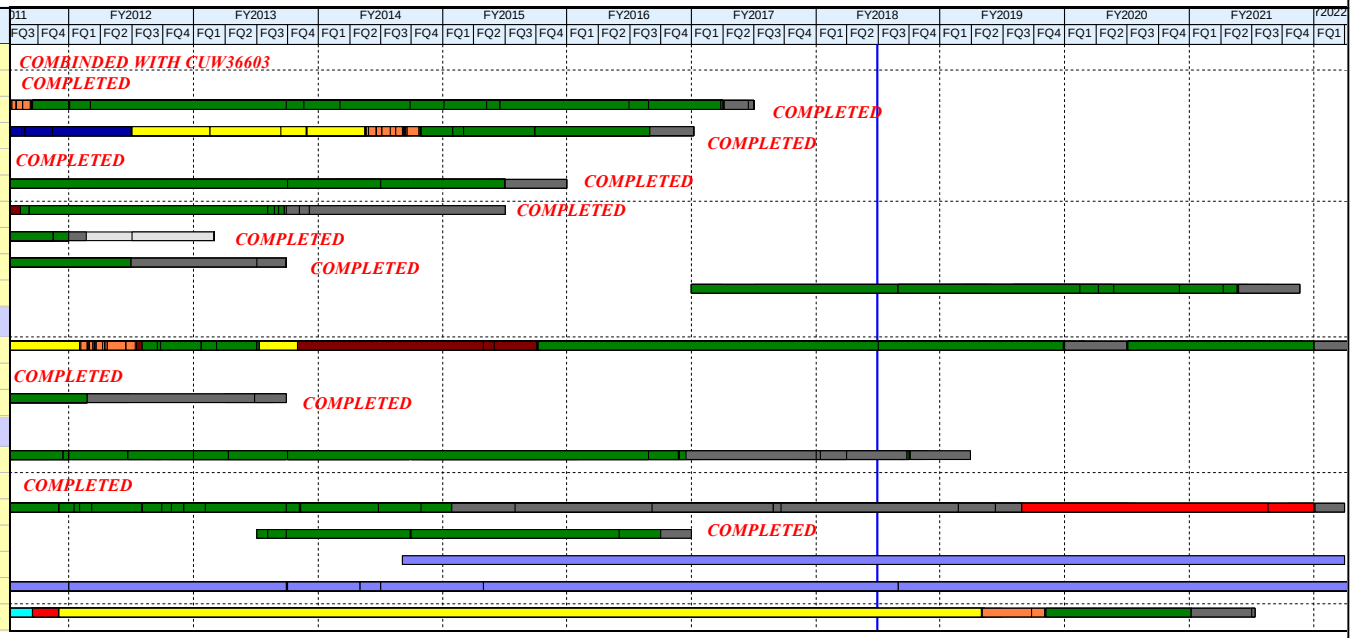
March 2018 Revised WSIP - Revised Project-Level Schedules



March 2018 Revised WSIP - Revised Project-Level Schedules

Project Name	Start	Finish
HTWTP Short-Term Improvements - Re	12-Jan-06 A	22-Feb-08 A
HTWTP Short-Term Improvements - Cc	03-Jul-06 A	28-Jul-10 A
HTWTP Long-Term Improvements	01-Jul-03 A	30-Dec-16 A
Peninsula Pipelines Seismic Upgrade	01-Jul-09 A	06-Jul-16 A
Capuchino Valve Lot Improvements	22-Apr-05 A	19-Aug-08 A
Crystal Springs/San Andreas Transmiss	18-Aug-03 A	30-Jun-15 A
Crystal Springs Pipeline No. 2 Replacen	15-Jan-04 A	31-Dec-14 A
San Andreas Pipeline No. 3 Installation	15-Jan-04 A	30-Aug-12 A
Baden and San Pedro Valve Lots Impro	03-Oct-05 A	29-Mar-13 A
WSIP Closeout - Peninsula	01-Jul-16 A	19-May-21
San Francisco Regional Region	31-Mar-00 A	30-Dec-21
Regional Groundwater Storage and Rec	01-Jun-03 A	30-Dec-21
Sunset Reservoir - North Basin	31-Mar-00 A	10-Sep-10 A
University Mound Reservoir - North Bas	24-Oct-05 A	29-Mar-13 A
Support Projects	13-Apr-04 A	30-Dec-21
System Security Upgrades	07-Jan-06 A	28-Sep-18
Programmatic EIR	13-Apr-04 A	30-Jun-09 A
Bioregional Habitat Restoration	06-Sep-06 A	30-Sep-21
Vegetation Restoration of WSIP Constru	02-Jan-13 A	30-Jun-16 A
Long Term Mitigation Endowment	05-Mar-14 A	30-Sep-21
Program Management Project	01-Aug-05 A	30-Dec-21
Watershed and Environmental Improver	02-Jan-07 A	08-Jan-21



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

APPENDIX G

REVISED PHASE-LEVEL SCHEDULES

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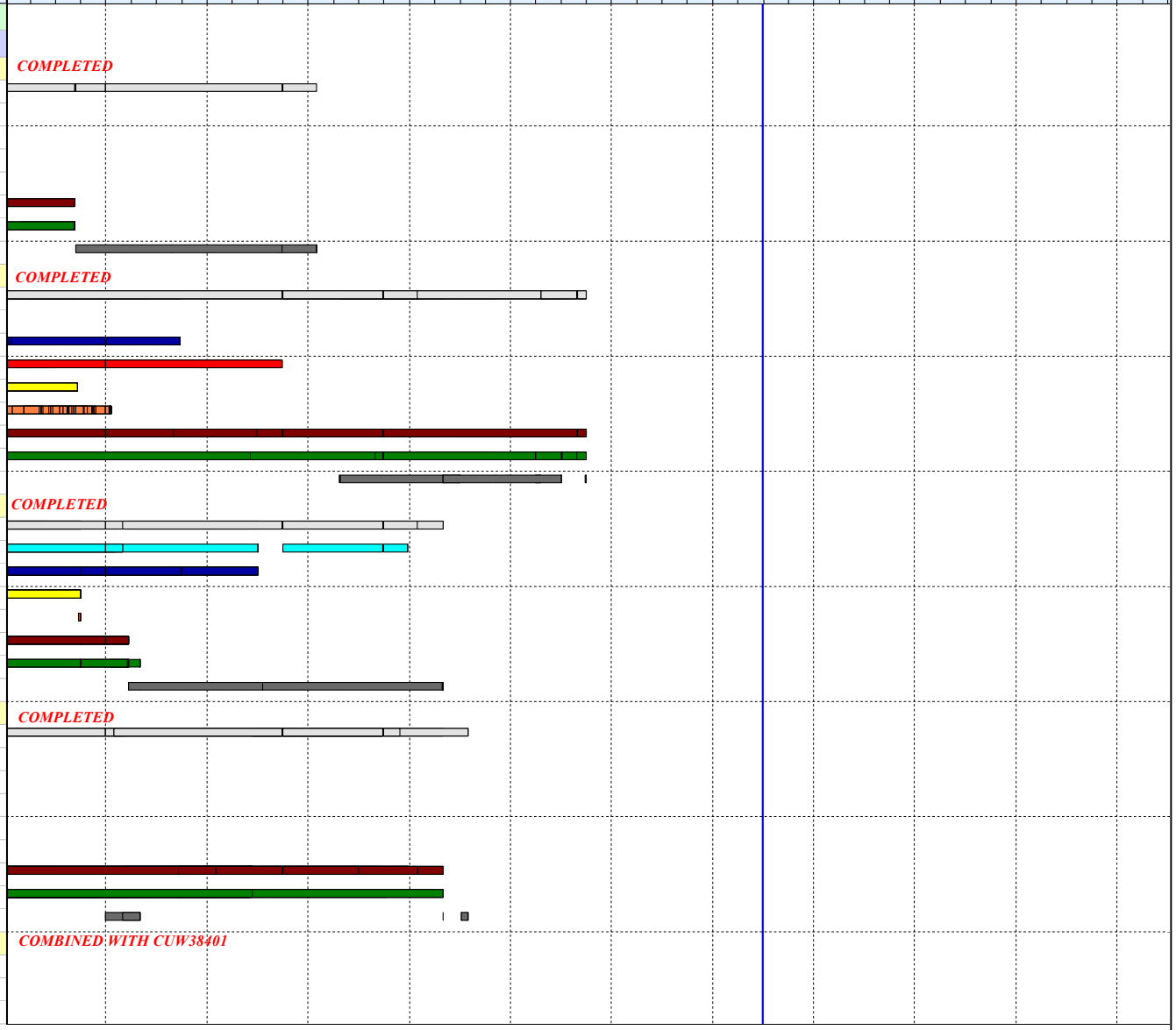
March 2018 Revised WSIP - Revised Phase-Level Schedules

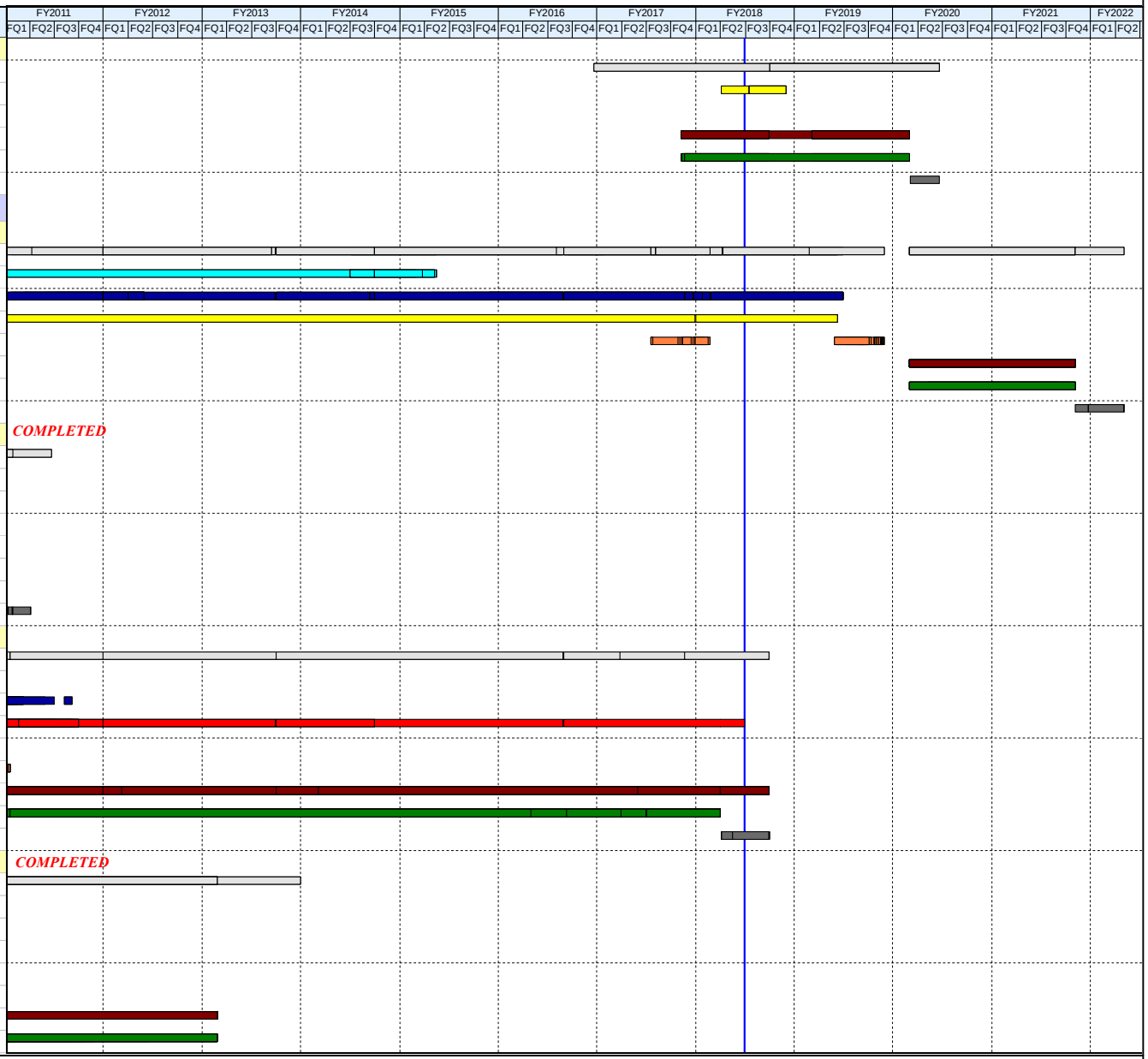
Project Name	Start	Finish
Regional Improvement Projects	31-Mar-00 A	30-Dec-21
San Joaquin Region	01-Jul-02 A	20-Dec-19
Lawrence Livermore Water Quality Impr	02-Feb-04 A	31-Jul-13 A
Project Management	02-Feb-04 A	31-Jul-13 A
Planning	02-Feb-04 A	28-Sep-07 A
Environmental	31-Aug-06 A	25-Feb-09 A
Design	01-Oct-07 A	31-Mar-09 A
Bid & Award	01-Dec-08 A	25-Aug-09 A
Construction Management	27-Feb-09 A	11-Mar-11 A
Construction	26-Aug-09 A	11-Mar-11 A
Closeout	14-Mar-11 A	31-Jul-13 A
San Joaquin Pipeline System	19-Aug-02 A	31-Mar-16 A
Project Management	19-Aug-02 A	31-Mar-16 A
Planning	19-Aug-02 A	28-Dec-06 A
Environmental Review	17-Feb-04 A	27-Mar-12 A
Right of Way	02-Jan-07 A	29-Mar-13 A
Design	02-Jan-07 A	23-Mar-11 A
Bid & Award	27-Apr-09 A	21-Jul-11 A
Construction Management	03-Feb-09 A	31-Mar-16 A
Construction	13-Oct-09 A	31-Mar-16 A
Closeout	24-Oct-13 A	31-Mar-16 A
Rehabilitation of Existing San Joaquin P	03-Jul-06 A	31-Oct-14 A
Project Management	03-Jul-06 A	31-Oct-14 A
Planning	03-Jul-06 A	27-Jun-14 A
Environmental Review	26-Sep-06 A	31-Dec-12 A
Design	31-Jul-06 A	31-Mar-11 A
Bid & Award	02-May-08 A	31-Mar-11 A
Construction Management	03-Jul-06 A	19-Sep-11 A
Construction	02-Oct-06 A	01-Nov-11 A
Closeout	20-Sep-11 A	31-Oct-14 A
Tesla Treatment Facility	01-Jul-02 A	30-Jan-15 A
Project Management	01-Jul-02 A	30-Jan-15 A
Planning	01-Jul-02 A	29-Jun-07 A
Environmental	30-Jun-06 A	25-Feb-09 A
Right of Way	17-Mar-08 A	16-Oct-08 A
Design	15-Feb-07 A	20-Nov-09 A
Bid & Award	30-Jan-08 A	10-Nov-08 A
Construction Management	02-Feb-09 A	31-Oct-14 A
Construction	08-Sep-08 A	31-Oct-14 A
Closeout	01-Jul-11 A	30-Jan-15 A
Tesla Portal Disinfection Station	01-Jul-02 A	29-Jun-07 A
Project Management	01-Jul-02 A	29-Jun-07 A
Planning	01-Jul-02 A	29-Jun-07 A
Environmental	19-Aug-04 A	29-Dec-06 A



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

March 2018 Revised WSIP - Revised Phase-Level Schedules

Project Name	Start	Finish
WSIP Closeout - San Joaquin	20-Jun-16 A	20-Dec-19
Project Management	20-Jun-16 A	20-Dec-19
Design	02-Oct-17 A	31-May-18
Bid & Award (JOC Process)	01-Jun-18	31-Aug-18
Construction Management	09-May-17 A	30-Aug-19
Construction	09-May-17 A	30-Aug-19
Close Out	03-Sep-19	20-Dec-19
Sunol Valley Region	19-Dec-01 A	03-Nov-21
Alameda Creek Recapture Project	30-Sep-03 A	03-Nov-21
Project Management	30-Sep-03 A	03-Nov-21
Planning	30-Sep-03 A	14-Nov-14 A
Environmental	23-Apr-10 A	28-Dec-18
Design	01-Jul-10 A	06-Dec-18
Bid & Award	17-Jan-17 A	30-May-19
Construction Management	30-Aug-19	04-May-21
Construction	30-Aug-19	04-May-21
Closeout	05-May-21	03-Nov-21
Standby Power Facilities - Various Locat	11-Jul-02 A	22-Dec-10 A
Project Management	11-Jul-02 A	22-Dec-10 A
Planning	11-Jul-02 A	30-Jun-05 A
Environmental (CatEx)	26-May-05 A	23-Sep-05 A
Design	01-Jul-05 A	04-May-07 A
Bid & Award	16-Apr-07 A	31-Dec-07 A
Construction Management	10-Dec-07 A	22-Jun-10 A
Construction	10-Dec-07 A	28-May-10 A
Closeout	10-Sep-08 A	07-Oct-10 A
New Irvington Tunnel	19-Dec-01 A	31-Mar-18
Project Management	19-Dec-01 A	30-Mar-18
Planning	19-Dec-01 A	07-Oct-05 A
Environmental	25-Aug-04 A	07-Mar-11 A
Right of Way	03-Jul-06 A	29-Dec-17 A
Design	11-Oct-05 A	12-Jan-10 A
Bid & Award	05-Jan-09 A	21-Jul-10 A
Construction Management	28-Sep-09 A	30-Mar-18
Construction	31-Mar-09 A	30-Sep-17 A
Close Out	02-Oct-17 A	31-Mar-18
Alameda Siphon #4	19-Dec-01 A	28-Jun-13 A
Project Management	19-Dec-01 A	28-Jun-13 A
Planning	19-Dec-01 A	07-Oct-05 A
Environmental	25-Aug-04 A	30-Mar-10 A
Right of Way	04-Jun-07 A	09-Feb-09 A
Design	11-Oct-05 A	13-Mar-09 A
Bid & Award	03-Nov-08 A	25-Aug-09 A
Construction Management	26-Aug-09 A	24-Aug-12 A
Construction	20-Apr-09 A	24-Aug-12 A

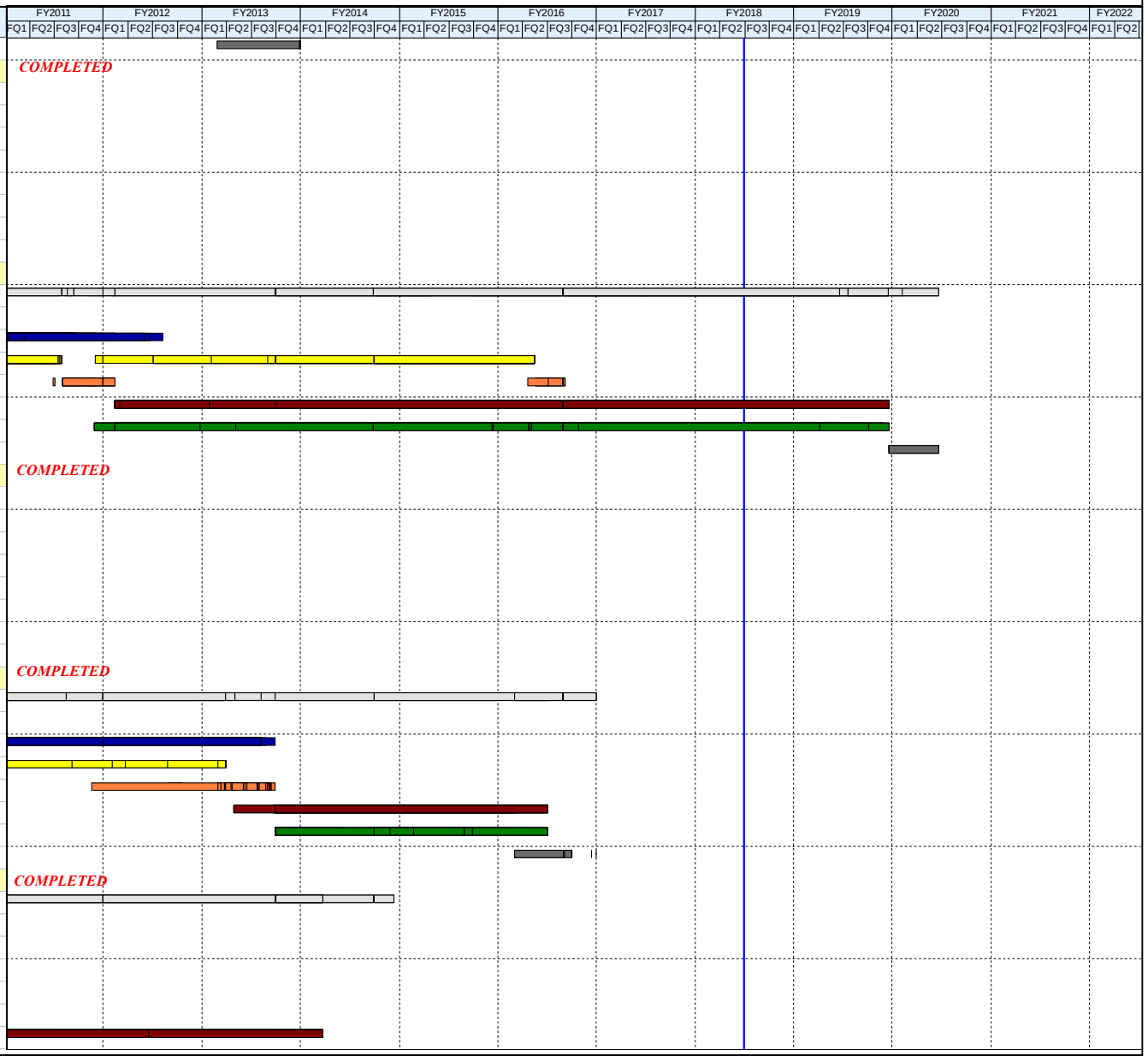


Project Management | Environmental | Right-of-Way | Construction Management | Closeout

Planning | Design | Bid & Award | Construction | Program Management

March 2018 Revised WSIP - Revised Phase-Level Schedules

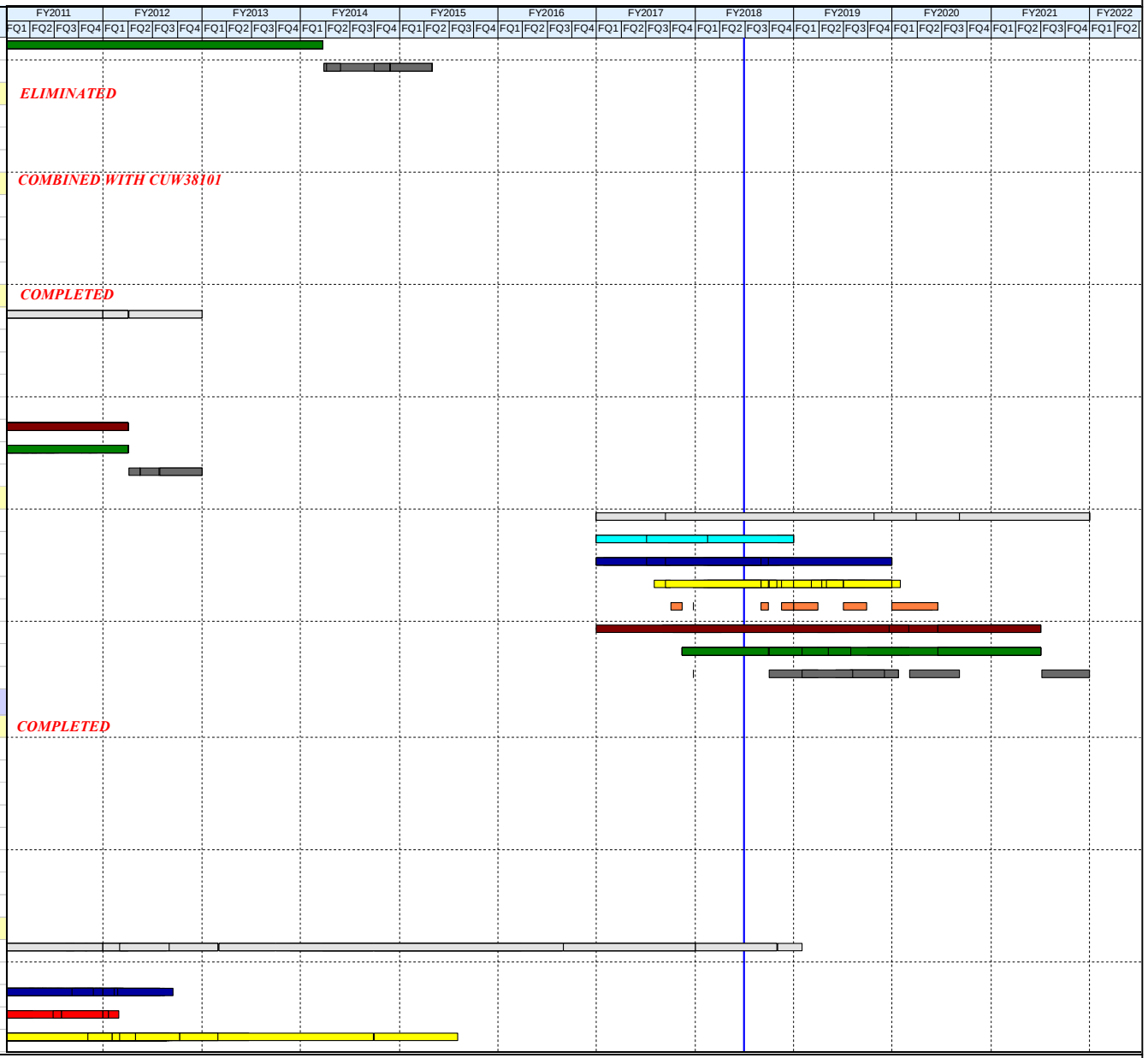
Project Name	Start	Finish
Closeout	27-Aug-12 A	28-Jun-13 A
Pipeline Repair & Readiness Improvem	21-Apr-03 A	16-Apr-09 A
Project Management	21-Apr-03 A	16-Apr-09 A
Planning	21-Apr-03 A	30-Mar-07 A
Environmental (CatEx)	14-Jan-05 A	29-Dec-06 A
Design	07-Jun-04 A	05-Feb-07 A
Bid & Award	31-Oct-05 A	23-Jul-07 A
Construction Management	30-Jan-06 A	15-Oct-08 A
Construction	30-Jan-06 A	15-Oct-08 A
Close Out	18-Sep-06 A	16-Apr-09 A
Calaveras Dam Replacement	03-Sep-02 A	20-Dec-19
Project Mangement	03-Sep-02 A	20-Dec-19
Planning	03-Sep-02 A	04-Nov-05 A
Environmental	16-May-05 A	06-Feb-12 A
Design	14-Nov-05 A	13-Nov-15 A
Bid & Award	27-Dec-10 A	07-Mar-16 A
Construction Management	15-Aug-11 A	19-Jun-19
Construction	31-May-11 A	19-Jun-19
Closeout	19-Jun-19	20-Dec-19
Calaveras Reservoir Upgrades	19-Nov-03 A	28-Jul-06 A
Project Management	19-Nov-03 A	28-Jul-06 A
Planning	19-Nov-03 A	18-Nov-05 A
Environmental	21-May-04 A	18-Nov-05 A
Design	16-Dec-04 A	18-Nov-05 A
Bid & Award	28-Jan-05 A	18-Nov-05 A
Construction Management	27-Jun-05 A	14-Feb-06 A
Construction	27-Jun-05 A	14-Feb-06 A
Close Out	07-Oct-05 A	28-Jul-06 A
San Antonio Backup Pipeline	17-Dec-03 A	30-Jun-16 A
Project Management	17-Dec-03 A	30-Jun-16 A
Planning	17-Dec-03 A	11-May-07 A
Environmental	02-Oct-06 A	29-Mar-13 A
Design	01-Mar-07 A	24-Sep-12 A
Bid & Award	18-May-11 A	29-Mar-13 A
Construction Management	26-Oct-12 A	31-Dec-15 A
Construction	29-Mar-13 A	31-Dec-15 A
Close Out	31-Aug-15 A	30-Jun-16 A
SVWTP Expansion & Treated Water Re	22-Apr-05 A	31-Oct-14 A
Project Management	22-Apr-05 A	12-Jun-14 A
Planning	22-Apr-05 A	29-Jun-07 A
Environmental Review	21-Jul-06 A	30-Jun-10 A
Right of Way	03-Jul-06 A	16-Jun-09 A
Design	16-Jan-07 A	10-Dec-09 A
Bid & Award	23-Nov-09 A	22-Jun-10 A
Construction Management	30-Apr-10 A	20-Sep-13 A



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

March 2018 Revised WSIP - Revised Phase-Level Schedules

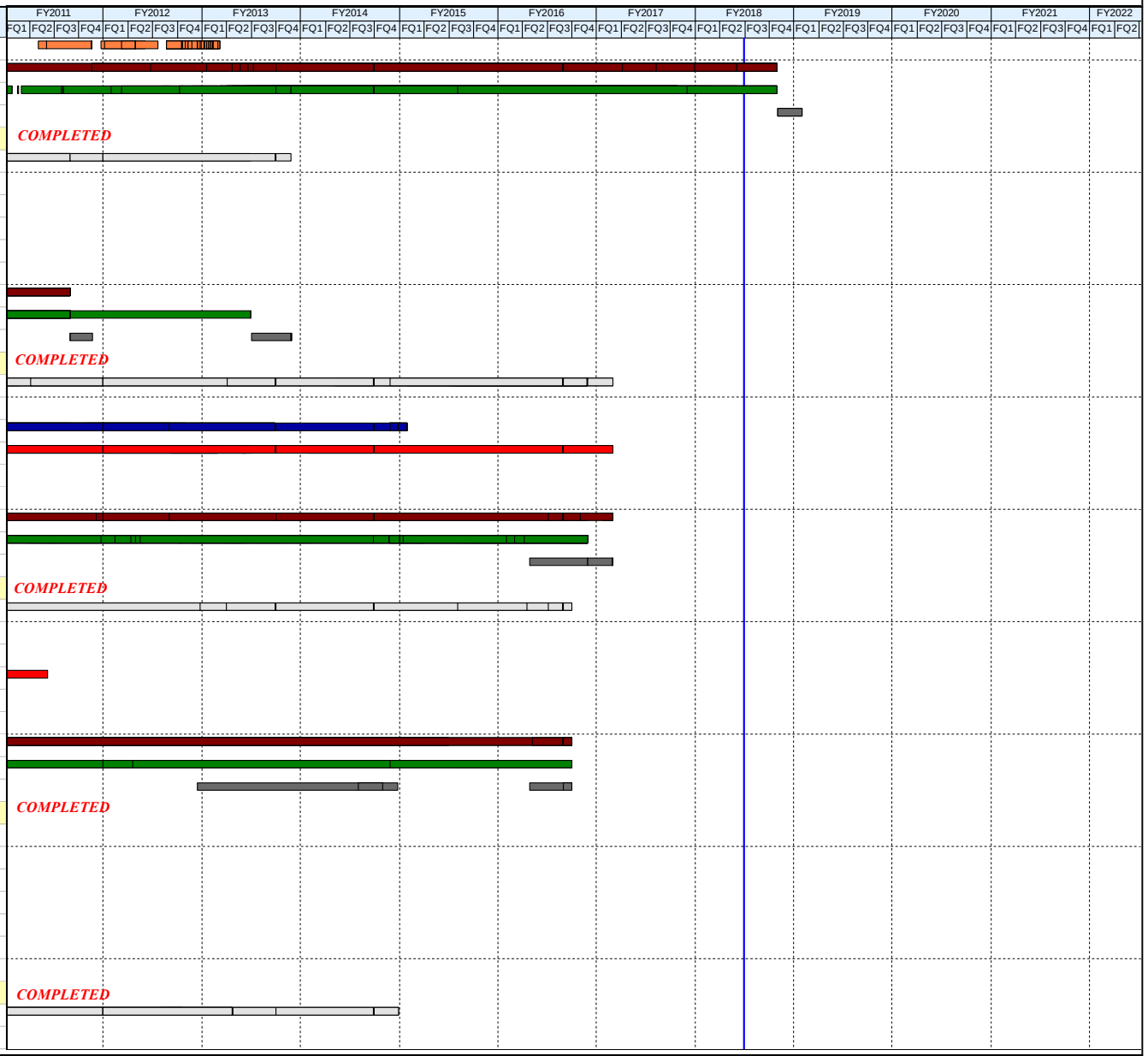
Project Name	Start	Finish
Construction	23-Jun-10 A	20-Sep-13 A
Closeout	23-Sep-13 A	31-Oct-14 A
SVWTP Calaveras Road	01-Feb-07 A	14-Dec-07 A
Project Management Cal. Road Imprc	12-Mar-07 A	14-Dec-07 A
Environmental (CatEx) - Cal. Road Im	01-Feb-07 A	30-Jul-07 A
Design - Cal. Road Improvements	02-Apr-07 A	14-Dec-07 A
SVWTP Treated Water Reservoir	15-Sep-03 A	02-Mar-07 A
Project Management	15-Sep-03 A	02-Mar-07 A
Planning	15-Sep-03 A	29-Sep-04 A
Environmental	26-Mar-04 A	09-Feb-07 A
Design	03-Nov-04 A	02-Mar-07 A
San Antonio Pump Station Upgrade	01-Jul-04 A	29-Jun-12 A
Project Management	01-Jul-04 A	29-Jun-12 A
Planning	01-Jul-04 A	12-Jan-07 A
Environmental (CatEx)	02-Jan-07 A	21-Jun-07 A
Design	06-Jul-07 A	15-May-09 A
Bid & Award	14-Apr-09 A	30-Oct-09 A
Construction Management	02-Nov-09 A	30-Sep-11 A
Construction	02-Nov-09 A	30-Sep-11 A
Close-Out	03-Oct-11 A	29-Jun-12 A
WSIP Closeout - Sunol Valley	01-Jul-16 A	30-Jun-21
Project Management	01-Jul-16 A	30-Jun-21
Planning	01-Jul-16 A	29-Jun-18
Environmental	01-Jul-16 A	28-Jun-19
Design	30-Jan-17 A	29-Jul-19
Bid & Award (JOC Process)	03-Apr-17 A	17-Dec-19
Construction Management	01-Jul-16 A	31-Dec-20
Construction	01-Jul-16 A	31-Dec-20
Close Out	26-Jun-17 A	30-Jun-21
Bay Division Region	19-Dec-01 A	30-Jun-20
BDPL Nos. 3 & 4 Crossover/Isolation Va	06-Jan-03 A	31-Jul-09 A
Project Management	06-Jan-03 A	31-Jul-09 A
Planning - Phase A	06-Jan-03 A	20-Jul-04 A
Environmental - Phase A	16-Jul-03 A	28-Feb-06 A
Design - Phase A	03-May-04 A	16-May-06 A
Bid & Award - Phase A	16-May-05 A	18-Aug-06 A
Construction Management - Phase A	23-Jan-06 A	03-Apr-09 A
Construction - Phase A	11-Oct-05 A	19-Mar-08 A
Close Out - Phase A	20-Mar-08 A	31-Jul-09 A
Seismic Upgrade of BDPL Nos. 3 & 4	22-Oct-04 A	30-Jul-18
Project Management	22-Oct-04 A	30-Jul-18
Planning - Phase B	22-Oct-04 A	12-Dec-08 A
Environmental (EIR) - Phase B	11-Sep-06 A	17-Mar-12 A
Right of Way Phase B	03-Jul-06 A	26-Aug-11 A
Design - Phase B	05-Mar-07 A	02-Feb-15 A



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

March 2018 Revised WSIP - Revised Phase-Level Schedules

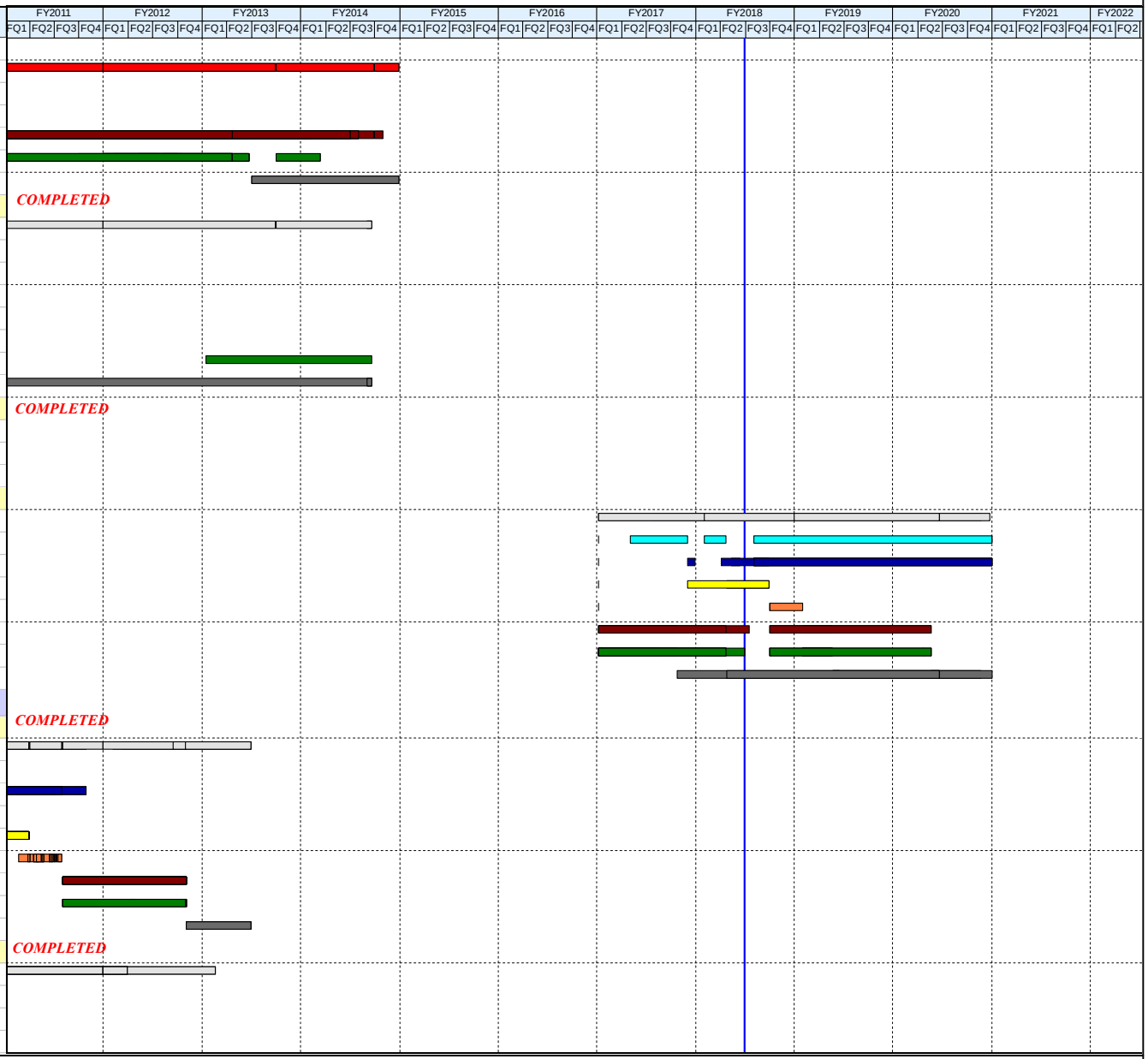
Project Name	Start	Finish
Bid and Award - Phase B	03-Nov-08 A	04-Sep-12 A
Construction Management - Phase B	03-May-10 A	30-Apr-18
Construction - Phase B	12-Jan-10 A	30-Apr-18
Close Out - Phase B	01-May-18	30-Jul-18
SCADA System - Phase II	22-Apr-05 A	28-May-13 A
Project Management	22-Apr-05 A	28-May-13 A
Planning	26-Apr-05 A	24-Dec-07 A
Environmental	30-Oct-07 A	15-Jul-09 A
Right of Way	10-Apr-07 A	01-Jun-09 A
Design	26-Dec-07 A	27-Jul-09 A
Bid & Award	22-Jun-09 A	11-Dec-09 A
Construction Management	23-Sep-08 A	28-Feb-11 A
Construction	25-Jul-08 A	28-Dec-12 A
Close Out	01-Mar-11 A	28-May-13 A
BDPL Reliability Upgrade / Tunnel	19-Dec-01 A	30-Aug-16 A
Project Management	19-Dec-01 A	30-Aug-16 A
Planning	19-Dec-01 A	31-May-06 A
Environmental	18-Nov-04 A	31-Jul-14 A
Right of Way	03-Jul-06 A	30-Aug-16 A
Design - BAY TUNNEL	01-Aug-05 A	03-Aug-09 A
Bid & Award - BAY TUNNEL	01-May-09 A	31-Mar-10 A
Construction Management - BAY TUN	24-Jun-08 A	30-Aug-16 A
Construction - BAY TUNNEL	17-Jul-09 A	30-May-16 A
Close Out - BAY TUNNEL	26-Oct-15 A	30-Aug-16 A
BDPL Reliability Upgrade - Pipeline	19-Dec-01 A	31-Mar-16 A
Project Management	03-Jan-06 A	31-Mar-16 A
Planning	19-Dec-01 A	31-May-06 A
Environmental	18-Nov-04 A	12-Feb-10 A
Right of Way	03-Jul-06 A	08-Dec-10 A
Design - PIPELINE	03-Jan-06 A	17-Aug-09 A
Bid and Award	22-Apr-09 A	09-Mar-10 A
Construction Management	23-Sep-08 A	31-Mar-16 A
Construction	04-Jan-10 A	31-Mar-16 A
Closeout	14-Jun-12 A	31-Mar-16 A
BDPL Reliability Upgrade - Relocation o	24-Apr-06 A	28-May-10 A
Project Management	24-Apr-06 A	28-May-10 A
Right of Way	28-May-10 A	28-May-10 A
Design	24-Apr-06 A	16-Jan-07 A
Bid and Award	17-Jan-07 A	06-Jan-10 A
Construction Management	02-Jul-07 A	28-May-10 A
Construction	15-Nov-06 A	28-May-10 A
Closeout	28-May-10 A	28-May-10 A
BDPL Nos. 3 & 4 Crossovers	17-Feb-04 A	30-Jun-14 A
Project Management	17-Feb-04 A	30-Jun-14 A
Planning	17-Feb-04 A	14-Nov-06 A



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

March 2018 Revised WSIP - Revised Phase-Level Schedules

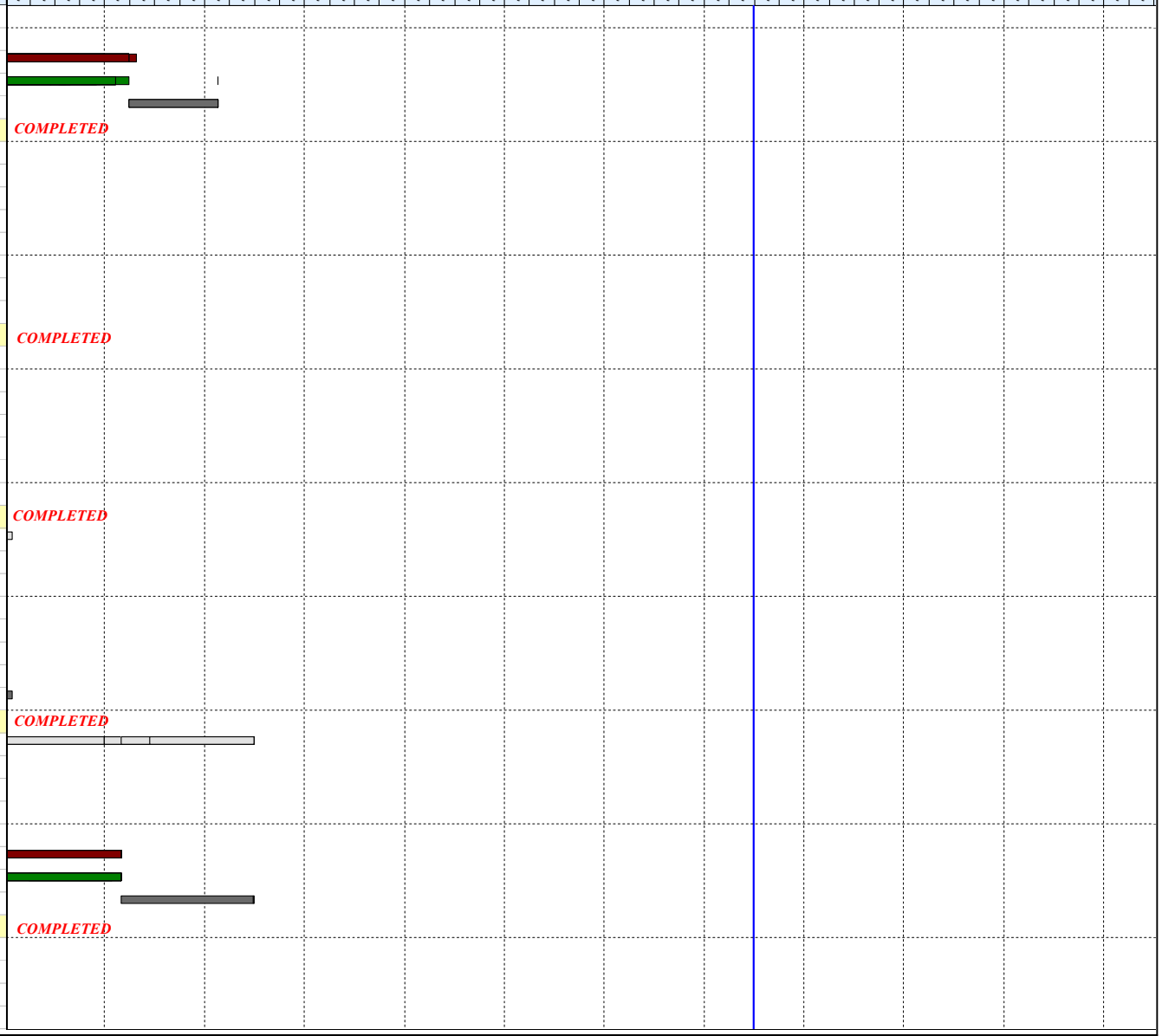
Project Name	Start	Finish
Environmental	28-Aug-06 A	31-Dec-08 A
Right of Way	04-Sep-07 A	30-Jun-14 A
Design	04-Dec-06 A	20-Jul-09 A
Bid & Award	05-Nov-08 A	10-Jul-09 A
Construction Management	23-Sep-08 A	30-Apr-14 A
Construction	30-Jan-09 A	11-Sep-13 A
Close Out	31-Dec-12 A	30-Jun-14 A
SFPUC/EBMUD Intertie	24-Jun-02 A	20-Mar-14 A
Project Management	24-Jun-02 A	20-Mar-14 A
Planning	24-Jun-02 A	11-Oct-02 A
Environmental	14-Oct-02 A	31-Mar-03 A
Design	01-Apr-03 A	30-Jul-04 A
Bid & Award	02-Aug-04 A	21-Dec-04 A
Construction Management	18-Jan-05 A	31-Jan-08 A
Construction	18-Jan-05 A	20-Mar-14 A
Close Out	01-Feb-08 A	20-Mar-14 A
BDPL No. 4 Condition Assessment PCC	04-Aug-06 A	06-Feb-09 A
Project Management	04-Aug-06 A	06-Feb-09 A
Planning	04-Aug-06 A	06-Feb-09 A
Environmental	16-Jul-07 A	30-Sep-08 A
WSIP Closeout - Bay Division	01-Jul-16 A	30-Jun-20
Project Management	01-Jul-16 A	30-Jun-20
Planning	01-Jul-16 A	30-Jun-20
Environmental	01-Jul-16 A	30-Jun-20
Design	01-Jul-16 A	30-Mar-18
Bid & Award (JOC Process)	01-Jul-16 A	31-Jul-18
Construction Management	01-Jul-16 A	19-Nov-19
Construction	01-Jul-16 A	19-Nov-19
Close Out	25-Apr-17 A	30-Jun-20
Peninsula Region	01-Nov-00 A	19-May-21
Lower Crystal Springs Dam Improveme	01-Nov-00 A	28-Dec-12 A
Project Management	01-Nov-00 A	28-Dec-12 A
Planning	01-Nov-00 A	30-Dec-04 A
Environmental Review	03-Jan-05 A	28-Apr-11 A
Right of Way	03-Jul-06 A	30-Jun-10 A
Design	08-Mar-07 A	30-Sep-10 A
Bid & Award	20-Aug-10 A	28-Jan-11 A
Construction Management	31-Jan-11 A	01-May-12 A
Construction	31-Jan-11 A	01-May-12 A
Close Out	02-May-12 A	28-Dec-12 A
New Crystal Springs Bypass Tunnel	07-Jan-02 A	17-Aug-12 A
Project Management	07-Jan-02 A	17-Aug-12 A
Planning	07-Jan-02 A	05-Aug-04 A
Environmental	18-Sep-03 A	09-Oct-08 A
Right of Way	03-Jul-06 A	16-Sep-08 A



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

March 2018 Revised WSIP - Revised Phase-Level Schedules

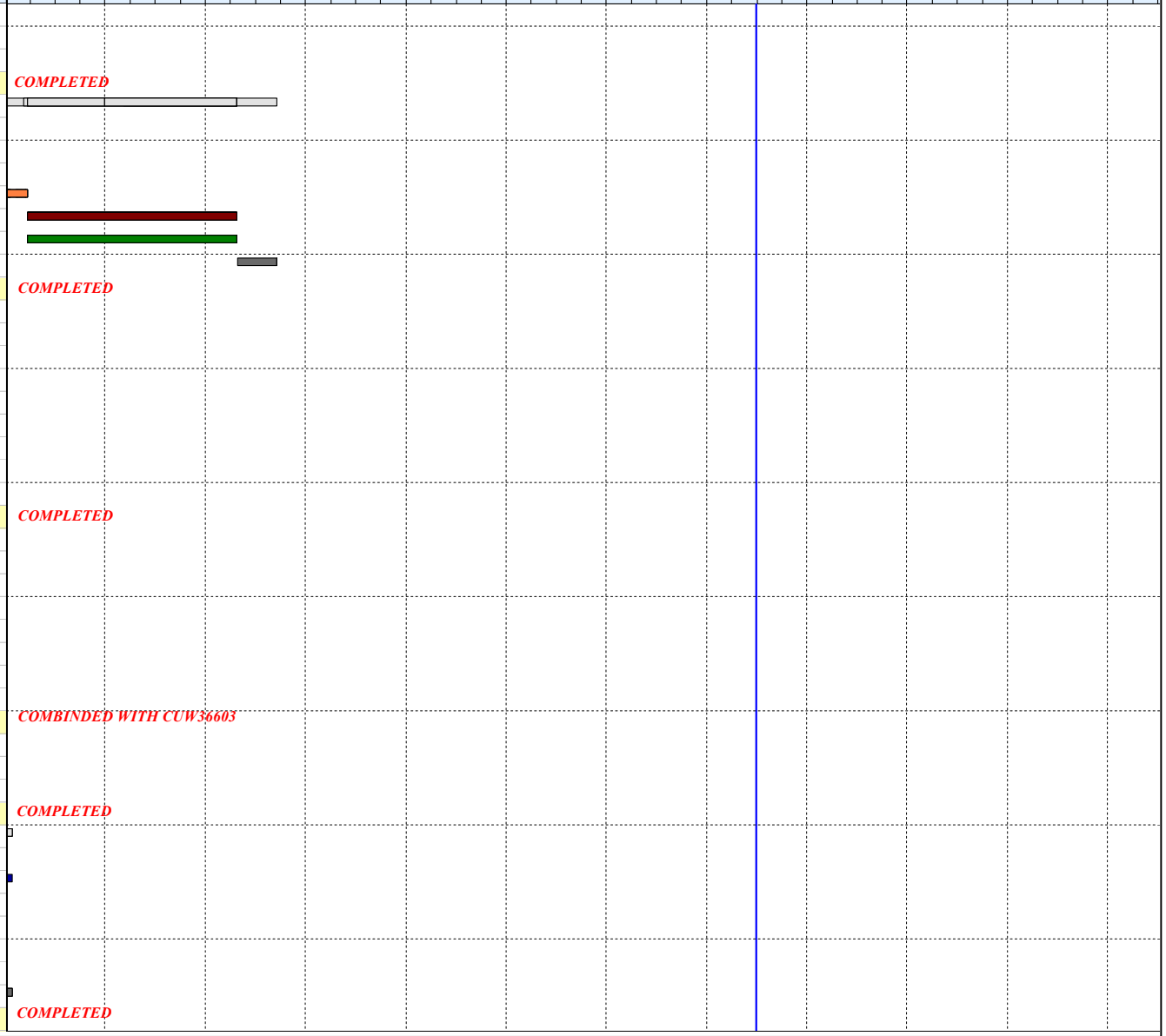
Project Name	Start	Finish
Design	01-Jun-04 A	05-Jun-08 A
Bid & Award	05-Jun-08 A	01-Dec-08 A
Construction Management	01-Dec-08 A	26-Oct-11 A
Construction	01-Dec-08 A	17-Aug-12 A
Close Out	29-Sep-11 A	17-Aug-12 A
Adit Leak Repair - Crystal Springs/Calav	01-Apr-05 A	31-Jul-08 A
Project Management	01-Apr-05 A	31-Jul-08 A
Planning	01-Apr-05 A	27-Mar-06 A
Environmental	01-Jul-05 A	30-Jun-06 A
Design	01-Sep-05 A	15-Sep-06 A
Bid & Award	28-Aug-06 A	30-Mar-07 A
Construction Management	02-Apr-07 A	05-Mar-08 A
Construction	09-Apr-07 A	05-Mar-08 A
Close Out	12-Mar-08 A	08-Jul-08 A
Pulgas Balancing - Inlet/Outlet Work	15-May-02 A	11-May-06 A
Project Management	01-Jul-03 A	11-May-06 A
Planning	15-May-02 A	01-Aug-05 A
Environmental	02-May-04 A	02-May-04 A
Bid & Award	05-Mar-04 A	06-Sep-05 A
Construction Management	07-Sep-05 A	02-Feb-06 A
Construction	06-Sep-05 A	02-Feb-06 A
Close Out	03-Feb-06 A	11-May-06 A
Pulgas Balancing - Discharge Channel I	01-Apr-05 A	30-Jul-10 A
Project Management	01-Apr-05 A	30-Jul-10 A
Planning	01-Apr-05 A	15-Sep-06 A
Environmental	17-Aug-06 A	03-Apr-09 A
Design	16-Apr-07 A	03-Nov-08 A
Bid & Award	04-Nov-08 A	03-Apr-09 A
Construction Management	06-Apr-09 A	07-Dec-09 A
Construction	02-Apr-09 A	07-Dec-09 A
Close Out	08-Dec-09 A	30-Jul-10 A
Pulgas Balancing - Structural Rehabilitat	03-Apr-06 A	28-Dec-12 A
Project Management	03-Apr-06 A	28-Dec-12 A
Planning	03-Apr-06 A	11-Dec-07 A
Environmental	03-Jul-07 A	16-Jul-09 A
Design	11-Jan-08 A	01-Jul-09 A
Bid & Award	06-Apr-09 A	30-Nov-09 A
Construction Management	30-Nov-09 A	01-Sep-11 A
Construction	30-Nov-09 A	01-Sep-11 A
Close Out	02-Sep-11 A	28-Dec-12 A
Pulgas Balancing - Laguna Creek Sedin	31-Mar-06 A	31-Dec-07 A
Project Management	31-Mar-06 A	31-Dec-07 A
Environmental	31-Dec-07 A	31-Dec-07 A
Design	31-Mar-06 A	26-Dec-06 A
Bid & Award	27-Dec-06 A	31-Dec-07 A



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

March 2018 Revised WSIP - Revised Phase-Level Schedules

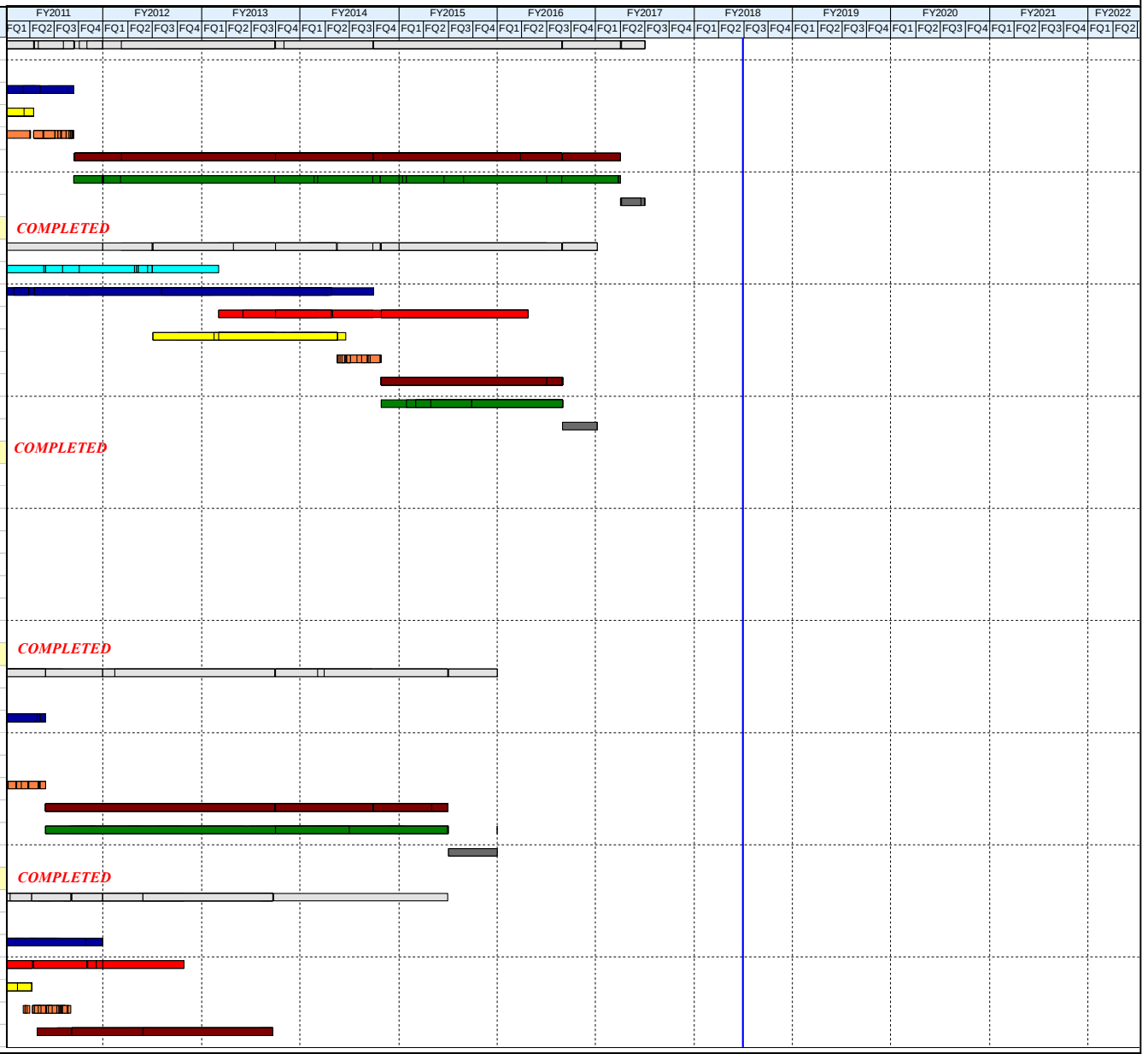
Project Name	Start	Finish	
Construction Management	04-Oct-07 A	31-Dec-07 A	
Construction	04-Oct-07 A	31-Dec-07 A	
Close Out	04-Oct-07 A	31-Dec-07 A	
Pulgas Balancing - Modifications of the E	02-Apr-07 A	20-Mar-13 A	COMPLETED
Project Management	02-Apr-07 A	20-Mar-13 A	
Planning	02-Apr-07 A	17-Mar-09 A	
Environmental	19-Nov-07 A	04-Mar-10 A	
Design	02-Jan-09 A	12-Mar-10 A	
Bid & Award	29-Jan-10 A	22-Sep-10 A	
Construction Management	22-Sep-10 A	25-Oct-12 A	
Construction	22-Sep-10 A	25-Oct-12 A	
Close Out	26-Oct-12 A	20-Mar-13 A	
Cross Connection Controls	01-Jul-03 A	30-Apr-09 A	COMPLETED
Project Management	01-Jul-03 A	27-Feb-09 A	
Planning	01-Jul-03 A	03-Aug-04 A	
Environmental	01-Jul-03 A	05-Aug-08 A	
Right of Way	03-Sep-07 A	30-Sep-08 A	
Design	03-Aug-04 A	30-Dec-05 A	
Bid & Award	01-Apr-05 A	31-May-05 A	
Construction Management	01-Jun-05 A	26-Nov-08 A	
Construction	01-Jun-05 A	26-Nov-08 A	
Close Out	01-Dec-08 A	30-Apr-09 A	
HTWTP Short-Term Improvements (De	04-Sep-02 A	14-Nov-06 A	COMPLETED
Project Management	04-Sep-02 A	14-Nov-06 A	
Planning	04-Sep-02 A	30-Apr-03 A	
Environmental	01-Aug-03 A	08-Aug-05 A	
Design	01-Aug-03 A	11-Feb-05 A	
Bid & Award	14-Feb-05 A	08-Sep-05 A	
Construction Management	09-Sep-05 A	27-Feb-06 A	
Construction	09-Sep-05 A	27-Feb-06 A	
Close Out	12-Jan-06 A	13-Nov-06 A	
HTWTP Short-Term Improvements - Re	12-Jan-06 A	22-Feb-08 A	COMBINDED WITH CUW36603
Project Management	12-Jan-06 A	31-Jan-08 A	
Planning	12-Jan-06 A	22-Aug-07 A	
Design	03-Mar-07 A	22-Feb-08 A	
HTWTP Short-Term Improvements - Cc	03-Jul-06 A	28-Jul-10 A	COMPLETED
Project Management	03-Jul-06 A	28-Jul-10 A	
Planning	03-Jul-06 A	22-Aug-07 A	
Environmental	03-Jul-06 A	28-Jul-10 A	
Design	13-Jul-07 A	22-Feb-08 A	
Bid & Award 2 & 3	03-Sep-07 A	09-Jul-08 A	
Construction Management 2& 3	18-Jun-08 A	31-Mar-10 A	
Construction 2 & 3	19-Feb-08 A	31-Mar-10 A	
Close Out 2 & 3	01-Apr-10 A	28-Jul-10 A	
HTWTP Long-Term Improvements	01-Jul-03 A	30-Dec-16 A	COMPLETED



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

March 2018 Revised WSIP - Revised Phase-Level Schedules

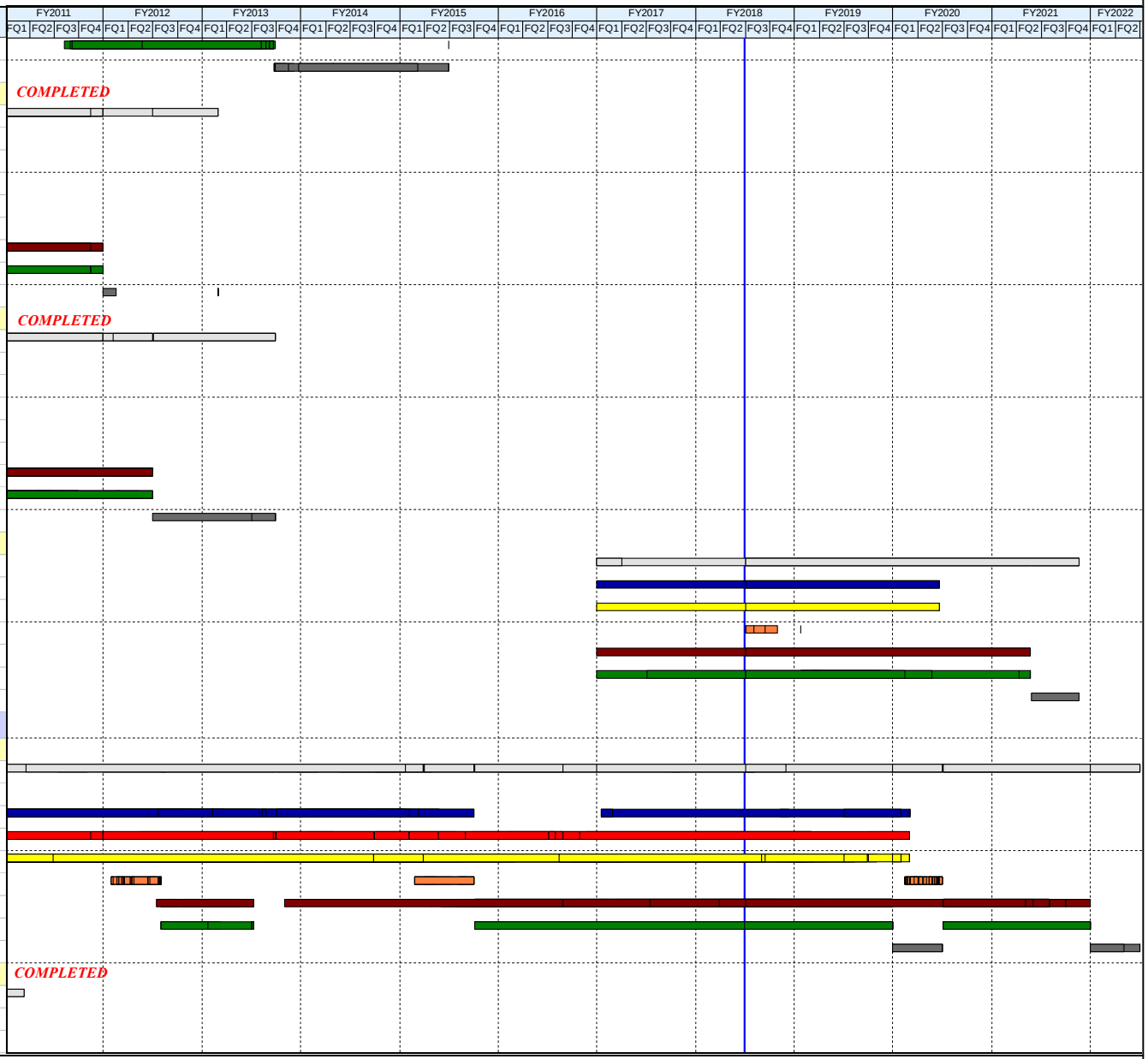
Project Name	Start	Finish
Project Management	01-Jul-03 A	30-Dec-16 A
Planning	01-Jul-03 A	29-Aug-08 A
Environmental	09-Jan-07 A	15-Mar-11 A
Design	02-Sep-08 A	15-Oct-10 A
Bid & Award	01-Jul-10 A	15-Mar-11 A
Construction Management	16-Mar-11 A	30-Sep-16 A
Construction	16-Mar-11 A	30-Sep-16 A
Close Out	01-Oct-16 A	30-Dec-16 A
Peninsula Pipelines Seismic Upgrade	01-Jul-09 A	06-Jul-16 A
Project Management	01-Jul-09 A	06-Jul-16 A
Planning	01-Jul-09 A	31-Aug-12 A
Environmental	01-Jul-09 A	01-Apr-14 A
Right of Way	03-Sep-12 A	24-Oct-15 A
Design	03-Jan-12 A	18-Dec-13 A
Bid & Award	15-Nov-13 A	28-Apr-14 A
Construction Management	28-Apr-14 A	29-Feb-16 A
Construction	28-Apr-14 A	29-Feb-16 A
Closeout	29-Feb-16 A	06-Jul-16 A
Capuchino Valve Lot Improvements	22-Apr-05 A	19-Aug-08 A
Project Management	22-Apr-05 A	19-Aug-08 A
Planning	22-Apr-05 A	01-Nov-05 A
Environmental	01-Nov-05 A	14-Nov-06 A
Design	01-Nov-05 A	15-Sep-06 A
Bid & Award	18-Sep-06 A	29-Jan-07 A
Construction Management	29-Jan-07 A	05-Mar-08 A
Construction	29-Jan-07 A	05-Mar-08 A
Close Out	06-Mar-08 A	19-Aug-08 A
Crystal Springs/San Andreas Transmiss	18-Aug-03 A	30-Jun-15 A
Project Management	18-Aug-03 A	30-Jun-15 A
Planning	18-Aug-03 A	20-Apr-07 A
Environmental	03-Jan-07 A	30-Nov-10 A
Right of Way	27-Mar-06 A	30-Jun-10 A
Design	15-Oct-07 A	15-Jun-10 A
Bid & Award	13-Apr-10 A	30-Nov-10 A
Construction Management	01-Dec-10 A	31-Dec-14 A
Construction	01-Dec-10 A	30-Jun-15 A
Close Out	02-Jan-15 A	30-Jun-15 A
Crystal Springs Pipeline No. 2 Replacen	15-Jan-04 A	31-Dec-14 A
Project Management	15-Jan-04 A	31-Dec-14 A
Planning	15-Jan-04 A	19-Jan-07 A
Environmental	01-Apr-04 A	30-Jun-11 A
Right of Way	01-Sep-06 A	27-Apr-12 A
Design	01-Jan-07 A	08-Oct-10 A
Bid & Award	09-Sep-10 A	04-Mar-11 A
Construction Management	01-Nov-10 A	22-Mar-13 A



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

March 2018 Revised WSIP - Revised Phase-Level Schedules

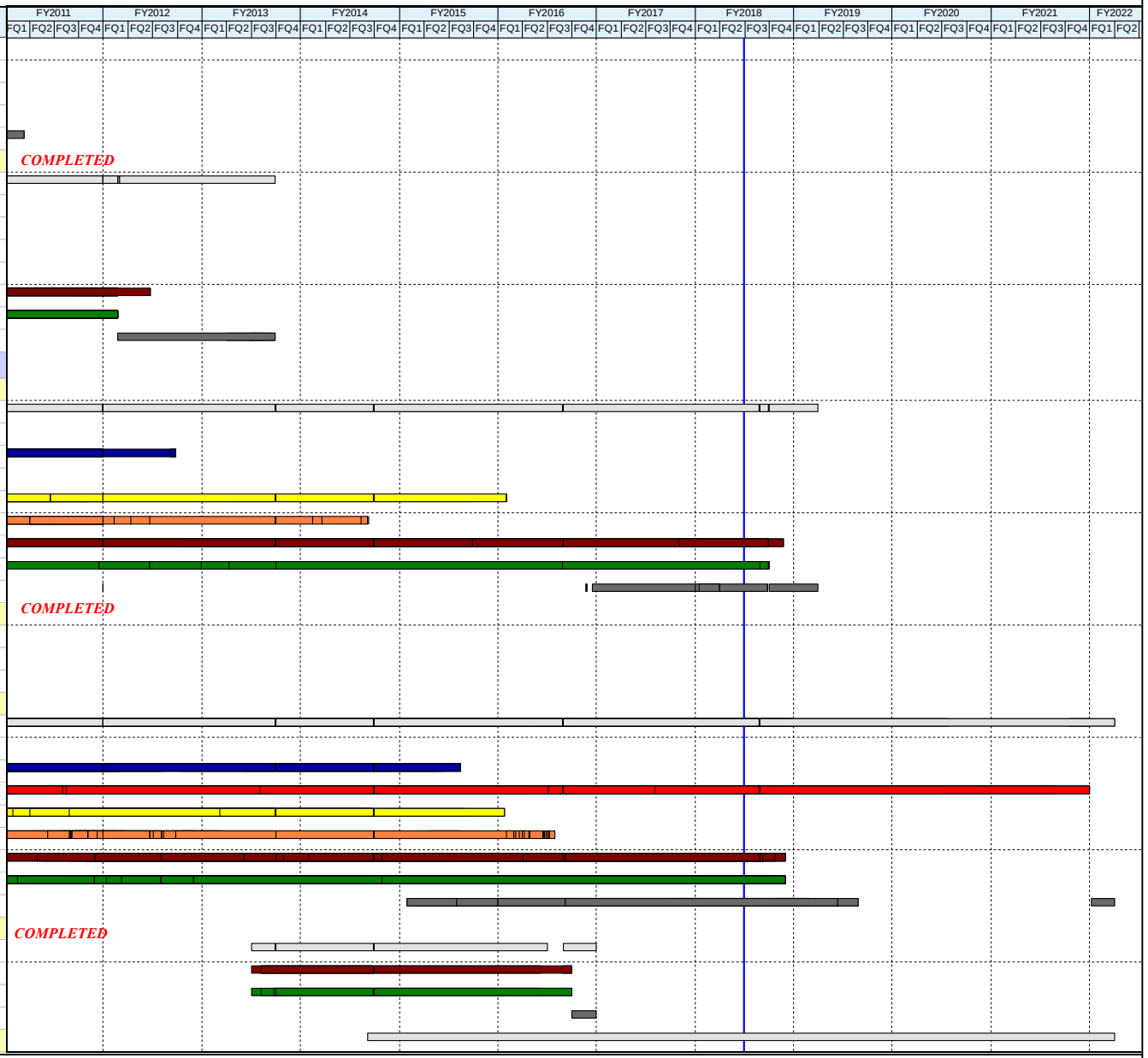
Project Name	Start	Finish
Construction	07-Feb-11 A	31-Dec-14 A
Close Out	24-Mar-13 A	31-Dec-14 A
San Andreas Pipeline No. 3 Installation	15-Jan-04 A	30-Aug-12 A
Project Management	15-Jan-04 A	30-Aug-12 A
Planning	15-Jan-04 A	28-Apr-05 A
Environmental	01-Apr-04 A	15-May-09 A
Right of Way	01-Aug-06 A	13-Aug-09 A
Design	01-May-05 A	17-Apr-09 A
Bid & Award	20-Apr-09 A	26-Aug-09 A
Construction Management	26-Aug-09 A	30-Jun-11 A
Construction	26-Aug-09 A	30-Jun-11 A
Closeout	01-Jul-11 A	30-Aug-12 A
Baden and San Pedro Valve Lots Impro	03-Oct-05 A	29-Mar-13 A
Project Management	03-Oct-05 A	29-Mar-13 A
Planning	03-Oct-05 A	03-Nov-06 A
Environmental	05-Oct-06 A	21-Oct-08 A
Right of Way	05-Oct-06 A	31-Mar-08 A
Design	29-Mar-07 A	12-Jan-09 A
Bid & Award	29-Sep-08 A	07-Apr-09 A
Construction Management	08-Apr-09 A	30-Dec-11 A
Construction	03-Apr-09 A	30-Dec-11 A
Close Out	31-Dec-11 A	29-Mar-13 A
WSIP Closeout - Peninsula	01-Jul-16 A	19-May-21
Project Management	01-Jul-16 A	19-May-21
Environmental	01-Jul-16 A	20-Dec-19
Design	01-Jul-16 A	20-Dec-19
Bid & Award	02-Jan-18	24-Jul-18
Construction Management	01-Jul-16 A	20-Nov-20
Construction	01-Jul-16 A	20-Nov-20
Close Out	23-Nov-20	19-May-21
San Francisco Regional Region	31-Mar-00 A	30-Dec-21
Regional Groundwater Storage and Rec	01-Jun-03 A	30-Dec-21
Project Management	01-Jul-05 A	30-Dec-21
Planning	01-Jun-03 A	31-Jan-08 A
Environmental	15-Oct-07 A	03-Sep-19
Right of Way	07-Apr-08 A	30-Aug-19
Design	02-Jan-08 A	30-Aug-19
Bid & Award	11-Mar-09 A	31-Dec-19
Construction Management	04-Mar-08 A	29-Jun-21
Construction	01-Jul-03 A	30-Jun-21
Closeout	01-Jul-19	30-Dec-21
Sunset Reservoir - North Basin	31-Mar-00 A	10-Sep-10 A
Project Management	31-Mar-00 A	10-Sep-10 A
Planning	31-Mar-00 A	28-Sep-01 A
Environmental	21-May-04 A	21-Dec-04 A



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

March 2018 Revised WSIP - Revised Phase-Level Schedules

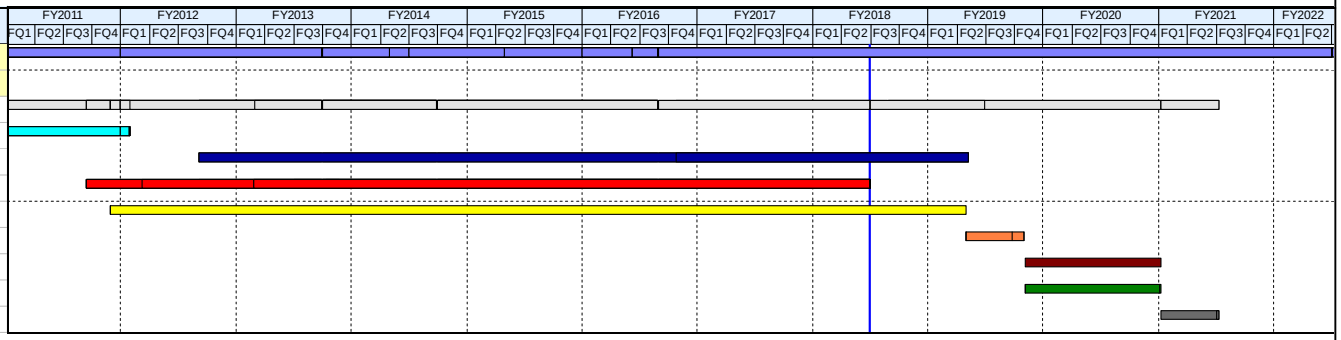
Project Name	Start	Finish
Design	01-Oct-01 A	12-Apr-06 A
Bid & Award	22-Oct-04 A	10-Oct-06 A
Construction Management	11-Apr-05 A	26-Mar-09 A
Construction	11-Apr-05 A	09-Nov-09 A
Close Out	13-Nov-06 A	10-Sep-10 A
University Mound Reservoir - North Bas	24-Oct-05 A	29-Mar-13 A
Project Management	24-Oct-05 A	29-Mar-13 A
Planning	24-Oct-05 A	06-Apr-07 A
Environmental	26-Dec-06 A	18-Jul-07 A
Design	07-Apr-07 A	24-Mar-09 A
Bid & Award	02-Feb-09 A	31-Jul-09 A
Construction Management	03-Aug-09 A	23-Dec-11 A
Construction	27-Jul-09 A	23-Aug-11 A
Close Out	23-Aug-11 A	29-Mar-13 A
Support Projects	13-Apr-04 A	30-Dec-21
System Security Upgrades	07-Jan-06 A	28-Sep-18
Project Management	19-Jun-06 A	28-Sep-18
Planning	19-Jun-06 A	08-Jul-09 A
Environmental	19-Jun-06 A	28-Mar-12 A
Right of Way	26-Nov-08 A	26-Nov-08 A
Design	19-Jun-06 A	03-Aug-15 A
Bid & Award	07-Jan-06 A	10-Mar-14 A
Construction Management	13-Nov-06 A	22-May-18
Construction	13-Nov-06 A	31-Mar-18
Close Out	24-Sep-07 A	28-Sep-18
Programmatic EIR	13-Apr-04 A	30-Jun-09 A
Project Management	13-Apr-04 A	30-Jun-09 A
Planning	13-Apr-04 A	28-Feb-07 A
Environmental Review	15-Jun-04 A	30-Jun-09 A
Bioregional Habitat Restoration	06-Sep-06 A	30-Sep-21
Project Management	01-Nov-06 A	30-Sep-21
Planning	06-Sep-06 A	31-Dec-07 A
Environmental Review	03-Jan-07 A	13-Feb-15 A
Right of Way	02-Jul-08 A	30-Jun-21
Design	16-Jul-07 A	27-Jul-15 A
Bid & Award	04-Dec-09 A	29-Jan-16 A
Construction Management	22-Jun-10 A	31-May-18
Construction	06-Mar-09 A	31-May-18
Closeout	29-Jul-14 A	30-Sep-21
Vegetation Restoration of WSIP Constru	02-Jan-13 A	30-Jun-16 A
Project Management	02-Jan-13 A	30-Jun-16 A
Construction Management	02-Jan-13 A	31-Mar-16 A
Construction (Maintenance)	02-Jan-13 A	31-Mar-16 A
Closeout	01-Apr-16 A	30-Jun-16 A
Long Term Mitigation Endowment	05-Mar-14 A	30-Sep-21



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

March 2018 Revised WSIP - Revised Phase-Level Schedules

Project Name	Start	Finish
Program Management Project	01-Aug-05 A	30-Dec-21
Watershed and Environmental Improver	02-Jan-07 A	08-Jan-21
Project Management	02-Jul-07 A	08-Jan-21
Planning	02-Jan-07 A	29-Jul-11 A
Environmental	05-Mar-12 A	06-Nov-18
Right of Way	14-Mar-11 A	31-Dec-17 A
Design	31-May-11 A	30-Oct-18
Bid & Award	31-Oct-18	03-May-19
Construction Management	06-May-19	06-Jul-20
Construction	06-May-19	06-Jul-20
Closeout	07-Jul-20	08-Jan-21



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

APPENDIX H

2003-2018 SCHEDULE CHANGES

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March 2018 Revised WSIP - 2003 to 2018 Schedule Changes

Project No.	Project Name	2003 CIP Completion Date A	2005 WSIP Completion Date B	Variance, Months (A-B)	2007 Revised WSIP Completion Date C	Variance, Months (B-C)	2009 Revised WSIP Completion Date D	Variance, Months (C-D)	2011 Revised WSIP Completion Date E	Variance, Months (D-E)	2011-2013 Revised Completion Date[1] F	Variance, Months (E-F)	2013 Rivised WSIP Completion Date G	Variance, Months (F-G)	2014 Rivised WSIP Completion Date H	Variance, Months (G-H)	2015 Rivised WSIP Completion Date[2] I	Variance, Months (H-I)	2016 Rivised WSIP Completion Date J	Variance, Months (I-J)	2017 Rivised WSIP Completion Date[3] K	Variance, Months (J-K)	2018 Rivised WSIP Completion Date L	Variance, Months (K-L)
San Joaquin Region																								
CUW36401	Lawrence Livermore Water Quality Improvement ***(Completed)***	Mar-11	Nov-11	8 (Late)	Dec-10	11 (Early)	Dec-10	-	Sep-11	9 (Late)	Sep-11	-	Apr-13	19 (Late)	Jul-13	3 (Late)	Jul-13	-	Jul-13	-	Jul-13	-	Jul-13	-
CUW37301	San Joaquin Pipeline System	May-11	Mar-14	35 (Late)	Mar-14	-	Mar-14	-	Mar-14	-	Mar-14	-	Mar-15	12 (Late)	Mar-15	-	Mar-16	12 (Late)	Mar-16	-	Mar-16	-	Mar-16	-
CUW37302	Rehabilitation of Existing San Joaquin Pipelines ***(Completed)***	-	Jun-14	-	Jun-14	-	Jun-14	-	Mar-14	4 (Early)	Mar-14	-	Aug-13	6 (Early)	Jun-14	10 (Late)	Jun-14	-	Oct-14	4 (Late)	Oct-14	-	Oct-14	-
CUW38401	Tesla Treatment Facility ***(Completed)***	Nov-11	Jul-11	4 (Early)	Mar-12	9 (Late)	Mar-12	-	Sep-12	6 (Late)	Sep-12	-	Sep-13	12 (Late)	Jul-14	10 (Late)	Jul-14	-	Jan-15	6 (Late)	Jan-15	-	Jan-15	-
CUW38701	Tesla Portal Disinfection Station ***(Combined with CUW38401)***	Apr-08	Sep-11	41 (Late)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CUWSJI0101	WSIP Closeout - San Joaquin ***(New)***																		Dec-19	-	Dec-19	-	Dec-19	-
Sunol Valley Region																								
CUW35201	Alameda Creek Recapture Project	Dec-06	May-12	66 (Late)	Mar-14	22 (Late)	Aug-14	5 (Late)	Jul-16	23 (Late)	Jul-16	-	Apr-19	33 (Late)	Apr-19	-	Apr-19	-	Jun-19	3 (Late)	Jun-19	-	Nov-21	28 (Late)
CUW35501	Standby Power Facilities - Various Locations ***(Completed)***	Nov-13	Dec-10	35 (Early)	Dec-10	-	Dec-10	-	Dec-10	<1 (Late)	Dec-10	-	Dec-10	-	Dec-10	-	Dec-10	-	Dec-10	-	Dec-10	-	Dec-10	-
CUW35901	New Irvington Tunnel	Aug-09	Sep-13	50 (Late)	Dec-13	3 (Late)	Dec-13	-	Oct-14	10 (Late)	Jan-16	15 (Late)	Mar-16	2 (Late)	Mar-16	-	Mar-16	-	Dec-16	10 (Late)	Mar-18	15 (Late)	Mar-18	-
CUW35902	Alameda Siphon #4 ***(Completed)***	Aug-09	Apr-11	20 (Late)	Aug-11	4 (Late)	Jun-12	10 (Late)	Jun-12	-	Jun-12	-	Jun-13	13 (Late)	Jun-13	-	Jun-13	-	Jun-13	-	Jun-13	-	Jun-13	-
CUW37001	Pipeline Repair & Readiness Improvements ***(Completed)***	Sep-04	Mar-07	31 (Late)	Dec-08	21 (Late)	Dec-08	-	Apr-09	3 (Late)	Apr-09	-	Apr-09	-	Apr-09	-	Apr-09	-	Apr-09	-	Apr-09	-	Apr-09	-
CUW37401	Calaveras Dam Replacement	May-09	May-12	37 (Late)	May-12	-	Dec-15	42 (Late)	Jul-16	8 (Late)	Aug-18	25 (Late)	Aug-18	-	May-19	9 (Late)	May-19	-	Dec-19	7 (Late)	Dec-19	-	Dec-19	-
CUW37402	Calaveras Reservoir Upgrades ***(Completed)***	-	Jun-06	-	Jul-06	1 (Late)	Jul-06	-	Jul-06	-	Jul-06	-	Jul-06	-	Jul-06	-	Jul-06	-	Jul-06	-	Jul-06	-	Jul-06	-
CUW37403	San Antonio Backup Pipeline	-	Jun-12	-	Jun-12	-	Dec-13	18 (Late)	Mar-15	14 (Late)	Mar-15	-	Nov-15	9 (Late)	Nov-15	-	Mar-16	4 (Late)	Mar-16	-	Mar-16	-	Jun-16	3 (Late)
CUW38101	SVWTP Expansion & Treated Water Reservoir ***(Completed)***	Apr-09	Jul-13	51 (Late)	Jul-13	-	Jul-13	-	Dec-13	5 (Late)	Dec-13	-	Feb-14	2 (Late)	May-14	3 (Late)	Jun-14	1 (Late)	Oct-14	5 (Late)	Oct-14	-	Oct-14	-
CUW38102	SVWTP Calaveras Road ***(Eliminated)***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CUW38201	SVWTP Treated Water Reservoir ***(Combined with CUW38101)***	Nov-07	Dec-10	38 (Late)	Mar-07	-	Mar-07	-	Mar-07	-	Mar-07	-	Mar-07	-	Mar-07	-	Mar-07	-	Mar-07	-	Mar-07	-	Mar-07	-
CUW38601	San Antonio Pump Station Upgrade ***(Completed)***	Oct-05	Dec-11	74 (Late)	Dec-11	<1 (Early)	Dec-11	-	Dec-11	-	Dec-11	-	Jun-12	7 (Late)	Jun-12	-	Jun-12	-	Jun-12	-	Jun-12	-	Jun-12	-
CUWSVI0101	WSIP Closeout - Sunol Valley ***(New)***																		Dec-19	-	Dec-19	-	Jun-21	18 (Late)
Bay Division Region																								
CUW35301	BDPL Nos. 3 & 4 Crossover/Isolation Valves ***(Completed)***	Aug-10	Sep-08	22 (Early)	Sep-08	-	Sep-08	-	Jul-09	10 (Late)	Jul-09	-	Jul-09	-	Jul-09	-	Jul-09	-	Jul-09	-	Jul-09	-	Jul-09	-
CUW35302	Seismic Upgrade of BDPL Nos. 3 & 4	Feb-13	Oct-12	4 (Early)	Dec-14	26 (Late)	Dec-14	-	Apr-15	4 (Late)	Apr-15	<1 (Early)	Sep-15	5 (Late)	Dec-15	3 (Late)	May-16	5 (Late)	Dec-16	8 (Late)	Mar-18	15 (Late)	Jul-18	4 (Late)
CUW36301	SCADA System - Phase II ***(Completed)***	Sep-14	Feb-12	30 (Early)	Feb-12	-	Feb-12	-	Feb-12	-	Feb-12	-	May-13	15 (Late)	May-13	-	May-13	-	May-13	-	May-13	-	May-13	-
CUW36801	BDPL Reliability Upgrade - Tunnel	Feb-13	Jan-14	12 (Late)	Jan-14	-	Aug-15	18 (Late)	Nov-15	3 (Late)	Nov-15	-	Nov-15	-	Mar-16	5 (Late)	Mar-16	-	Aug-16	5 (Late)	Aug-16	-	Aug-16	-
CUW36802	BDPL Reliability Upgrade - Pipeline	-	Jan-14	-	Mar-13	11 (Early)	Mar-13	<1 (Late)	Mar-13	-	Oct-13	7 (Late)	Dec-13	3 (Late)	Apr-15	15 (Late)	Mar-16	12 (Late)	Mar-16	-	Mar-16	-	Mar-16	-
CUW36803	BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2 ***(Completed)***	-	Jan-14	-	Jun-11	32 (Early)	Jul-11	1 (Late)	May-10	13 (Early)	May-10	-	May-10	-	May-10	-	May-10	-	May-10	-	May-10	-	May-10	-
CUW38001	BDPL Nos. 3 & 4 Crossovers ***(Completed)***	Jul-10	Apr-13	34 (Late)	Sep-13	5 (Late)	Sep-13	-	May-13	4 (Early)	May-13	-	Jul-13	2 (Late)	Jun-14	11 (Late)	Jun-14	-	Jun-14	-	Jun-14	-	Jun-14	-
CUW38901	SFPUC/EBMUD Intertie ***(Completed)***	-	Feb-07	-	Jun-08	17 (Late)	Jun-08	-	Dec-11	42 (Late)	Dec-11	-	Sep-13	21 (Late)	Mar-14	6 (Late)	Mar-14	-	Mar-14	-	Mar-14	-	Mar-14	-
CUW39301	BDPL No. 4 Condition Assessment PCCP Sections ***(Completed)***	-	May-08	-	May-08	-	Feb-09	9 (Late)	Feb-09	-	Feb-09	-	Feb-09	-	Feb-09	-	Feb-09	-	Feb-09	-	Feb-09	-	Feb-09	-
CUWBDP0101	WSIP Closeout - Bay Division ***(New)***																		Dec-19	-	Dec-19	-	Jun-20	6 (Late)
Peninsula Region																								
CUW35401	Lower Crystal Springs Dam Improvements ***(Completed)***	Feb-14	Aug-11	30 (Early)	Aug-11	-	Jun-12	10 (Late)	Sep-12	3 (Late)	Sep-12	-	Dec-12	3 (Late)	Dec-12	-	Dec-12	-	Dec-12	-	Dec-12	-	Dec-12	-
CUW35601	New Crystal Springs Bypass Tunnel ***(Completed)***	May-09	Oct-10	17 (Late)	Mar-12	16 (Late)	Mar-12	-	Mar-12	<1 (Late)	Mar-12	-	Aug-12	5 (Late)	Aug-12		Aug-12		Aug-12		Aug-12	-	Aug-12	-
CUW35701	Adit Leak Repair - Crystal Springs/Calaveras ***(Completed)***	Dec-07	Jul-08	7 (Late)	Jul-08	-	Jul-08	<1 (Late)	Jul-08	-	Jul-08	-	Jul-08	-	Jul-08	-	Jul-08	-	Jul-08	-	Jul-08	-	Jul-08	-
CUW36101	Pulgas Balancing - Inlet/Outlet Work ***(Completed)***	Mar-16	May-06	118 (Early)	May-06	-	May-06	-	May-06	-	May-06	-	May-06	-	May-06	-	May-06	-	May-06	-	May-06	-	May-06	-
CUW36102	Pulgas Balancing - Discharge Channel Modifications ***(Completed)***	-	Aug-13	-	Jun-12	14 (Early)	Aug-10	22 (Early)	Jul-10	<1 (Early)	Jul-10	-	Jul-10	-	Jul-10	-	Jul-10	-	Jul-10	-	Jul-10	-	Jul-10	-
CUW36103	Pulgas Balancing - Structural Rehabilitation and Roof Replacement ***(Completed)***	-	Jan-13	-	Nov-13	9 (Late)	Feb-12	21 (Early)	Feb-12	<1 (Late)	Feb-12	-	Dec-12	10 (Late)	Dec-12		Dec-12		Dec-12		Dec-12	-	Dec-12	-
CUW36104	Pulgas Balancing - Laguna Creek Sedimentation ***(Eliminated)***	-		-		-		-		-		-		-		-		-		-		-		-
CUW36105	Pulgas Balancing - Modifications of the Existing Dechloramination Facility ***(Completed)***	-	Aug-13	-	May-12	14 (Early)	May-12	-	May-12	-	Mar-13	10 (Late)	Mar-13	-	Mar-13	-	Mar-13	-	Mar-13	-	Mar-13	-	Mar-13	-
CUW36501	Cross Connection Controls ***(Completed)***	Sep-15	May-09	76 (Early)	Feb-09	3 (Early)	Feb-09	-	Apr-09	2 (Late)	Apr-09	-	Apr-09	-	Apr-09	-	Apr-09	-	Apr-09	-	Apr-09	-	Apr-09	-
CUW36601	HTWTP Short-Term Improvements (Demo Filters) ***(Completed)***	Nov-12	Jun-06	77 (Early)	Nov-06	5 (Late)	Nov-06	<1 (Late)	Nov-06	-	Nov-06	-	Nov-06	-	Nov-06	-	Nov-06	-	Nov-06	-	Nov-06	-	Nov-06	-
CUW36602	HTWTP Short-Term Improvements - Remaining Filters ***(Combined with CUW36603)***	-	Sep-10	-	Feb-08	31 (Early)	Feb-08	-	Feb-08	-	Feb-08	-	Feb-08	-	Feb-08	-	Feb-08	-	Feb-08	-	Feb-08	-	Feb-08	-
CUW36603	HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters ***(Completed)***	-	Sep-10	-	Sep-10	-	Sep-10	-	Jul-10	1 (Early)	Jul-10	-	Jul-10	-	Jul-10	-	Jul-10	-	Jul-10	-	Jul-10	-	Jul-10	-
CUW36701	HTWTP Long-Term Improvements	Mar-16	Apr-14	23 (Early)	Jun-14	2 (Late)	Jun-14	-	Dec-15	18 (Late)	Dec-15	-	Jan-16	1 (Late)	Jan-16	-	Aug-16	7 (Late)	Dec-16	5 (Late)	Dec-16	-	Dec-16	-

March 2018 Revised WSIP - 2003 to 2018 Schedule Changes

Project No.	Project Name	2003 CIP Completion Date A	2005 WSIP Completion Date B	Variance, Months (A-B)	2007 Revised WSIP Completion Date C	Variance, Months (B-C)	2009 Revised WSIP Completion Date D	Variance, Months (C-D)	2011 Revised WSIP Completion Date E	Variance, Months (D-E)	2011-2013 Revised Completion Date[1] F	Variance, Months (E-F)	2013 Rivised WSIP Completion Date G	Variance, Months (F-G)	2014 Rivised WSIP Completion Date H	Variance, Months (G-H)	2015 Rivised WSIP Completion Date[2] I	Variance, Months (H-I)	2016 Rivised WSIP Completion Date J	Variance, Months (I-J)	2017 Rivised WSIP Completion Date[3] K	Variance, Months (J-K)	2018 Rivised WSIP Completion Date L	Variance, Months (K-L)
CUW36702	Peninsula Pipelines Seismic Upgrade	-	-	-	-	-	Dec-14	-	Jul-16	19 (Late)	Jul-16	-	Jul-16	-	Jul-16	-	Jul-16	-	Jul-16	-	Jul-16	-	Jul-16	-
CUW36901	Capuchino Valve Lot Improvements *(Completed)*	Mar-16	Jul-09	80 (Early)	Feb-09	5 (Early)	Aug-08	6 (Early)	Aug-08	-	Aug-08	-	Aug-08	-	Aug-08	-	Aug-08	-	Aug-08	-	Aug-08	-	Aug-08	-
CUW37101	Crystal Springs/San Andreas Transmission Upgrade *(Completed)*	Jul-11	Apr-14	33 (Late)	Apr-14	-	Apr-14	-	Apr-14	<1 (Late)	Apr-14	-	Jan-15	8 (Late)	Jun-15	6 (Late)	Jun-15	-	Jun-15		Jun-15	-	Jun-15	-
CUW37801	Crystal Springs Pipeline No. 2 Replacement *(Completed)*	Nov-15	Apr-12	43 (Early)	Apr-12	-	Jul-13	15 (Late)	Sep-13	2 (Late)	Sep-13	-	Sep-13	-	Jul-14	10 (Late)	Jul-14	-	Dec-14	5 (Late)	Dec-14	-	Dec-14	-
CUW37901	San Andreas Pipeline No. 3 Installation *(Completed)*	Nov-14	Jun-11	41 (Early)	May-12	11 (Late)	May-12	-	Nov-11	6 (Early)	Nov-11	-	Aug-12	9 (Late)	Aug-12	-	Aug-12	-	Aug-12	-	Aug-12	-	Aug-12	-
CUW39101	Baden and San Pedro Valve Lots Improvements *(Completed)*	-	Oct-11	-	Aug-11	2 (Early)	Aug-11	-	Aug-12	11 (Late)	Aug-12	-	Mar-13	8 (Late)	Mar-13	-	Mar-13	-	Mar-13	-	Mar-13	-	Mar-13	-
CUWPWI0101	WSIP Closeout - Peninsula *(New)*																		Dec-19	-	Dec-19	-	May-21	17 (Late)
San Francisco Regional Region																								
CUW30103	Regional Groundwater Storage and Recovery		Feb-14	-	Dec-13	2 (Early)	Sep-14	9 (Late)	Jun-16	21 (Late)	Jun-16	-	Jul-16	1 (Late)	Jul-18	24 (Late)	Jul-18	-	Jul-19	12 (Late)	Jul-19	-	Dec-21	29 (Late)
CUW35801	Sunset Reservoir - North Basin *(Completed)*	Oct-14	May-09	65 (Early)	May-09	<1 (Early)	May-09	<1 (Late)	Sep-10	16 (Late)	Sep-10	-	Sep-10	-	Sep-10	-	Sep-10	-	Sep-10	-	Sep-10	-	Sep-10	-
CUW37201	University Mound Reservoir - North Basin *(Completed)*	Aug-11	Mar-11	5 (Early)	Mar-11	-	Dec-11	9 (Late)	Jan-12	1 (Late)	Feb-12	1 (Late)	Mar-13	13 (Late)	Mar-13	-	Mar-13	-	Mar-13	-	Mar-13	-	Mar-13	-
Support Projects																								
CUW36302[4]	System Security Upgrade	-	Feb-12	-	Feb-12	-	Feb-12	-	Apr-16	50 (Late)	Apr-16	-	Apr-16	-	Apr-16	-	Apr-16	-	Dec-16	8 (Late)	Mar-18	15 (Late)	Sep-18	6 (Late)
CUW38801	Programmatic EIR *(Completed)*	-	Jan-08	-	May-08	4 (Late)	Jun-09	13 (Late)	Jun-09	-	Jun-09	-	Jun-09	-	Jun-09	-	Jun-09	-	Jun-09	-	Jun-09	-	Jun-09	-
CUW38802	Bioregional Habitat Restoration	-	-	-	Aug-11	-	Aug-11	-	Jun-16	58 (Late)	Jun-16	-	Jul-16	1 (Late)	Jul-16	-	Jul-16	-	May-18	22 (Late)	May-18	-	Sep-21	40 (Late)
CUW38803	Vegetation Restoration of WSIP Construction Sites	-	-	-	-	-	-	-	-	-	Oct-13	-	Oct-13	-	Dec-15	26 (Late)	Jun-16	6 (Late)	Jun-16	-	Jun-16	-	Jun-16	-
CUW38804	Long Term Mitigation Endowment														Aug-18	-	Aug-18	-	Aug-18	-	Aug-18	-	Sep-21	37 (Late)
CUW39201	Program Management Project	-	Jun-14	-	Dec-14	6 (Late)	Dec-15	12 (Late)	Jul-16	8 (Late)	Jul-16	-	Jul-16	-	Dec-16	5 (Late)	Dec-16	-	Dec-19	36 (Late)	Dec-19	-	Dec-21	24 (Late)
CUW39401	Watershed Environmental Improvement Program	-	Jun-13	-	Jun-13	<1 (Late)	Jun-13	-	Jun-14	12 (Late)	Jun-14	-	May-15	10 (Late)	Aug-18	40 (Late)	Aug-18	-	Apr-19	8 (Late)	Apr-19	-	Jan-21	20 (Late)
	Regional Program	**Mar-16**	**Jun-14**	**21 (Early)**	**Dec-14**	**6 (Late)**	**Dec-15**	**12 (Late)**	**Jul-16**	**8 (Late)**	**Aug-18**	**25 (Late)**	**Apr-19**	**7 (Late)**	**May-19**	**2 (Late)**	**May-19**	**2 (Late)**	**Dec-19**	**7 (Late)**	**Dec-19**	**-**	**Dec-21**	**24 (Late)**

Notes:

(1) Revisions to project schedule approved by Commission between adoption of 2011 Revised WSIP Schedule and 2013 Revised WSIP Schedule.

(2) Revisions to project schedule approved by Commission between adoption of 2014 Revised WSIP Schedule and 2015 Revised WSIP Schedule.

(3) Revisions to project schedule approved by Commission between adoption of 2016 Revised WSIP Schedule and 2017 Revised WSIP Schedule.

(4) In the 2005 Revised WSIP, the System Upgrade project was combined with the SCADA System Phase II project, and the combined project was budgeted under the Bay Division Region. In the 2007 and 2009 Revised WSIP, the System Security Upgrade project was budgeted separately under the Bay Division Region (budgets reflected herein under Support Proejcts)managed under the Bay Division Region. In the 2011 Revised WSIP and subsequent program revisions, the System Security Upgrade Project was reported under the Support Projects.

APPENDIX I

REVISED PROJECT BUDGETS

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March 2018 Revised WSIP - Summary of Revised Project Level Cost

PROJECT NO.	Project Name	CONSTRUCTION COSTS [1]	DELIVERY COSTS[2]	OTHER COSTS[3]	TOTAL PROJECT COSTS
San Joaquin Region		**$222,552,903**	**$117,461,543**	**$8,184,486**	**$348,198,932**
CUW36401	Lawrence Livermore Water Quality Improvement *(Completed)*	$1,481,801	$2,716,446	-	$4,198,247
CUW37301	San Joaquin Pipeline System *(Completed)*	$125,965,937	$73,780,110	$3,431,968	$203,178,014
CUW37302	Rehabilitation of Existing San Joaquin Pipelines *(Completed)*	$11,434,583	$9,695,039	$24,000	$21,153,622
CUW38401	Tesla Treatment Facility *(Completed)*	$81,277,518	$27,205,570	$4,728,519	$113,211,607
CUW38701	Tesla Portal Disinfection Station *(Combined with CUW38401)*	-	$2,081,278	-	$2,081,278
CUWSJI0101	WSIP Closeout - San Joaquin	$2,393,064	$1,983,100	-	$4,376,164
Sunol Valley Region		**$1,124,510,895**	**$359,409,638**	**$5,528,648**	**$1,489,449,181**
CUW35201	Alameda Creek Recapture Project	$15,402,000	$18,550,006	$48,000	$34,000,006
CUW35501	Standby Power Facilities - Various Locations *(Completed)*	$9,602,901	$3,347,665	-	$12,950,566
CUW35901	New Irvington Tunnel	$272,130,689	$65,812,902	$2,462,767	$340,406,358
CUW35902	Alameda Siphon #4 *(Completed)*	$41,479,253	$23,209,275	$261,978	$64,950,507
CUW37001	Pipeline Repair & Readiness Improvements *(Completed)*	$2,763,325	$2,432,056	-	$5,195,381
CUW37401	Calaveras Dam Replacement	$644,509,688	$176,296,031	$2,286,046	$823,091,765
CUW37402	Calaveras Reservoir Upgrades *(Completed)*	$1,274,600	$415,953	-	$1,690,552
CUW37403	San Antonio Backup Pipeline *(Completed)*	$33,339,396	$20,255,287	-	$53,594,683
CUW38101	SVWTP Expansion & Treated Water Reservoir *(Completed)*	$94,121,180	$35,002,638	$469,856	$129,593,674
CUW38102	SVWTP Calaveras Road *(Eliminated)*	-	$34,654	-	$34,654
CUW38201	SVWTP Treated Water Reservoir *(Combined with CUW38101)*	-	$5,056,596	-	$5,056,596
CUW38601	San Antonio Pump Station Upgrade *(Completed)*	$7,516,865	$5,377,727	-	$12,894,592
CUWSVI0101	WSIP Closeout - Sunol Valley	$2,370,998	$3,618,848	-	$5,989,845
Bay Division Region		**$462,880,470**	**$176,186,163**	**$8,763,089**	**$647,829,723**
CUW35301	BDPL Nos. 3 & 4 Crossover/Isolation Valves *(Completed)*	$20,649,649	$6,389,500	-	$27,039,149
CUW35302	Seismic Upgrade of BDPL Nos. 3 & 4	$43,114,117	$30,435,863	$73,316	$73,623,296
CUW36301	SCADA System - Phase II *(Completed)*	$5,390,903	$4,061,569	$18,450	$9,470,922
CUW36801	BDPL Reliability Upgrade - Tunnel *(Completed)*	$220,454,710	$50,077,878	$1,831,502	$272,364,089
CUW36802	BDPL Reliability Upgrade - Pipeline *(Completed)*	$145,692,701	$65,477,542	$5,700,912	$216,871,156
CUW36803	BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2 *(Completed)*	$2,363,367	$683,615	-	$3,046,981
CUW38001	BDPL Nos. 3 & 4 Crossovers *(Completed)*	$14,794,660	$14,576,880	$538,909	$29,910,449
CUW38901	SFPUC/EBMUD Intertie *(Completed)*	$8,489,689	$677,617	-	$9,167,306
CUW39301	BDPL No. 4 Condition Assessment PCCP Sections *(Completed)*	-	$1,937,599	-	$1,937,599
CUWBDP0101	WSIP Closeout - Bay Division	$1,930,675	$1,868,100	$600,000	$4,398,775
Peninsula Region		**$547,050,940**	**$255,133,493**	**$2,940,047**	**$805,124,480**
CUW35401	Lower Crystal Springs Dam Improvements *(Completed)*	$20,357,967	$14,451,073	$50,000	$34,859,040
CUW35601	New Crystal Springs Bypass Tunnel *(Completed)*	$57,409,887	$23,933,121	$123,725	$81,466,732
CUW35701	Adit Leak Repair - Crystal Springs/Calaveras *(Completed)*	$1,706,478	$1,080,845	-	$2,787,322
CUW36101	Pulgas Balancing - Inlet/Outlet Work *(Completed)*	$638,020	$1,127,918	-	$1,765,938
CUW36102	Pulgas Balancing - Discharge Channel Modifications *(Completed)*	$903,240	$1,942,236	$64,531	$2,910,007
CUW36103	Pulgas Balancing - Structural Rehabilitation and Roof Replacement *(Completed)*	$13,283,050	$6,804,183	$151,483	$20,238,716

March 2018 Revised WSIP - Summary of Revised Project Level Cost

PROJECT NO.	Project Name	CONSTRUCTION COSTS [1]	DELIVERY COSTS[2]	OTHER COSTS[3]	TOTAL PROJECT COSTS
CUW36104	Pulgas Balancing - Laguna Creek Sedimentation *(Eliminated)*	-	$503,928	-	$503,928
CUW36105	Pulgas Balancing - Modifications of the Existing Dechloramination Facility *(Completed)*	$2,054,696	$3,285,334	$50,000	$5,390,031
CUW36501	Cross Connection Controls *(Completed)*	$1,835,224	$2,090,210	$23,509	$3,948,944
CUW36601	HTWTP Short-Term Improvements (Demo Filters) *(Completed)*	$1,683,042	$1,384,862	-	$3,067,903
CUW36602	HTWTP Short-Term Improvements - Remaining Filters *(Combined with CUW36603)*	-	$1,424,510	-	$1,424,510
CUW36603	HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters *(Completed)*	$15,214,291	$3,390,646	-	$18,604,937
CUW36701	HTWTP Long-Term Improvements *(Completed)*	$196,615,628	$76,482,504	$983,837	$274,081,969
CUW36702	Peninsula Pipelines Seismic Upgrade *(Completed)*	$23,097,596	$15,165,614	$562,136	$38,825,346
CUW36901	Capuchino Valve Lot Improvements *(Completed)*	$1,576,733	$1,226,420	-	$2,803,153
CUW37101	Crystal Springs/San Andreas Transmission Upgrade *(Completed)*	$133,915,522	$56,257,341	$136,590	$190,309,453
CUW37801	Crystal Springs Pipeline No. 2 Replacement *(Completed)*	$34,750,123	$20,932,509	$387,877	$56,070,509
CUW37901	San Andreas Pipeline No. 3 Installation *(Completed)*	$17,087,803	$10,001,396	$406,359	$27,495,558
CUW39101	Baden and San Pedro Valve Lots Improvements *(Completed)*	$15,646,639	$9,344,164	-	$24,990,803
CUWPWI0101	WSIP Closeout - Peninsula	$9,275,000	$4,304,680	-	$13,579,680
San Francisco Regional Region		**$164,477,403**	**$76,578,193**	**$5,274,995**	**$246,330,591**
CUW30103	Regional Groundwater Storage and Recovery	$80,539,000	$52,979,319	$5,274,995	$138,793,314
CUW35801	Sunset Reservoir - North Basin *(Completed)*	$52,777,386	$11,493,339	-	$64,270,725
CUW37201	University Mound Reservoir - North Basin *(Completed)*	$31,161,017	$12,105,535	-	$43,266,552
Support Projects		**$21,265,068**	**$171,592,696**	**$73,274,990**	**$266,132,754**
CUW36302	System Security Upgrade	$6,166,652	$9,034,659	-	$15,201,311
CUW38801	Programmatic EIR *(Completed)* [4]	-	$10,730,684	-	$10,730,684
CUW38802	Bioregional Habitat Restoration	-	$35,381,866	$57,960,117	$93,341,983
CUW38803	Vegetation Restoration of WSIP Construction Sites *(Completed)*	-	$1,177,223	$934,323	$2,111,546
CUW38804	Long Term Mitigation Endowment	-	-	$12,000,000	$12,000,000
CUW39201	Program Management Project [4]	-	$112,747,230	-	$112,747,230
CUW39401	Watershed and Environmental Improvement Program	$15,098,416	$2,521,034	$2,380,550	$20,000,000
	Regional Program Sub-Total	**$2,542,737,679**	**$1,156,361,726**	**$103,966,255**	**$3,803,065,661**
	Local Program Sub-Total	**$424,793,027**	**$183,666,743**	**$4,258,240**	**$612,718,010**
	Regional + Local Programs Sub-Total	**$2,967,530,706**	**$1,340,028,469**	**$108,224,495**	**$4,415,783,671**
	Financing Cost (5)				**$371,991,469**
	PROGRAM TOTAL				**$4,787,775,140**

LEGEND:

(1) **Construction Costs** include the Construction Base Bid, Construction Contingency and owner-provided equipment/material.
(2) **Delivery Costs** include program and 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) Not included in 52 regional project count.
(5) Financing Costs are currently under review. A memorandum will be prepared and submitted to the Commission and BAWSCA by September 1, 2018 documenting the assumptions associated with the WSIP "Finance" cost category, the actual financing costs for the WSIP, and the resulting impact on the "Finance" cost catagory moving forward.

APPENDIX J

2003-2018 BUDGET CHANGES

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March 2018 Revised WSIP - 2003 to 2018 Budget Changes

Project No.	Project Name	2003 Baseline Budget A	2005 Baseline Budget B	Variance (A-B)	2007 Revised WSIP Budget C	Variance (B-C)	2009 Revised WSIP Budget D	Variance (C-D)	2011 Revised WSIP Budget E	Variance (D-E)	2011-2013 Revised Budget[1] G	Variance (E-G)	2013 Revised WSIP Budget H	Variance (G-H)	2014 Revised WSIP Budget I	Variance (H-I)	2016 Revised WSIP Budget J	Variance (I-J)	2018 Revised WSIP Budget K	Variance (J-K)
San Joaquin Region		**$454,340,058**	**$559,341,529**	**($105,001,471)**	**$486,201,180**	**$73,140,349**	**$430,052,456**	**$56,148,724**	**$342,820,653**	**$87,231,803**	**$351,886,307**	**($9,065,655)**	**$348,691,060**	**$3,195,247**	**$346,911,672**	**$1,779,388**	**$345,185,162**	**$1,726,510**	**$348,198,932**	**($3,013,770)**
CUW36401	Lawrence Livermore Water Quality Improvement ***(Completed)***	$1,800,828	$4,235,258	($2,434,430)	$4,355,200	($119,942)	$3,900,231	$454,969	$4,205,166	($304,935)	$4,205,167	($1)	$4,205,166	$1	$4,198,480	$6,686	$4,198,480	$0	$4,198,247	$233
CUW37301	San Joaquin Pipeline System	$391,379,655	$352,732,000	$38,647,655	$270,346,843	$82,385,157	$278,055,413	($7,708,570)	$203,608,758	$74,446,655	$209,928,252	($6,319,494)	$207,416,022	$2,512,230	$205,961,446	$1,454,576	$202,886,020	$3,075,426	$203,178,014	($291,994)
CUW37302	Rehabilitation of Existing San Joaquin Pipelines	$0	$80,000,000	($80,000,000)	$89,999,545	($9,999,545)	$31,852,309	$58,147,236	$22,242,218	$9,610,091	$22,276,151	($33,933)	$21,318,258	$957,893	$21,284,284	$33,974	$21,153,438	$130,846	$21,153,622	($184)
CUW38401	Tesla Treatment Facility	$50,645,454	$101,643,001	($50,997,547)	$119,404,314	($17,761,313)	$114,162,348	$5,241,966	$110,683,233	$3,479,115	$113,395,460	($2,712,227)	$113,670,336	($274,876)	$113,386,184	$284,152	$113,225,946	$160,238	$113,211,607	$14,339
CUW38701	Tesla Portal Disinfection Station ***(Combined with CUW38401)***	$10,514,121	$20,731,270	($10,217,149)	$2,095,278	$18,635,992	$2,082,155	$13,123	$2,081,278	$877	$2,081,278	$0	$2,081,278	$0	$2,081,278	$0	$2,081,278	$0	$2,081,278	$0
CUWSJI	WSIP Closeout - San Joaquin ***(New)***	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,640,000	($1,640,000)	$4,376,164	($2,736,164)
Sunol Valley Region		**$442,165,999**	**$870,904,713**	**($428,738,714)**	**$957,767,968**	**($86,863,255)**	**$1,053,987,667**	**($96,219,699)**	**$1,056,068,082**	**($2,080,415)**	**$1,188,168,081**	**($132,099,999)**	**$1,262,521,783**	**($74,353,702)**	**$1,374,222,885**	**($111,701,102)**	**$1,476,017,317**	**($101,794,432)**	**$1,489,449,181**	**($13,431,864)**
CUW35201	Upper Alameda Creek Filter Gallery	$6,730,672	$18,809,304	($12,078,632)	$21,855,361	($3,046,057)	$21,855,361	$0	$45,746,807	($23,891,446)	$45,746,807	$0	$24,403,000	$21,343,807	$29,411,000	($5,008,000)	$29,411,000	$0	$34,000,006	($4,589,006)
CUW35501	Standby Power Facilities - Various Locations ***(Completed)***	$5,498,790	$9,949,735	($4,450,945)	$13,110,232	($3,160,497)	$13,110,232	$0	$12,947,780	$162,452	$12,947,780	$0	$12,947,780	$0	$12,947,780	$0	$12,950,566	($2,786)	$12,950,566	$0
CUW35901	New Irvington Tunnel	$143,928,778	$214,650,004	($70,721,226)	$342,679,908	($128,029,904)	$337,703,984	$4,975,924	$313,424,513	$24,279,471	$319,924,513	($6,500,000)	$323,734,000	($3,809,487)	$339,110,995	($15,376,995)	$347,128,023	($8,017,028)	$340,406,358	$6,721,665
CUW35902	Alameda Siphon #4 ***(Completed)***	$0	$78,577,000	($78,577,000)	$61,859,768	$16,717,232	$60,881,458	$978,310	$61,645,964	($764,506)	$66,045,964	($4,400,000)	$65,082,000	$963,964	$65,093,582	($11,582)	$65,093,582	$0	$64,950,507	$143,075
CUW37001	Pipeline Repair & Readiness Improvements ***(Completed)***	$3,369,860	$5,591,770	($2,221,910)	$5,653,459	($61,689)	$5,407,880	$245,579	$5,205,493	$202,387	$5,205,493	$0	$5,205,493	$0	$5,205,493	$0	$5,195,381	$10,112	$5,195,381	$0
CUW37401	Calaveras Dam Replacement	$150,000,000	$256,511,407	($106,511,407)	$307,756,121	($51,244,714)	$409,444,761	($101,688,640)	$415,637,844	($6,193,083)	$532,637,844	($117,000,000)	$620,813,000	($88,175,156)	$718,311,764	($97,498,764)	$810,024,424	($91,712,660)	$823,091,765	($13,067,341)
CUW37402	Calaveras Reservoir Upgrades ***(Completed)***	$0	$1,740,055	($1,740,055)	$2,306,690	($566,635)	$1,690,553	$616,137	$1,690,552	$1	$1,690,552	$0	$1,690,552	$0	$1,690,552	$0	$1,690,552	$0	$1,690,552	$0
CUW37403	San Antonio Backup Pipeline	$0	$7,677,000	($7,677,000)	$32,328,158	($24,651,158)	$39,202,680	($6,874,522)	$54,867,139	($15,664,459)	$54,867,138	$1	$55,490,000	($622,862)	$54,692,801	$797,199	$53,688,450	$1,004,351	$53,594,683	$93,767
CUW38101	SVWTP Expansion & Treated Water Reservoir	$81,974,044	$133,108,002	($51,133,958)	$149,143,167	($16,035,165)	$144,872,375	$4,270,792	$126,384,532	$18,487,843	$130,584,532	($4,200,000)	$135,170,000	($4,585,468)	$129,763,671	$5,406,329	$129,593,674	$169,997	$129,593,674	$0
CUW38102	SVWTP Calaveras Road ***(Eliminated)***	$0	$0	$0	$390,820	($390,820)	$34,653	$356,167	$34,654	($1)	$34,654	$0	$34,654	$0	$34,654	$0	$34,654	$0	$34,654	$0
CUW38201	SVWTP Treated Water Reservoir ***(Combined with CUW38101)***	$46,978,215	$102,436,436	($55,458,221)	$5,082,923	$97,353,513	$5,070,808	$12,115	$5,057,035	$13,773	$5,057,035	$0	$5,056,596	$439	$5,056,596	$0	$5,056,596	$0	$5,056,596	$0
CUW38601	San Antonio Pump Station Upgrade ***(Completed)***	$3,685,640	$41,854,000	($38,168,360)	$15,601,361	$26,252,639	$14,712,922	$888,439	$13,425,768	$1,287,154	$13,425,768	$0	$12,894,707	$531,061	$12,903,996	($9,289)	$12,905,415	($1,419)	$12,894,592	$10,823
CUWSVI	WSIP Closeout - Sunol Valley ***(New)***	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$3,245,000	($3,245,000)	$5,989,845	($2,744,845)
Bay Division Region		**$330,657,813**	**$749,730,402**	**($419,072,589)**	**$796,170,605**	**($46,440,203)**	**$785,113,675**	**$11,056,930**	**$691,915,562**	**$93,198,113**	**$705,833,449**	**($13,917,887)**	**$665,079,503**	**$40,753,946**	**$666,014,510**	**($935,007)**	**$651,848,538**	**$14,165,972**	**$647,829,723**	**$4,018,815**
CUW35301	BDPL Nos. 3 & 4 Crossover/Isolation Valves ***(Completed)***	$42,003,012	$27,600,158	$14,402,854	$28,588,382	($988,224)	$27,731,316	$857,066	$27,014,559	$716,757	$27,014,559	$0	$27,011,834	$2,725	$27,011,834	$0	$27,045,627	($33,793)	$27,039,149	$6,478
CUW35302	Seismic Upgrade of BDPL Nos. 3 & 4	$0	$66,792,849	($66,792,849)	$66,786,229	$6,620	$85,193,182	($18,406,953)	$92,199,810	($7,006,628)	$91,567,810	$632,000	$78,211,285	$13,356,525	$75,129,259	$3,082,026	$76,980,435	($1,851,176)	$73,623,296	$3,357,139
CUW36301	SCADA System - Phase II ***(Completed)***	$28,713,137	$36,098,999	($7,385,862)	$21,288,390	$14,810,609	$18,232,832	$3,055,558	$10,420,832	$7,812,000	$10,420,832	$0	$9,498,352	$922,480	$9,480,089	$18,263	$9,470,922	$9,167	$9,470,922	$0
CUW36801	BDPL Reliability Upgrade - Tunnel	$248,969,805	$572,022,634	($323,052,829)	$352,320,841	$219,701,793	$346,660,244	$5,660,597	$307,081,069	$39,579,175	$307,081,069	$0	$286,372,630	$20,708,439	$287,599,138	($1,226,508)	$275,931,544	$11,667,594	$272,364,089	$3,567,455
CUW36802	BDPL Reliability Upgrade - Pipeline	$0	$0	$0	$260,114,266	($260,114,266)	$250,629,058	$9,485,208	$207,372,702	$43,256,356	$221,922,589	($14,549,887)	$217,884,968	$4,037,621	$220,884,968	($3,000,000)	$217,262,675	$3,622,293	$216,871,156	$391,519
CUW36803	BDPL Reliability Upgrade - Relocation of BDPL Nos. 1 & 2 ***(Completed)***	$0	$0	$0	$4,109,984	($4,109,984)	$2,885,190	$1,224,794	$3,046,681	($161,491)	$3,046,681	$0	$3,046,981	($300)	$3,046,981	$0	$3,046,981	$0	$3,046,981	$0
CUW38001	BDPL Nos. 3 & 4 Crossovers	$10,971,859	$36,616,911	($25,645,052)	$43,033,869	($6,416,958)	$33,944,441	$9,089,428	$33,253,264	$691,177	$33,253,263	$1	$30,473,544	$2,779,719	$30,313,550	$159,994	$29,910,448	$403,102	$29,910,449	($1)
CUW38901	SFPUC/EBMUD Intertie ***(Completed)***	$0	$8,598,851	($8,598,851)	$8,429,072	$169,779	$8,429,072	$0	$9,559,755	($1,130,683)	$9,559,755	$0	$10,613,018	($1,053,263)	$10,581,799	$31,219	$9,167,306	$1,414,493	$9,167,306	$0
CUW39301	BDPL No. 4 Condition Assessment PCCP Sections ***(Completed)***	$0	$2,000,000	($2,000,000)	$2,119,540	($119,540)	$2,028,308	$91,232	$1,966,891	$61,417	$1,966,891	$0	$1,966,891	$0	$1,966,891	$0	$1,937,599	$29,292	$1,937,599	$0
CUWBDP	WSIP Closeout - Bay Division ***(New)***	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,095,000	($1,095,000)	$4,398,775	($3,303,775)
Peninsula Region		**$272,785,754**	**$700,531,784**	**($427,746,030)**	**$712,372,425**	**($11,840,641)**	**$894,784,082**	**($182,411,657)**	**$771,655,408**	**$123,128,674**	**$773,912,408**	**($2,257,000)**	**$808,596,773**	**($34,684,365)**	**$809,507,930**	**($911,157)**	**$804,539,830**	**$4,968,100**	**$805,124,480**	**($584,650)**
CUW35401	Lower Crystal Springs Dam Improvements ***(Completed)***	$16,888,718	$27,752,222	($10,863,504)	$30,411,202	($2,658,980)	$36,253,097	($5,841,895)	$33,510,000	$2,743,097	$35,767,000	($2,257,000)	$34,920,718	$846,282	$34,931,424	($10,706)	$34,859,039	$72,385	$34,859,040	($1)
CUW35601	New Crystal Springs Bypass Tunnel ***(Completed)***	$49,483,542	$83,222,790	($33,739,248)	$100,622,777	($17,399,987)	$94,608,996	$6,013,781	$86,444,995	$8,164,001	$86,089,995	$355,000	$81,462,828	$4,627,167	$81,460,035	$2,793	$81,435,610	$24,425	$81,466,732	($31,122)
CUW35701	Adit Leak Repair - Crystal Springs/Calaveras ***(Completed)***	$2,194,818	$3,748,452	($1,553,634)	$3,236,526	$511,926	$2,792,885	$443,641	$2,787,322	$5,563	$2,787,322	$0	$2,787,322	$0	$2,787,322	$0	$2,787,322	$0	$2,787,322	$0
CUW36101	Pulgas Balancing - Inlet/Outlet Work ***(Completed)***	$15,776,324	$1,667,532	$14,108,792	$1,766,937	($99,405)	$1,765,940	$997	$1,765,938	$2	$1,765,938	$0	$1,765,938	$0	$1,765,938	$0	$1,765,938	$0	$1,765,938	$0
CUW36102	Pulgas Balancing - Discharge Channel Modifications ***(Completed)***	$0	$8,111,422	($8,111,422)	$9,485,990	($1,374,568)	$4,432,368	$5,053,622	$2,898,902	$1,533,466	$2,898,902	$0	$2,911,617	($12,715)	$2,911,617	$0	$2,910,007	$1,610	$2,910,007	$0
CUW36103	Pulgas Balancing - Structural Rehabilitation and Roof Replacement ***(Completed)***	$0	$36,712,846	($36,712,846)	$21,247,383	$15,465,463	$21,247,383	$0	$21,363,694	($116,311)	$21,363,695	($1)	$20,226,342	$1,137,353	$20,232,215	($5,873)	$20,232,215	$0	$20,238,716	($6,501)
CUW36104	Pulgas Balancing - Laguna Creek Sedimentation ***(Eliminated)***	$0	$0	$0	$902,301	($902,301)	$495,889	$406,412	$503,928	($8,039)	$503,928	$0	$503,928	$0	$503,928	$0	$503,928	$0	$503,928	$0
CUW36105	Pulgas Balancing - Modifications of the Existing Dechloramination Facility ***(Completed)***	$0	$0	$0	$8,699,000	($8,699,000)	$6,158,246	$2,540,754	$5,790,114	$368,132	$6,145,114	($355,000)	$5,463,595	$681,519	$5,390,031	$73,564	$5,390,031	$0	$5,390,031	$0
CUW36501	Cross Connection Controls ***(Completed)***	$3,895,491	$6,111,779	($2,216,288)	$6,244,597	($132,818)	$3,802,674	$2,441,923	$3,965,943	($163,269)	$3,965,944	($1)	$3,948,944	$17,000	$3,948,944	$0	$3,948,944	$0	$3,948,944	$0
CUW36601	HTWTP Short-Term Improvements (Demo Filters) ***(Completed)***	$2,996,539	$4,381,375	($1,384,836)	$3,234,505	$1,146,870	$3,062,332	$172,173	$3,067,227	($4,895)	$3,067,227	$0	$3,067,903	($676)	$3,067,903	$0	$3,067,903	$0	$3,067,903	$0
CUW36602	HTWTP Short-Term Improvements - Remaining Filters ***(Combined with CUW36603)***	$0	$16,079,372	($16,079,372)	$1,385,576	$14,693,796	$1,396,761	($11,185)	$1,424,553	($27,792)	$1,424,553	$0	$1,424,510	$43	$1,424,510	$0	$1,424,510	$0	$1,424,510	$0
CUW36603	HTWTP Short-Term Improvements - Coagulation & Flocculation/ Remaining Filters ***(Completed)***	$0	$9,741,617	($9,741,617)	$24,833,123	($15,091,506)	$19,579,133	$5,253,990	$18,604,528	$974,605	$18,604,527	$1	$18,605,702	($1,175)	$18,605,702	$0	$18,604,938	$764	$18,604,937	$1

March 2018 Revised WSIP - 2003 to 2018 Budget Changes

Project No.	Project Name	2003 Baseline Budget A	2005 Baseline Budget B	Variance (A-B)	2007 Revised WSIP Budget C	Variance (B-C)	2009 Revised WSIP Budget D	Variance (C-D)	2011 Revised WSIP Budget E	Variance (D-E)	2011-2013 Revised Budget[1] G	Variance (E-G)	2013 Revised WSIP Budget H	Variance (G-H)	2014 Revised WSIP Budget I	Variance (H-I)	2016 Revised WSIP Budget J	Variance (I-J)	2018 Revised WSIP Budget K	Variance (J-K)
CUW36701	HTWTP Long-Term Improvements	$37,391,665	$167,570,000	($130,178,335)	$175,760,181	($8,190,181)	$359,063,409	($183,303,228)	$276,896,409	$82,167,000	$276,896,409	$0	$283,238,337	($6,341,928)	$278,238,337	$5,000,000	$280,238,337	($2,000,000)	$274,081,969	$6,156,368
CUW36702	Peninsula Pipelines Seismic Upgrade	$0	$0	$0	$0	$0	$15,000,000	($15,000,000)	$30,616,959	($15,616,959)	$30,616,959	$0	$42,093,629	($11,476,670)	$42,093,628	$1	$40,298,944	$1,794,684	$38,825,346	$1,473,598
CUW36901	Capuchino Valve Lot Improvements ***(Completed)***	$1,663,210	$3,573,782	($1,910,572)	$3,494,350	$79,432	$2,818,378	$675,972	$2,803,153	$15,225	$2,803,153	$0	$2,803,153	$0	$2,803,153	$0	$2,803,153	$0	$2,803,153	$0
CUW37101	Crystal Springs/San Andreas Transmission Upgrade	$58,169,947	$148,582,655	($90,412,708)	$170,668,718	($22,086,063)	$192,070,722	($21,402,004)	$164,722,000	$27,348,722	$164,722,000	$0	$193,623,446	($28,901,446)	$200,779,600	($7,156,154)	$190,740,623	$10,038,977	$190,309,453	$431,170
CUW37801	Crystal Springs Pipeline No. 2 Replacement	$58,997,400	$93,926,000	($34,928,600)	$68,316,098	$25,609,902	$71,243,333	($2,927,235)	$57,469,321	$13,774,012	$57,469,321	$0	$57,195,477	$273,844	$56,054,876	$1,140,601	$56,152,026	($97,150)	$56,070,509	$81,517
CUW37901	San Andreas Pipeline No. 3 Installation ***(Completed)***	$25,328,100	$42,029,941	($16,701,841)	$46,659,868	($4,629,927)	$31,903,033	$14,756,835	$29,910,051	$1,992,982	$29,910,051	$0	$27,500,388	$2,409,663	$27,495,558	$4,830	$27,495,558	$0	$27,495,558	$0
CUW39101	Baden and San Pedro Valve Lots Improvements ***(Completed)***	$0	$47,319,999	($47,319,999)	$35,403,293	$11,916,706	$27,089,503	$8,313,790	$27,110,368	($20,865)	$27,110,368	$0	$25,052,994	$2,057,374	$25,013,207	$39,787	$24,990,803	$22,404	$24,990,803	$0
CUWPWI	WSIP Closeout - Peninsula ***(New)***	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,890,000	($4,890,000)	$13,579,680	($8,689,680)
San Francisco Regional Region		**$109,366,305**	**$204,092,052**	**($94,725,747)**	**$182,804,822**	**$21,287,230**	**$160,330,360**	**$22,474,462**	**$194,089,200**	**($33,758,840)**	**$194,089,199**	**$1**	**$208,183,000**	**($14,093,801)**	**$221,271,570**	**($13,088,570)**	**$221,271,570**	**$0**	**$246,330,591**	**($25,059,021)**
CUW30103	Regional Groundwater Storage and Recovery	$0	$39,233,443	($39,233,443)	$44,579,270	($5,345,827)	$49,848,731	($5,269,461)	$85,291,731	($35,443,000)	$85,291,730	$1	$100,491,430	($15,199,700)	$113,580,000	($13,088,570)	$113,580,000	$0	$138,793,314	($25,213,314)
CUW35801	Sunset Reservoir - North Basin ***(Completed)***	$44,853,501	$61,975,999	($17,122,498)	$65,922,929	($3,946,930)	$64,334,929	$1,588,000	$64,374,385	($39,456)	$64,374,385	$0	$64,271,570	$102,815	$64,271,570	$0	$64,271,570	$0	$64,270,725	$845
CUW37201	University Mound Reservoir - North Basin ***(Completed)***	$64,512,804	$102,882,610	($38,369,806)	$72,302,623	$30,579,987	$46,146,700	$26,155,923	$44,423,084	$1,723,616	$44,423,084	$0	$43,420,000	$1,003,084	$43,420,000	$0	$43,420,000	$0	$43,266,552	$153,448
Support Projects		**$0**	**$81,347,001**	**($81,347,001)**	**$186,892,911**	**($105,545,910)**	**$189,757,910**	**($2,864,999)**	**$253,945,595**	**($64,187,685)**	**$258,033,901**	**($4,088,306)**	**$255,178,920**	**$2,854,981**	**$256,669,351**	**($1,490,431)**	**$262,203,244**	**($5,533,893)**	**$266,132,754**	**($3,929,510)**
CUW36302 [2]	System Security Upgrade	$0	$0	$0	$9,380,032	($9,380,032)	$9,380,032	$0	$16,667,553	($7,287,521)	$16,667,553	$0	$18,855,409	($2,187,856)	$18,624,873	$230,536	$15,201,312	$3,423,561	$15,201,311	$1
CUW38801	Programmatic EIR ***(Completed)***	$0	$9,271,001	($9,271,001)	$11,086,441	($1,815,440)	$11,086,441	$0	$10,730,307	$356,134	$10,730,307	$0	$10,730,307	$0	$10,730,307	$0	$10,730,307	$0	$10,730,684	($377)
CUW38802	Bioregional Habitat Restoration	$0	$0	$0	$47,281,219	($47,281,219)	$48,146,219	($865,000)	$89,805,677	($41,659,458)	$89,236,983	$568,694	$95,948,775	($6,711,792)	$85,669,741	$10,279,034	$91,801,218	($6,131,477)	$93,341,983	($1,540,765)
CUW38803	Vegetation Restoration of WSIP Construction Sites	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,200,000	($2,200,000)	$2,200,000	$0	$2,200,000	$0	$2,200,000	$0	$2,111,546	$88,454
CUW38804	Long Term Mitigation Endowment											$0		$0	$12,000,000	($12,000,000)	$12,000,000	$0	$12,000,000	$0
CUW39201	Program Management Project	$0	$52,076,000	($52,076,000)	$108,525,251	($56,449,251)	$110,525,250	($1,999,999)	$116,742,058	($6,216,808)	$119,199,058	($2,457,000)	$107,444,429	$11,754,629	$107,444,429	$0	$110,270,407	($2,825,978)	$112,747,230	($2,476,823)
CUW39401	Watershed Environmental Improvement Program	$0	$20,000,000	($20,000,000)	$20,000,000	$0	$20,000,000	$0	$20,000,000	$0	$20,000,000	$0	$20,000,000	$0	$20,000,000	$0	$20,000,000	$0	$20,000,000	$0
Deferred/Cancelled Regional Projects		**$47,580,797**	**$0**	**$47,580,797**	**$3,865,000**	**($3,865,000)**	**$0**	**$3,865,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Regional Program Sub-Total		**$1,656,896,726**	**$3,407,351,000**	**($1,750,454,274)**	**$3,546,503,829**	**($139,152,829)**	**$3,514,026,150**	**$32,477,679**	**$3,310,494,499**	**$203,531,651**	**$3,471,923,344**	**($161,428,845)**	**$3,548,251,038**	**($76,327,694)**	**$3,674,597,919**	**($126,346,881)**	**$3,761,065,661**	**($86,467,742)**	**$3,803,065,661**	**($42,000,000)**
San Francisco Local Program																				
Non-Water Supply Projects		**$301,412,973**	**$383,202,000**	**($81,789,027)**	**$383,202,000**	**$0**	**$368,742,000**	**$14,460,000**	**$360,618,130**	**$8,123,870**	**$360,618,130**	**$0**	**$339,220,100**	**$21,398,030**	**$337,873,220**	**$1,346,880**	**$331,405,476**	**$6,467,744**	**$331,405,476**	**$0**
Water Supply Projects		**$116,441,065**	**$241,403,557**	**($124,962,492)**	**$220,428,918**	**$20,974,639**	**$231,088,110**	**($10,659,192)**	**$281,312,534**	**($50,224,424)**	**$281,312,533**	**$1**	**$281,312,533**	**$0**	**$281,312,533**	**$0**	**$281,312,533**	**$0**	**$281,312,533**	**$0**
Local Projects Sub-Total		**$417,854,038**	**$383,202,000**	**$34,652,038**	**$383,202,000**	**$0**	**$599,830,110**	**($216,628,110)**	**$641,930,664**	**($42,100,554)**	**$641,930,663**	**$1**	**$620,532,633**	**$21,398,030**	**$619,185,753**	**$1,346,880**	**$612,718,010**	**$6,467,743**	**$612,718,010**	**$0**
Regional + Local Program Sub-Total		**$2,074,750,764**	**$3,790,553,000**	**($1,715,802,236)**	**$3,929,705,829**	**($139,152,829)**	**$4,113,856,260**	**($184,150,431)**	**$3,952,425,163**	**$161,431,097**	**$4,113,854,007**	**($161,428,844)**	**$4,168,783,672**	**($54,929,665)**	**$4,293,783,672**	**($125,000,000)**	**$4,373,783,671**	**($80,000,000)**	**$4,415,783,671**	**($42,000,000)**
Financing Cost		**$662,988,000**	**$552,419,000**	**$110,569,000**	**$462,419,000**	**$90,000,000**	**$471,700,000**	**($9,281,000)**	**$471,700,000**	**$0**	**$471,700,000**	**$0**	**$471,700,000**	**$0**	**$471,700,000**	**$0**	**$471,700,000**	**$0**	**$371,991,469**	**$99,708,531**
Program Escalation [3]		**$481,044,000**	**$0**	**$481,044,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Program Management Reserve [4]		**$408,927,000**	**$0**	**$408,927,000**	**$0**	**$0**	**$0**	**$0**	**$161,431,097**	**($161,431,097)**	**$2,253**	**$161,428,844**	**$0**	**$2,253**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Program Total		**$3,627,709,764**	**$4,342,972,000**	**($715,262,236)**	**$4,392,124,829**	**($49,152,829)**	**$4,585,556,260**	**($193,431,431)**	**$4,585,556,260**	**$0**	**$4,585,556,260**	**$0**	**$4,640,483,672**	**($54,927,412)**	**$4,765,483,672**	**($125,000,000)**	**$4,845,483,671**	**($80,000,000)**	**$4,787,775,140**	**$57,708,531**

Notes:

(1) Revisions to project budget funded from Program Management Reserve and approved by Commission between adoption of 2011 Revised WSIP Budget and 2013 Revised WSIP Budget.

(2) In the 2005 Revised WSIP, the System Upgrade project was combined with the SCADA System Phase II project, and the combined project was budgeted under the Bay Division Region. In the 2007 and 2009 Revised WSIP, the System Security Upgrade project was budgeted separately under the Bay Division Region (budgets reflected herein under Support Projects) managed under the Bay Division Region. In the 2011 Revised WSIP and subsequent program revisions, the System Security Upgrade Project was reported under the Support Projects.

(3) Escalation for the 2003 WSIP Budget was estimated at the program level only. Escalation for the 2005, 2007 and 2009 Revised WSIP Budgets was estimated at the project-specific level.

(4) A Program Management Reserve was included only in the 2003 WSIP Budget and the 2011 WSIP Revised Budget.

APPENDIX K

BUDGET DETAIL FOR RGSR AND ACRP

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Budget Detail for RGSR

	Cost in $1000s			
Phase	**2016 Approved Budget**	**2018 Approved Budget**	**2016 vs 2018 Approved Budgets**	**Reasons for Increased Budget**
Regional Groundwater Storage & Recovery (Total)	**113,580**	**138,793**	**(25,213)**	
Project Management	6592	9941	(2,899)	–Additional PM cost due to reflect schedule delay – Greater level of effort for Operations support for start-up and testing than previously estimated.
Planning	2032	2032	–	
Environmental	4,267	4267	–	
Right- of- Way	4,863	4843	20	Remaining budget for ROW capital cost & associated ROW support for land acquisitions
Design	12,371	16231	(3,860)	• Additional design cost for Phase 1 (NaOH storage and feed system modifications, communications & master PLC modifications/implementation, access improvements, automated sampling stations, flow meter conduits/sample lines • Additional cost to research multiple various possible sites for Phase 2 well siting • Additional design cost for 3 new test wells • Consultant services support through design
Bid and Award	471	537	(66)	Reevaluate support costs to bid Phase 2
Construction Management	14300	19446	(5,146)	– Increase cost for backup water connection to Cal Water –Extended CM, engineering and Operations support associated with construction schedule delays on Phase 1 – Additional Phase 1 testing and startup support from CM, engineering and Operations – Additional materials testing costs for Phase 1 – CM oversight of JOCs for sacrificial test well and test water quality –Additional design support during construction, especially for design of NaOH system and remote sampling analyzers, access, and modifications to well stations –Additional environmental construction compliance support –Additional cost for implementation of master PLC
Construction	68308	80939	(12,631)	– Phase 1 trends for addition of NaOH storage and feed systems, water quality sampling station modifications, access improvements, master PLC implementation, extended overhead for startup and testing: ADD $10,075 – Deletion of Phase 2 well stations*, including 10% contingency: DELETE ($8,426) – Reevaluation of cost to build South San Francisco Main well station and pipeline, including escalation not added since 2013: ADD $4,518 – JOCs for 3 new test wells: ADD $1,800 – Add flow meters/transducers: ADD $800 – Improvements to Phase 1 wells to be implemented in Phase 2 contract: ADD $3,864
Close- Out	376	1006	(630)	Reevaluate support costs for closeout based on final schedule, including escalation costs

* Cost for 2 well stations is based on two 16ths of the March 2013 Approved Budget for construc6tion of 16 well stations(~$60M).

Budget Detail for ACRP

	Cost in $1000s			
Phase	**2016 Approved Budget**	**2018 Approved Budget**	**2016 vs 2018 Approved Budgets**	**Reasons for Increased Budget**
Alameda Creek Recapture (Total)	**$ 29,411**	**$ 34,000**	**$ 4,589**	
Project Management	$ 3,417	$ 4,157	$ 740	Staff, management, and legal costs for recirculation of the EIR
Planning	$ 1,807	$ 1,807	$ -	
Environmental	$ 3,577	$ 4,306	$ 729	Delays in preparation of the EIR and extension of the public comment period.
Right- of- Way	$ -	$ -	$ -	
Design	$ 2,926	$ 4,275	$ 1,349	• Incorporate questions on bid documents received during original advertisement; and repackage, stamp, sign, reproduce and re-advertise bid documents due to EIR appeal • Additional geotechnical work to address erosion issues in Pond F2 • Relocate and design permanent access road into Pond F2 due to erosion issues • Reconfiguration of the barge system design
Bid and Award	$ 100	$ 128	$ 28	Additional bidding process due to EIR Appeal
Construction Management	$ 2,720	$ 3,704	$ 984	Construction management, supplier quality surveillance, engineering support and environmental support for delay in construction contract due to EIR appeal and forecast increase in construction duration.
Construction	$ 14,864	$ 15,623	$ 759	• Construction contract forecast escalation for delay due to EIR re-circulation • Construction and CM forecast cost increases for revised barge configuration, permanent access road, and Hetch Hetchy Power pole installation work
Close- Out	$ -	$ -	$ -	