



HETCH HETCHY
WATER SYSTEM **IMPROVEMENT** PROGRAM

ATTACHMENT 8:

June 2011 Revised WSIP - Project Descriptions



San Francisco Public Utilities Commission

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Introduction

This document includes updated descriptions for all of the Water System Improvement System (WSIP) regional projects as part of the June 2011 Revised WSIP to be considered for approval by the San Francisco Public Utilities Commission (SFPUC) on July 12, 2011.

The project descriptions include the three 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 June 2009 Notice of Change to WSIP report.

Note that most projects have few or no scope refinements, but that in some cases additional detail is provided that reflect the progress made on the design of projects since these descriptions were last published in June 2009. Four (4) projects have more significant scope modifications as indicated in Attachment 7. These projects are:

- Project CUW35302: Seismic Upgrade of BDPL Nos. 3 & 4
- Project CUW39501 Peninsula Pipelines Seismic Upgrade
- Project CUW38802 Bioregional Habitat Restoration, formerly "Habitat Reserve Program"
- Project CUW39401 Watershed & Environmental Improvement Program

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 150-gallon-per-minute, parallel UV units and ancillary facilities. The units will be installed in the existing Thomas Shaft building.
- Two pumps that will pump water from the 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 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 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

The following changes have been implemented to refine the scope described above and have served as the basis for the proposed revisions to the 2011 Revised WSIP Schedule and Cost:

- Deletion of security-related site improvements at Roselle, including related support cost. (Security system components at Roselle Crossover will be installed and integrated as part of the Hetch Hetchy Regional Water System security network by CUW36302 - Security System Upgrade Project.)
- Conclusion of WSIP effort to establish a program of pipelines condition assessment by recapitulation of conditions assessment and findings to date, completion of programmatic permitting for the full scope of pipelines rehabilitation, and procurement of permits for initial condition assessment and repair activities in the SJPL Mapes-Gates reach. (Mapes-Gates permit is to serve as a model for successive rehabilitation projects.)
- Conclusion of WSIP effort to upgrade the existing pipelines cathodic protection system by installation of an electrical isolation joint on SFPL No. 1 at Oakdale Portal in coordination with work there under project CUW373-01, SJPL System, Contract HH935C, Eastern Segment.
- SCADA upgrades at existing SJPL facilities have been limited to that already provided at Roselle Crossover and being provided as part of new facilities work under WSIP project CUW373-01, SJPL System, due to Hetch Hetchy Water & Power (HHWP) determination that an extensive communications system upgrade project is to be performed as part of another program of work prior to any additional SCADA upgrades at SJPL facilities.
- Replacement of a short length of SJPL No. 1 is proposed for replacement at Oakdale Portal in coordination with possible repair work there on SJPL Nos. 2 & 3 and installation of SJPL No. 4 and security upgrades under project CUW373-01, SJPL System, Contract HH935C, Eastern Segment.

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.

Sunol Valley Region

35201, Upper Alameda Creek Filter Gallery (formerly Alameda Creek Fishery Enhancement)

Background

The 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. Additionally, up to 1,200 acre-feet of other pre-1914 water rights historically collected through the Sunol infiltration galleries will also be recaptured under this project.

Description

A Conceptual Engineering Report (CER) has been completed for this project to perform preliminary design of the preferred alternative that was previously selected and approved. This preferred alternative, construction of an in-stream infiltration gallery under Alameda Creek and pumping of recaptured water to San Antonio Reservoir, currently includes the following six project components:

- A filter gallery, including two well screens buried approximately 15 to 20 feet beneath the streambed of Alameda Creek;
- A wet well or storage basin;
- A pump station, named Alameda Creek Pump Station (ACPS);
- A potential water treatment facility, the need for which will be based on the findings from ongoing water quality monitoring and analysis;
- A 1,250-foot-long transfer pipeline between the ACPS and an existing pipeline; and
- Post-construction restoration of Alameda Creek at the project site.

An Alternatives Analysis Report (AAR) has been completed for this project and work is about to be initiated on the Conceptual Engineering Report (CER) Phase. As part of the AAR, several diversion and infiltration alternatives were reviewed. The proposed alternative consists of the construction of an in-stream infiltration gallery under Alameda Creek. A definitive scope will be developed as part of the conceptual engineering work.

Scope Refinements

The following features have been added to the project during the CER phase:

Environmental Restoration within project limits: Since this project is located within Alameda Creek, two major components were added to the project: restoration of the Alameda Creek within the project footprint and mitigation of Alameda Creek outside of the actual project footprint. The onsite restoration and offsite mitigation will ensure that the SFPUC meets it's

environmental stewardship commitments; in addition, it is anticipated that these components will be required in order to obtain permits from the jurisdictional regulatory agencies.

Change infiltration pipe backfill from native material to engineered filter pack: Native material backfill was recommended by the previous consultant. However, the consultant who prepared the CER recommended an engineered filter pack backfill.

Additional Building & Site Improvements: Additional building and site improvements include equipment crane, erosion control/armoring along creek, erosion control at Pond F3 West, security fencing and access control, and relocation of existing quarry drainage facilities in conflict with new road.

Deeper burial of infiltration pipe: The AAR included the infiltration pipes buried shallow below the creek bed at a depth of 5 feet. However, the CER recommends a deeper burial of 25 feet at the interface between the younger alluvium and the Livermore Gravels in order to maximize the performance of the filter gallery.

Larger diameter infiltration pipe: The diameter of the infiltration pipe was increased from 24 to 36 inches diameter in order to increase contact with the water bearing soils.

Addition of fourth pump/motor unit: A fourth pump was added for the ability to have redundancy in pumping capacity and flexibility in future flow rates.

Variable frequency drives (VFDs) and soft start motors: VFDs allow for the ability to ramp up and ramp down pumping rates during periods of uncertain flows in Alameda Creek; soft start motors allows for minimal wear on motors when starting and stopping.

Increased size of Transfer Pipeline from 24" to 36": This is required to accommodate flows from the South Bay Aqueduct should SFPUC decide to add this feature in the future.

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 critical facilities to allow these facilities to remain in operation during power outages and other emergencies.

Description

Standby power requirements are provided at six 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 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 locations.

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- Harry Tracy Water Treatment Plant (HTWTP): standby power improvements include removing the four existing, smaller emergency generators and providing two 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 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 18,300 feet long and have a horseshoe shape with excavated dimensions of approximately 12 feet by 14 feet. The final tunnel lining will be mortar-lined, welded steel pipe in lieu of a slip-lined concrete liner as previously reported, resulting in a finished diameter of approximately 8.5 to 10.5 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 20% complete. Major project elements include:

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

Potentially contaminated spoils will be screened, separated, and if found to contain contaminants, hauled to a permitted landfill.

- The Contractor has elected to not mine a short, starter tunnel near the Irvington Portal as shown in the contract plans. Instead, this section of the new tunnel will be mined as part of the westward tunnel heading from Vargas Shaft. This will reduce the number of truck trip impacts for residents at Irvington Portal to haul tunnel spoils from this site.
- At the Irvington Portal, the tunnel will be connected to Bay Division Pipeline (BDPL) Nos. 1, 2, and 5 and to BDPL Nos. 3 and 4. Control valves will be directly buried with instrumentation and electrical gear in a small control building. At the Alameda West Portal, the tunnel will be connected to the discharge of the new mixing manifold to be constructed as part of the Alameda Siphons No. 4 Project and to the existing overflow shaft. The project includes a new isolation valve between the mixing manifold and the portal.
- The NIT Project will include construction of a new access bridge across Alameda Creek to accommodate temporary construction traffic and on-going SFPUC Alameda West Portal operations.
- A Groundwater Management Program has been developed that includes two years of pre-construction monitoring of wells, springs, creeks, ponds, and wetlands; environmental habitat construction mitigation measures; and two years of monitoring after construction to minimize the impact to the local groundwater.
- At both the existing Irvington and Alameda West Portal facilities, other security-related site improvements will be constructed, including undergrounding of portal structures and new card access controlled gates and security fences.

Scope Refinements

Construction tunneling methods have been refined. The final tunnel lining will be mortar-lined, welded steel pipe in lieu of a slip-lined concrete liner as previously reported. In lieu of a short starter tunnel at Irvington Portal, this section of tunnel will be mined as part of the westward tunnel heading from Vargas Shaft. The existing bridge across Alameda Creek will be replaced under the project rather than just being improved.

35902, Alameda Siphon # 4

Background

This project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals. The three 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 No. 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.

This project is currently in construction and is approximately 85% complete. The project primarily consists of:

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

Scope Refinements

The scope for modifications to the Alameda Creek Bridge has been moved to the New Irvington Tunnel Project. The overflow to the existing quarry will include a grouted rock riprap channel down the side of the quarry for erosion protection.

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

The project has been separated into the three 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 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 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 Game (CDFG) 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.
- The existing spillway will be removed, and a new spillway and stilling basin will be constructed. The overflow weir of the new spillway will be 307 feet long. The spillway will vary from 60 to 80 feet wide and will be 1,100 feet long. The stilling basin below the spillway will be 80 feet wide and 155 feet long.
- A new intake tower and shaft will be constructed. The drain line and three adits from the existing facility will be connected to the new shaft. The existing outlet conduit from the tower will be extended 1,100 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.

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- The new bypass tunnel and valve to be installed 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.
 - An approximately 1,000-foot long fish ladder will be added on the right abutment (looking downstream) of the ACDD, and fish screens will be added at the entrance of the ACDT.
 - The existing dam will largely remain in place. The downstream face will, however, be partially removed and regraded and a channel will be excavated through the dam to form the approach to the new spillway.

Scope Refinements

The revised project includes installation of a fish ladder at the ACDD, fish screens at the entrance of the existing ACDT, and fish screens at the entrance of the existing adits to the intake tower at Calaveras Dam.

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 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 6,410 feet of 66-inch-diameter steel pipe and extends from the Alameda Siphons at the SAPS to Sunol quarry, SMP-24, near the intersection of Calaveras Road and San Antonio Creek. There are three tie-in facilities with air gap provisions from the SABPL: one connecting to Alameda Siphon No. 3, a second to the SAPL near SAPS, and a third to the SAPL on the west side of Calaveras Road before the SAPL alignment turns and heads west to quarry SMP-24. The alignment of the SABPL parallels that of the existing SAPL, terminating with a control valve and concrete energy dissipation structure to quarry SMP-24. The project includes new chemical storage, feed and water quality monitoring facilities for dechlorination 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. Construction of a slurry wall is included around the quarry pond to minimize groundwater intrusion and to ensure slope stability.

Scope Refinements

In order to safely discharge water into the SMP-24 quarry pond, an energy dissipation concrete structure needs to be installed on the slope of the pond to receive the discharge. In order to meet water discharge permitting criteria, water discharged into the SMP-24 quarry pond will be required to be recovered (versus discharged into Alameda Creek) to allow free board for the next discharge event. Two submersible pumps will be installed along side the energy dissipation structure, and recovered water will be conveyed through a short section of 24-inch-diameter steel pipe which will connect with existing plumbing to convey the recovered 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.

Because of expected rapid changes in water elevation in the pond (particularly upon discharge) and because of the need to minimize groundwater intrusion and to ensure slope stability, a slurry wall will be constructed around the quarry pond.

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 will increase the sustainable capacity to 160 mgd, include the addition of a new flocculation/sedimentation basin and the retrofit of six of the twelve existing filters. Design of improvements to the remaining six filters will be performed under the project, and will be included as an optional bid item in the construction contract.
- A single 17.5-million-gallon (mg) circular TWR will be constructed together 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 will be hauled to a disposal site immediately east of the plant for disposal.
- New chemical storage and feed facilities for disinfection will be constructed including sodium hypochlorite and ammonia. New fluoride facilities will also be provided.
- Construction of approximately 2,700 feet of 78-inch-diameter pipe will connect the new TWR to the existing plant discharge pipeline. This will include a tunneled crossing of Alameda Creek.
- Miscellaneous plant improvements will include a new emergency generator and improvements to the plant electrical system and substation, an upgrade of the instrumentation and controls, a new filter washwater recovery basin, improvements to the flow distribution structure and associated facilities, and improvements to the influent chemical mixing system.

Scope Refinements

Scope Refinements include the following:

- Upgrade all 12 existing filters instead of 6 existing filters as originally planned during the design. This upgrade will provide an additional factor of safety for reliable and sustainable production of 160 mgd required to meet the LOS goals established for the system.
- Replace 9 existing chemical tanks and associated electrical and instrumentation components. The 9 existing chemical tanks and the associated electrical and instrumentation have reached the end of their useful life and are in jeopardy of failure. It was found to be prudent and more cost effective to perform that work under this project instead of performing the improvements under the Water Enterprise Capital Improvement Program (CIP).
- Replace approximately 13,000 feet of existing chemical feed lines and leak detection system from the chemical feed pumps to plant influent structure. These lines have reached the end of their useful life and have required multiple leak repairs over the last few years. This work is needed to ensure continued operation of the chemical feed system.
- Replace the electrical panels and motor control centers (MCCs). This upgrade is needed because the existing units are obsolete and not compatible with the new software upgrades being implemented throughout the regional transmission system.
- Replace the plant's existing boiler. The existing boiler is more than 50 years old, is leaking oil, and is very inefficient.

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- Replace the existing plant access road which is on a steep grade and is more than 50 years old. The road has deteriorated more than expected due to all the construction activities over the past year. A newly paved road is needed to ensure chemical delivery truck can access the plant during rainy conditions.

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

This project is in construction and is approximately 98% complete. The project consists of:

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

Scope Refinements

The project will include complete replacement of the three electric pumps because replacement of pump casings would not carry a manufacturer's warranty, and the cost for full pump replacement was not significantly higher. There are no other scope refinements to this project.

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 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 primarily consists of:

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

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 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 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 300 feet of the new BDPL No. 3 will cross under I-680 in an existing culvert; about 400 feet that crosses the fault will be in a newly constructed concrete vault ("box culvert"); about 150 feet of new pipeline will cross under Agua Fria Creek in a newly constructed culvert; and the remaining new pipeline will be buried. Further ongoing investigation may determine that the underground creek crossing is not required. All new construction will be in the SFPUC's existing right-of-way (ROW).

The project primarily consists of:

BDPL No. 3:

- A new 300-foot-long concrete vault will be constructed under Mission Boulevard near the I-680 Interchange where one fault trace is located. A new 400-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 or 78-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, about 400 feet of 78-inch-diameter welded steel pipe will be installed in an existing, unused culvert.
- For the crossing under Agua Fria Creek, about 150 feet of 78-inch diameter welded steel pipe will be installed in a newly constructed culvert using trenchless methods.
- About 1,450 feet of additional new 78-inch diameter welded steel pipe will connect the existing and new segments between the two vaults, and will be buried.

BDPL No. 4:

- About 400 feet of new 90-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.
- Improvements to BDPL No. 4 at Trace A of the Hayward Fault under I-680.
- Relocation of the following utilities: two Alameda County Water District water pipelines, one Union Sanitary District sewer pipeline, one conduit of AT&T phone lines, and one six-inch diameter PG&E gas pipeline.

Scope Refinements

As part of final design efforts, modeling was performed to assure the design components would perform as anticipated in a design seismic event. During this analysis, it was determined that BDPL No. 4 may be susceptible to failure at Hayward Fault Trace A, located under freeway I-680. This type of failure was deemed to be unacceptable, and thus, the project design has incorporated features to protect BDPL No. 4 against failure at Trace A. In addition to this scope change, the project refined the details for relocation of several existing utilities in the area, including two Alameda County Water District water pipelines, one Union Sanitary District sewer pipeline, one conduit of AT&T phone lines, and one six-inch diameter PG&E gas pipeline. Care is being taken to assure that the design of relocated facilities is compatible with the seismic reliability goals of the system.

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 major Bay Area Water Supply and Conservation Agency (BAWSCA) customer sites.
- Install pressure transmitters, perform piping modifications, and provide communication to SCADA master station at seven existing regulating valves in the City 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 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 now

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 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.

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 proposed 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.

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

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

The assessment identified six reaches of pipe (144 feet total out of 16 miles) that are potentially distressed. During initial investigations, the condition of one distressed pipe segment (Pipe 1558) was determined visually to be particularly deteriorated, and immediate emergency repair was recommended. The project funded and completed emergency repair, using post-tension exterior tendon repair, for this segment. For the other five potentially distressed pipe segments that were identified using electromagnetic survey, and determined to be of lower priority, recommendations were made for future excavation to confirm pipe condition in these areas, and repair if needed. A number of future follow-up investigations were recommended, including monitoring of groundwater acidity for a period of one year in the area of Edgewood Road, and additional excavations of lower priority pipe pieces. Any additional required repairs will be scheduled based on urgency and funded through the Water Enterprise's Repair and Replacement (R&R) Program.

Scope Refinements

There are no scope refinements to this project.

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 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 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 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 No. 2 (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 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 CUW36101 – 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; and/or
- 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 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 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 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 of the ten existing filters (two 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 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.

Scope Refinements

The project scope has been refined to include the following:

- 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.

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 drinking water transmission pipelines that deliver water from the

Harry Tracy Water Treatment Plant (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 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:

- Replacement of about 1,200 feet of SAPL2 at the Serra Fault Crossing;
- Replacement of about 1,050 feet of SAPL3 at the Serra Fault Crossing;
- Replacement of about 900 feet of SSBPL at the Serra Fault Crossing; and
- Replacement of about 1,150 feet of SAPL2 at two locations in the Colma Creek area in sites where there is potential for liquefaction hazard.

Scope Refinements

The scope of this project previously included geotechnical investigations to characterize the Serra Fault in the vicinity of the pipelines, followed by design and construction of improvements at up to two fault crossings. The current project scope has been refined based on findings from these evaluations, and includes pipeline replacement at the locations listed above.

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 pressure-reducing valves located in a vault.

Description

The project primarily consists of replacing two existing isolation valves; providing new electric actuators for valve operation; performing concrete crack repair to prevent water leakage into the vault; providing new instrumentation and control systems for valve operation and pressure monitoring; and relocating the existing electrical and instrumentation systems outside the vault.

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 Crystal Springs/San Andreas (CSSA) Pipeline, and the San Andreas outlet structures.

The project primarily consists of:

- The Upper Crystal Springs Dam includes two 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 No. 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 No. 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.

Scope Refinements

The isolation valves at Upper Crystal Springs Dam were removed from the contract per direction from California Division of Safety of Dams (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 Replacement 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.

37801, Crystal Springs Pipeline No. 2 Replacement

Background

The project is provided in response to the Seismic Reliability and Delivery Reliability LOS goals. 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 creek crossings, providing a new connection at the CSPS, and providing a connecting segment with a blind flange for later connection to the New Crystal Springs Bypass Tunnel (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

The major project elements include:

- Installation of 4.4 miles of 36-inch-diameter pipe with three bore-and-jack street crossings along 19th Avenue and John Daly Boulevard.
- Installation of five service connections.
- Installation of one altitude valve at Merced Manor Reservoir, six isolation valves, and a flow meter.
- Installation of a new cathodic protection system.
- Installation of three 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 new isolation valves, replacement of three existing valves, seismic retrofit

of eight existing vaults, replacement of onsite piping segments, replacement of the existing electrical switchgear and transformer, replacement of three pumps, installation of variable frequency drives, and other miscellaneous improvements.

- The San Pedro Valve Lot improvements include seismic retrofit of two 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 isolation valve.
- The Pulgas Tunnel Air Shaft improvements include site work to stabilize slopes.

Scope Refinements

There are no scope refinements to this project.

San Francisco Regional Region

30103, Regional Groundwater Storage and Recovery (formally Groundwater Project - South Westside Basin Conjunctive Use)

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 project includes construction of 16 groundwater wells with a total capacity of 7.2 mgd. Each of the wells will 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

Scope refinements includes the addition of 5 treatment facilities for potential manganese removal (serving 7 wells stations); addition of pH adjustment facilities for 3 wells and fluoridation for 8 wells; addition of secondary containment for chemical delivery vehicles; and changes to well station connections at 9 sites.

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 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

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 provided in response to the Seismic Reliability and Delivery Reliability LOS goals. The University Mound Reservoir is one of three 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 (formally System-Wide Region)

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 Homeland 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. This project will however fund the installation/construction of security upgrades at two valve lots, one reservoir, and the control server locations.

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

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

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 27 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 former Habitat Reserve Program 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 Habitat Reserve Program would include projects to preserve, enhance, restore, or create approximately 1,435 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.

Current determinations of project compensations by regulating agencies have resulted in changes and refinements to the project scope. The project's name has been changed to Bioregional Habitat Restoration Project to better reflect the objectives of the project. The updated project description includes development of compensation sites to preserve, enhance, restore, or create approximately 2,375 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, and establishment of a long-term maintenance endowment account.

The wide variety of the types of impacts from WSIP projects resulted in the need for development of 20 compensation sites on SFPUC property and contracting with 7 property owners to secure compensation on property outside the Alameda and Peninsula watersheds. There are 9 compensation sites on SFPUC property in the Alameda watershed with an average size of 225 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. The increase in the quantity of habitat compensation lands planned in 2011 versus 2007 includes over 900 acres. The significant increases are in Tidal Marsh (+301 acres), Oak Woodlands (+205 acres), Riparian Woodlands (+26 acres) and Grasslands (+427 acres).

39401, Watershed Environmental Improvement Program

The Watershed Environmental Improvement Program (WEIP) includes the comprehensive identification of critical watershed lands and ecosystem restoration needs within the hydrologic boundaries of the Alameda Creek, Peninsula (San Mateo and Pilarcitos Creeks) and Tuolumne

River watersheds, and prioritizes the protection and/or restoration of these lands. This program will manage watershed activities and resources to protect source water quality, native species and their habitat; and identify critical watershed lands, key ecosystem restoration needs and restoration priorities.

In 2007, two potential projects were identified: Repair or Replacement of Niles Gage on Alameda Creek and Watershed Road Management Plan and Improvements. After extensive project research and planning, the project's focus has shifted away from these two potential projects, and instead towards permanently protecting Alameda Creek watershed lands through conservation easements and/or fee title purchase of property from willing landowners. Under the new approach, there will be no construction work to be funded under this project.

Scope Refinements

The previous project scope identified two potential projects. However, the program's focus has shifted to Change from two projects to permanently protecting Alameda Creek Watershed lands through conservation easements and/or fee title purchase of property from willing landowners.