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

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July 11, 2018

Angela Calvillo
Clerk of the Board
1 Dr. Carlton B. Goodlett Place
City Hall, Room 244
San Francisco, CA 94102-4689

Dear Ms. Calvillo:

Please see the enclosed Certificates as required under 2002 Proposition E related to the following bond authorizing legislation:

- Wastewater Enterprise: File No. 180452 and Board of Supervisors Ordinance No. 0144-18

Should you have any questions, please do not hesitate to contact me.

Best regards,

Richard Morales
Debt Manager
Tel: 415-551-2973

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

Certificate of the Consulting Engineers
in connection with Section 8B.124 of the Charter of the City and County of San Francisco and the Indenture of the San Francisco Public Utilities Commission (SFPUC)
authorizing the Sale of Wastewater Revenue Bonds and / or Other Forms of Indebtedness, including Commercial Paper and State and Federal Loans

This Certificate has been prepared by AECOM Technical Services, Inc., (AECOM), an independent counsulting firm, at the request of the San Francisco Public Utilities Commission (SFPUC) in connection with the issuance by the SFPUC of its Wastewater Revenue Bonds and/or other forms of Indebtedness, including Commercial Paper and State and Federal loans.

Proposition E requires certification by an independent consulting engineer that, among other things, "(i) the Projects to be financed with proceeds of bonds under Proposition E, including the prioritization, scheduling and cost estimates thereof, meet generally accepted utility standards."

Section A below includes projects in the Sewer System Improvement Program (SSIP) and other portions of the Wastewater Enterprise's capital program, and certifies that (i) the anticipated projects to be financed by the proposed Revenue Bonds and/or Commercial Paper Notes (the "Notes"), or State and Federal loans including the prioritization, cost estimates and scheduling, meet generally accepted utility standards.

The findings and conclusions in this Certificate are based on AECOM's review of the following Documents, references and data provided by the SFPUC:

- Wastewater Enterprise Capital Improvement Program Quarterly Report – (Q3, FY2017-18), dated May 15, 2018.
- Wastewater Enterprise Revenue Bonds and Other Forms of Indebtedness – FY 2018-19 and FY 2019-20 Capital Improvement Projects (Attachment A, as included with the Environmental Planning Certification date June 26, 2018).
- Discussions with SFPUC staff.

1. Based upon its review of the Documents and in reliance on the information presented in the Documents, references and data, and in reliance upon conversations and representations of SFPUC staff, the undersigned certifies that the Projects, including prioritization, cost estimates, and scheduling, meet generally accepted utility standards.

2. The Documents contain information about the current status of the Projects, including estimated completion dates and the cost of completion of such Projects.

While developing the Certificate, AECOM reviewed the Documents, references and data and consulted with SFPUC staff. This Certification of the CIP is based on the information provided by the SFPUC. The conclusions and observations contained herein constitute only the opinions of AECOM. The various background documents, statements, and other information supplied by the SFPUC, its employees, and other consultants have been relied upon as being accurate in the performance of these analyses;

however, no assurances are given nor warranties implied by AECOM as to the accuracy of such information. AECOM makes no certification and gives no assurances except as explicitly set forth in this document.

SECTION A: CERTIFICATION OF SSIP AND WF&I

AECOM's review of the Documents, references and data for Section A included a "programmatic approach" such that AECOM certifies that the revenue bonds and/or commercial paper proceeds or state or federal loans are intended to be used by the SFPUC to fund the capital projects included in the Wastewater Enterprise's SSIP and other portions of the Wastewater Enterprise's capital program . Projects may be moved on or off the CIP list, modified, delayed or accelerated as necessary due to scheduling, budgeting, or other constraints.

Based upon our review of the Documents, references and data provided by the SFPUC, AECOM certifies that the projects to be financed by the revenue bonds and/or commercial paper program, as identified in the Wastewater Enterprise's SSIP and WF&I Program including the prioritization, cost estimates and scheduling, meet generally accepted utility standards.

Dated this 11th day of July, 2018

AECOM Technical Services, Inc.

By: _____

Derrick Wong, P. E.
Assoc. Vice President

REGISTERED ENGINEER
DERRICK H. WONG
C 054739
Exp. 12/31/17
CIVIL
STATE OF CALIFORNIA

Attachment A
Wastewater Enterprise Revenue Bonds and Other Forms of Indebtedness
FY 2018-19and FY 2019-20 Capital Improvement Projects

SCHEDULE I

Estimated Completion Date and Cost of Construction of Project

Reference the following:

- Attachment A for the list of projects
- Wastewater Enterprise Capital Improvement Program Quarterly Report – (Q3, FY2017-18), dated May 15, 2018 for the estimated completion date and project costs

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DATE: May 15, 2018

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

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

RE: Wastewater Enterprise Capital Improvement Program
3rd Quarter/ Fiscal Year 2017-2018

Enclosed please find the Wastewater Enterprise Capital Improvement Program (CIP) Quarterly Report for the 3rd Quarter (Q3) of Fiscal Year (FY) 2017-2018. The primary intent of the report is to provide the Commission, stakeholders, and the public, with a status summary of the Wastewater Enterprise Capital Projects, based on the available preliminary data for the period of January 1, 2018 to March 31, 2018.

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

April 2018 Revised SSIP

This quarterly report incorporates all the changes made to the SSIP Phase 1 program as part of the April 2018 Revised SSIP, which was endorsed by the San Francisco Public Utilities Commission on April 24, 2018.

The highlights of this reporting period are stated below:

SEWER SYSTEM IMPROVEMENT PROGRAM (SSIP)

STATUS AND PERFORMANCE SUMMARY

Overall, SSIP Phase 1 is 22.6% complete as of March 2018, which is on schedule and on budget in accordance with the Commission approved revised baseline on April 24, 2018.

As of the end of the reporting period, there is one (1) project in pre-planning, twenty-five (25) projects in planning or design, five (5) projects in bid & award, twenty (20) projects in construction, and nineteen (19) projects in closeout or completed.

PROGRAM UPDATE

The highlights for this reporting period are as follows:

- Completed scope, schedule, and budget project review meetings for 2018 Revised Baseline for Phase 1 projects.

Major program milestones reached during the reporting quarter include:

Planning and Design:

- Completed Final Conceptual Engineering Report (CER) for Folsom Area Stormwater Improvement Project
- Completed 35% design for two (2) projects:
  - Beach and Sansome Street CSD Rehabilitation - Sansome Street
  - 5th, North 6th and Division Street CSD Rehabilitation
- Completed 100% design for five (5) projects:
  - OSP Digester Gas Utilization Upgrade
  - Geary BRT Sewer Improvements Phase 1
  - Mariposa Dry-Weather Pump Station & Force Main Improvements
  - Beach and Sansome Street CSD Rehabilitation - Beach Street
  - Richmond Green Infrastructure

Environmental:

- CEQA (CatEx) was approved for one (1) project:
  - Beach and Sansome Street CSD Rehabilitation - Beach Street

Construction Contracts Advertised:

- Three (3) construction contracts were advertised during this quarter:
  - WW-674, Geary BRT Sewer Improvements Phase 1
  - JOC-59-23, Beach and Sansome Street CSD Rehabilitation - Beach Street
  - WW-627, Richmond Green Infrastructure

Construction Contracts Awarded:

- One (1) project was awarded during this quarter:
  - WW-657R, Drumm and Jackson Streets Sewer System Improvement

Construction Notice to Proceed (NTP) Issued:

- Issued construction NTP for one (1) contract:
  - WW-657R, Drumm and Jackson Streets Sewer System Improvement

Construction Substantial Completion Issued:

- Achieved Substantial Completion for three (3) contracts:
  - WW-614, NPF Outfall System Rehabilitation
  - WW-610R, Rutland Sewer Improvements
  - WW-653, Marin Street Sewer Replacement

Construction Final Completion Issued:

- Achieved Final Completion for two (2) contracts:
  - WW-614, NPF Outfall System Rehabilitation
  - WW-610R, Rutland Sewer Improvements

Project Completion:

- None

UPDATE ON PROJECTS IN PRE-CONSTRUCTION

Treatment Plant Projects:

- City Planning certified the EIR, and the Commission approved the SEP Biosolids Digester Facilities project, adopted the EIR findings and Mitigation and Monitoring Reporting Program, and authorized the General Manager to proceed with construction. Commenced 95% Design for SEP Biosolids Digester Facilities Project
- Commenced 95% design for North Shore Pump Station Wet Weather Improvements Project
- Continued design phase for SEP Seismic Reliability and Condition Assessment Improvement Project, SEP Power Feed Project and Primary Switchgear Upgrades Project, and OSP Odor Control Optimization Project
- Continued working on Final Design for Westside Pump Station Reliability Improvements

Central Bayside System Improvement Project (CBSIP):

- Finalize review of 35% Design technical memorandums, including the 35% Design cost estimate
- Continued working on the Draft Initial Study for the EIR

Collection System:

- Continued working on draft CER for Kansas and Marin Streets Sewer Improvements and Cargo Way Sewer Box Odor Reduction
- Finalizing 35% Design for the pilot block in Better Market Street Sewer Improvements project

Stormwater Management:

- Finalize CER for Yosemite Green Infrastructure with comments from San Francisco Recreation and Parks Department (SRFPD)

Flood Resilience:

- Completed Conceptual Engineering Report and received approval from the Technical Steering Committee for Folsom Area Stormwater Improvement Project. To commence environmental phase next quarter

UPDATE ON PROJECTS IN CONSTRUCTION

SEP 521/522 and Disinfection Upgrades (SEP Building 521 Replacement):
Continued the installation of hydraulic lines to the (2) new hydraulic control panels at existing Post-Chlorination Building (SEP 521) and the Terra Cotta panels at the exterior of new disinfection structure (SEP 522). Contractor also installed overhead conduit for power, signal and controls to the various electrical panels inside SEP 522. Project team continued excavating soils and installing RCP drain piping at the SEP 522 & W3 Pump station (SEP 920) areas. Contractor installed above ground W3 piping, airlines and related valves at SEP 920 and installed sample pump pipe assemblies inside the PDS channels at SEP 521. They also replaced (E) wood stop logs with (N) pre-cast concrete sections at the SEP 540 Effluent Structure area and mounted the (2) new HVAC Units a top the roof of SEP 522. Factory witness re-testing of the SEP 522 MCCs were approved on 3/23/18.

SEP Existing Digester Gas Handling Improvements:
Completed testing of HVAC Equipment, Gas Compressor Replacements (SEP 620 & 680), Wireless Notification System (SEP 800), Boiler No. 3 burner and control panel, Cooling Water & Water Booster Pumps (SEP 810), and factory witnessed testing of CPAS Control Panel. Project team also completed coating of new sludge blending tank (SEP 780) and Digester 8 and 9 piping modifications. Completed training on HVAC Equipment, Gas Compressor Replacements, and Boiler No. 3 burner and control panel. Commenced installation of replacement waste gas piping between SEP 740 and SEP 821 and installation of cover at sludge blending tank (SEP 780).

SEP Primary and Secondary Clarifier Upgrades:
Completed installation of tank cover ducts and supports for Primary Sedimentation Tanks. Completed demolition of motor control center (MCC) in building SEP-260. Completed electrical system cutover for Secondary Clarifier Nos. 9 to 16. Completed installation and testing of wiring between Substation 2B and the MCC in SEP-042. Communication functional test of Dilution Exhaust Fan control panel was performed on 3/20/18. Punchlist walk-thru for electrical work was held on 3/21/18.

WWE Capital Improvement Program (CIP)
None of the projects is under construction; forecast completion by June 2018.

WWE Facilities and Infrastructure Program

Project Status Reports for five (5) current projects, including one (1) project in construction, two (2) projects in design and two (2) projects in planning.

WWE Renewal and Replacement (R&R) Program

On-going construction of forty (40) Collection System projects and nineteen (19) Treatment Facilities projects.

Triple Bottom Line (TBL) Report

None completed in this quarter.

Enclosure

San Francisco
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Services of the San Francisco Public Utilities Commission

QUARTERLY REPORT

Wastewater Enterprise Programs

January 2018 – March 2018

Published: 05/15/2018

Quarterly Report

Wastewater Enterprise Programs

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I. Sewer System Improvement Program

1. PROGRAM DESCRIPTION

The responsibilities of the San Francisco Public Utilities Commission (SFPUC)'s Wastewater Enterprise (WWE) are to manage, operate, and maintain San Francisco's wastewater collection and treatment system. San Francisco's sewer system collects, conveys, and treats both dry and wet weather (urban stormwater) flows.

The Sewer System Improvement Program (SSIP) is the SFPUC's wastewater capital improvement program which includes multiple projects to improve the existing system. The SSIP is the culmination of several years of wastewater system planning efforts, public meetings, and SFPUC Commission workshops, to develop proposed improvements to address the following challenges:

1. Aging infrastructure and the poor condition of existing facilities.
2. Seismic deficiencies and lack of structural integrity.
3. Limited operating flexibility and lack of redundancy.
4. Compliance with operational permits at all times including.
5. Managing stormwater in San Francisco's eight urban watersheds.
6. Optimizing system performance and efficiency.
7. Protecting public health, the environment, and conservation goals to safeguard our natural and human environments, and
8. Compliance with the Commission's Environmental Justice and Community Benefits Policy.

The purpose of the SSIP is to upgrade the existing wastewater system so it can meet the challenges of today and the future. The implementation of the SSIP projects and their associated expenditures will be phased over twenty (20) years in an effort to maintain ratepayer affordability and minimize impacts to our communities throughout the City.

In February 2011 the SFPUC Commission directed staff to proceed with the procurement of a program management consultant to assist City staff with the implementation of the SSIP. The AECOM-Parsons Joint Venture was selected and the Program Management Consultant (PMC) team began work on September 6, 2011. The first major task for the PMC was to develop a recommended Program, collectively known as Program Validation. This effort was completed by the PMC and City staff recommending the scope, schedule, and budget of the SSIP treatment and collection system projects, as well as revisions to the SSIP Goals and Levels of Service (LOS). On August 28, 2012, after a series of three public SSIP workshops, the SFPUC Commission officially endorsed the proposed projects in the $6.933 billion 20-year SSIP and the associated Goals and Level of Service and also authorized staff to proceed with planning and development of projects within Phase 1 of the SSIP, representing $2.7 billion.

Subsequently in October 2015 the PMC was assigned to work on refining program scope, budget and schedule based on newly available information and various constraints and challenges. The effort included project re-prioritization, scope refinement, budget re-alignment and schedule re-alignment. The refinement was completed in January 2016 and presented to the SFPUC Commission on March 22, 2016. The refined program scope and budget for $6.976 billion along with the Goals and LOS for all three phases of the SSIP was endorsed by the Commission along with the baseline for scope, schedule and budget for Phase 1 projects totaling $2.910 billion. The revised program is referred to as the "2016 SSIP Baseline".

The endorsed Goals are stated below:

- Provide a compliant, reliable, resilient, and flexible system that can respond to catastrophic events;
- Integrate green and grey infrastructure to manage stormwater and minimize flooding;
- Provide benefits to impacted communities;
- Modify the system to adapt to climate change;
- Achieve economic and environmental sustainability; and

- Maintain ratepayer affordability.

Wastewater System Overview:

The San Francisco wastewater collection and treatment system has been developed over the past two centuries. San Francisco's sewer system dates back to the 1800's when the first sewers were constructed which, at the time, discharged directly into the San Francisco Bay and the Pacific Ocean. The City's major treatment facilities were constructed over several years as part of major capital improvement programs. The existing treatment facilities were built as follows: North Point Facility, 1951; Southeast Plant, 1952; and Oceanside Plant, 1993. The Southeast Plant was enlarged and upgraded to secondary treatment in 1982, and again expanded to treat peak wet-weather flows in 1996.

The Collection System is a network of sewers that collect and transport both sanitary flows and stormwater runoff. The system is designed to take advantage of the City's natural topography wherever possible to maximize the benefits of gravity flow for the collection, transport, treatment, and discharge of wastewater and stormwater. Ninety-two percent of San Francisco is served by a combined sanitary and stormwater system that consists of 24,800 manholes, 25,000 catch basins, 27 pump stations, and approximately 1,000 miles of sewers ranging from 8 inch diameter pipes to large transport structures measuring up to 45 feet deep by 25 feet wide. Flows are conveyed from the collection system through the transport/storage boxes, to two centralized all-weather treatment plants, located in the southeast and southwest sections of the City respectively, the Southeast Water Pollution Control Plant (SEP) and the Oceanside Water Pollution Control Plant (OSP). During wet weather additional flows are conveyed to our wet-weather facility, located in the northeast section of the City, the North Point Wet-Weather Facility (NPF). The collection system storage capacity is over 200 million gallons, comprised of predominantly grey infrastructure at this time. Existing collection system components include:

- Large Sewers*, Tunnels and Odor Control
- Pump Stations and Force Mains
- Transport/Storage Boxes, and
- Combined Sewer Discharge (CSD) Structures

* Large sewers are sewers greater than 36-inhces in diameter (or equivalent size).

The broad components of the wastewater treatment plant facilities include:

- Liquid treatment processes;
- Solids treatment processes; and,
- Deepwater outfalls, located in the San Francisco Bay and Pacific Ocean.

Operating a combined system, WWE treats both sanitary sewage and urban stormwater – commonly referred to as wastewater. The maximum daily treatment capacity of the existing system is 575 million gallons. On an annual basis the system treats approximately 40 billion gallons.

Program Phasing:

The 2016 SSIP Baseline endorsed by the SFPUC Commission is to be implemented in three (3) overlapping phases. A summary of the endorsed Program phases is stated below:

Phase 1: $2,910 million

Planning, environmental review, and final design through proposed construction of projects in the following subprograms:

- Biosolids Digester Facilities Project
- SEP New Headworks
- SEP Improvements
- OSP Improvements
- NPF Improvements
- Interceptors/Tunnels/Odor Control
- Interdepartmental (Collection System)
- Pump Stations and Force Main Improvements
- CSD and Transport/Storage Structures
- Stormwater Management
- Flood Resilience
- Land Reuse

Phase 1 also includes planning through preliminary design for the following projects:

- OSP Condition Assessment Repairs
- Central Bayside System Improvement Project (CBSIP)
- Watershed Stormwater Management
- Flood Resilience

Phase 2: $3,140 million
Final design through proposed construction of the following projects:

- OSP Condition Assessment Repairs
- CBSIP
- Watershed Stormwater Management
- Flood Resilience

Also includes planning, environmental review, and final design through proposed construction of the following projects:

- Demolition of the Existing Southeast Plant Digesters and Southside Renovation
- Southeast Plant Wet-Weather Primary Clarification Replacement
- SEP, OSP, and NPF Seismic and Structural Upgrades
- OSP Grit and Process Upgrades
- NPF Odor, Process and Security Upgrades
- Sewer Improvements
- Interdepartmental (Collection System)
- Pumps and Pump Stations Upgrades
- CSD Structure Improvements and Backflow Prevention

Phase 3: $926 million
Final design through proposed construction for the following projects:

- SEP Process Improvements
- SEP, OSP, and NPF Seismic and Structural Upgrades
- OSP and NPF Grit, Odor and Monitoring Upgrades
- Pumps and Pump Stations Upgrades
- CSD Structure Improvements and Backflow Prevention
- Watershed Stormwater Management

SSIP Phase 1 Revised Baseline:
As reflected in Table 1.1, the SSIP Phase 1 Baseline Budget and Schedule were revised in 2018, and these revisions were approved by the San Francisco Public Utilities Commission on April 24, 2018. The revised program is referred to as the "2018 SSIP Revised Baseline". The 2018 Approved Budget for SSIP Phase 1 is $2,979 million, which is about $68 million higher than 2016 Baseline Budget. The 2018 Approved Program Completion is May 2025, which is 18 months earlier than 2016 Baseline Program Completion.

Refer to Appendix 1 for scope description of all projects in Phase 1.

Table 1.1 SSIP Phase I Program Revision

Program Revision	Commission Approval	Budget ($Million)	Schedule*
2016 (Baseline)	March 22, 2016	$2,910.4	10/30/26
2018 (Latest Approved)	April 24, 2018	$2,978.7	05/01/25

* Final Program Completion Date

2. PROGRAM PHASE 1 STATUS

Figure 2.1 shows the total Current Approved Budget for the SSIP Phase 1 projects remaining in each phase of the program as of March 31, 2018. The number of projects currently active in each phase is shown in parentheses.

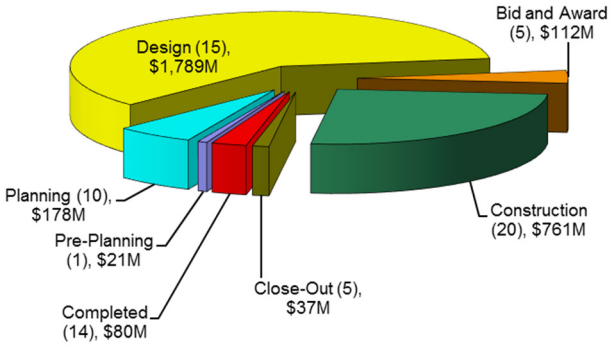

Figure 2.1 Total Current Approved Budget for Projects Active in Each Phase

Figure 2.2 shows the number of SSIP Phase 1 projects in the following stages of the program as of March 31, 2018: Pre-construction, Construction, and Post-construction.

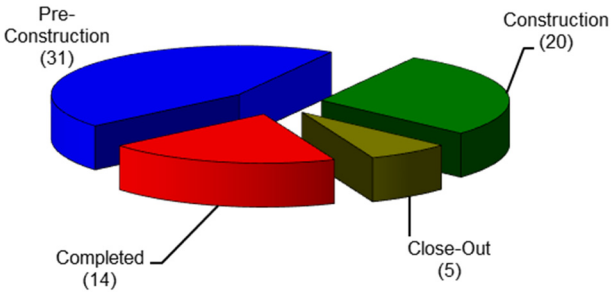

Figure 2.2 Number of Projects in Pre-construction, Construction, and Post-construction

Figure 2.3 summarizes the environmental review and permitting status of the SSIP Phase 1 projects as of March 31, 2018.

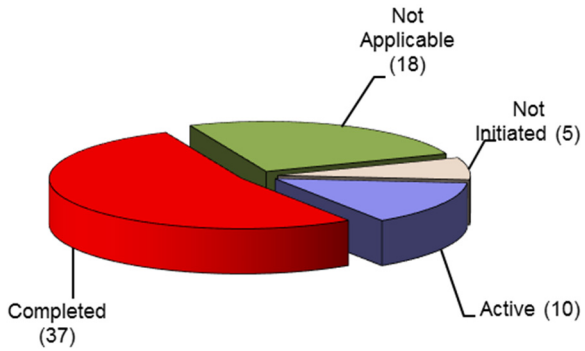

Figure 2.3 Program Environmental and Permitting Status

KEY ACCOMPLISHMENTS

Programmatic

- Completed scope, schedule, and budget project review meetings for 2018 Revised Baseline for Phase 1 projects.

COMMUNICATIONS

In the news

- Eighteen (18) media mentions of SSIP-related projects, including stories on: RainReadySF and deploying flood barriers ahead of rain, Adopt-A-Drain, stormwater runoff fees, opening of the new Griffith Yard, and several stories on the approved upgrades at the Southeast Treatment Plant.
- Over 255,139 impressions were recorded this quarter through social media outlets (Facebook, Twitter, Instagram, YouTube, Nextdoor, and LinkedIn), SSIP webpage views, treatment plant tours, and community meeting attendees.

Outreach

- Held Bayview Arts Masterplan Charrette at the Southeast Community Facility to gather input from stakeholders on themes, location, and metrics of success for public art supported by SSIP in the Bayview on February 2nd.

- Attended the 8th Annual Bayview Black History Month & Lunar New Year Celebration February 3rd to promote Headworks and Biosolids project updates and opening of new Construction Information Hub.
- Presented at Southeast Community Facility's Civic Design Review Committee on Southeast Treatment Plant Power Feed and Primary Switchgear Upgrades Project: Phase #3 on February 12th.
- February 15th hosted an Adopt a Drain VIP volunteer appreciation event at the SFPUC for adopters to pick up supplies, tour the building, and learn best practices from wastewater staff on efficient and safe drain cleaning practices.
- Attended Surfrider Foundation's Message in a Bottle event February 23rd-25th to promote pollution prevention and wastewater projects around San Francisco.
- Celebrated the Grand Opening & Open House of the Southeast Treatment Plant Construction Information Hub February 28th.
- In partnership with WEF, hosted a training under the National Green Infrastructure Certification March 7th-9th.
- Attended Sunday Streets in the Mission March 11th and Excelsior March 25th.
- Invited businesses located near the Southeast Treatment Plant to learn more about upcoming construction at the plant and ways to stay connected at our Headworks Construction Business Briefing March 27th.

3. PROGRAM COST SUMMARY

Table 3.1 provides a summary of the expenditures to date and cost variances for SSIP Phase 1 projects. The authorized SSIP Budget for Phase 1 is $2,979 million and the Current Forecasted Cost (based on the proposed project list shown in Appendix 1) at completion is the same.

Table 3.1 Phase 1 Cost Summary

Proposed Subprograms	Expenditures to Date ($ Million) (A)	Current Approved Budget ($ Million) (B)	Current Forecasted Cost ($ Million) (C)	Cost Variance ($ Million) (D = B - C)
Treatment Plants	**$319**	**$2,251**	**$2,251**	**-**
Biosolids Digester Facilities Project	$113	$1,276	$1,276	-
SEP New Headworks (Grit) Replacement	$35	$419	$419	-
Southeast Plant (SEP) Improvements	$122	$341	$341	-
Oceanside Plant (OSP) Improvements	$29	$140	$140	-
North Point Facility (NPF) Improvements	$21	$75	$75	-
Collection System	**$133**	**$505**	**$505**	**-**
Central Bayside System Improvement Project (CBSIP)	$29	$64	$64	-
Interceptors/Tunnels/Odor Control	$5	$65	$65	-
Interdepartmental Projects	$9	$87	$87	-
Pump Stations and Force Main Improvements	$29	$78	$78	-
CSD and Transport/Storage Structures	$1	$27	$27	-
Stormwater Management	$49	$96	$96	-
Flood Resilience Projects	$10	$88	$88	-
Land Reuse Projects	**$53**	**$98**	**$98**	**-**
Program Management (PM)	**$77**	**$125**	**$125**	**-**
TOTAL SSIP Phase 1	**$582**	**$2,979**	**$2,979**	**-**

4. PROGRAM SCHEDULE SUMMARY

Figure 4.1 compares the 2016 Baseline, 2018 Approved, and Current Forecasted Schedules for the Phase 1 of the SSIP. Refer to the "Cost and Schedule Status" notes in Section 5 for the criteria associated with the three color-coded Forecast Status levels in Figure 4.1 – Meet Requirements, Need Attention, and Exceed Limits.

Overall completion schedule for the revised SSIP Phase 1 projects was approved by the SFPUC Commission in April 2018. The approved schedule completion for the overall SSIP Phase 1 is in May 2025. The current forecasted completion of the SSIP Phase 1 is the same.

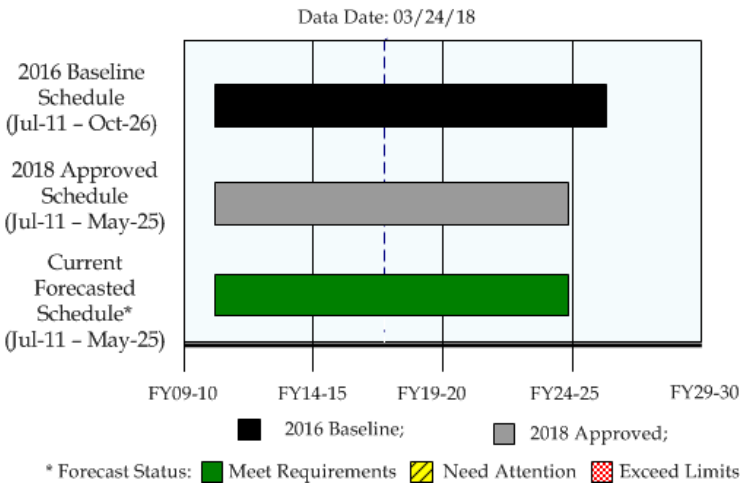

Figure 4.1 SSIP Phase 1 Schedule Summary

5. PROJECT PERFORMANCE SUMMARY*

All costs are shown in $1,000s as of 03/24/18

Project Name	Active Phase (**)	2016 Baseline Budget (a)	‡ 2018 Approved Budget (b)	ǂCurrent Approved Budget (c)	Current Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f = c - d)	Cost Status (+)	2016 Baseline Completion (g)	‡ 2018 Approved Completion (h)	ǂCurrent Approved Completion (i)	Current Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
Treatment Facilities															
Biosolids Digester Facilities Project															
CWWSIPDP01 - SEP Biosolids Digester Facilities Project (BDFP)	DS	$ 1,276,447	$ 1,276,447	$ 1,276,447	$ 1,276,447	$ 112,949	-	★	07/01/11	05/01/25	05/01/25	05/01/25	-	★	See Section 10
New Headworks (Grit) Replacement															
CWWSIPSE02 - SEP New Headworks (Grit) Replacement	CN	$ 358,631	$ 418,835	$ 418,835	$ 418,835	$ 34,932	-	★	03/01/13	09/30/24	09/30/24	09/30/24	-	★	See Section 10
Southeast Plant (SEP) Improvements															
CWWSIPSE04 - SEP Primary and Secondary Clarifier Upgrades	CN	$ 36,016	$ 36,016	$ 36,016	$ 36,016	$ 31,299	-	★	07/01/13	01/21/19	01/21/19	01/21/19	-	★	See Section 10
CWWSIPSE05 - SEP 521/522 and Disinfection Upgrades (SEP Building 521 Replacement)	CN	$ 41,614	$ 41,614	$ 41,614	$ 41,614	$ 33,236	-	★	06/03/13	09/04/19	09/04/19	09/04/19	-	★	See Section 10
CWWSIPSE07 - SEP Facility-wide Distributed Control System Upgrade	PL	$ 62,988	$ 62,988	$ 62,988	$ 62,988	$ 3,689	-	★	02/13/14	08/31/23	08/31/23	08/31/23	-	★	See Section 10
CWWSIPSE08 - SEP Seismic Reliability and Condition Assessment Improvements	DS	$ 53,152	$ 53,152	$ 53,152	$ 53,152	$ 5,036	-	★	06/03/13	09/30/21	09/30/21	09/30/21	-	★	See Section 10
CWWSIPSE09 - SEP Existing Digester Gas Handling Improvements	CN	$ 22,143	$ 22,143	$ 22,143	$ 22,143	$ 11,192	-	★	06/16/14	11/30/19	11/30/19	11/30/19	-	★	See Section 10
CWWSIPSE10 - SEP Power Feed and Primary Switchgear Upgrades	DS	$ 69,841	$ 84,340	$ 84,340	$ 84,340	$ 4,377	-	★	06/23/14	12/30/22	12/30/22	12/30/22	-	★	See Section 10
CWWSIPSE11 - SEP Oxygen Generation Plant 01	CN	$ 9,030	$ 9,850	$ 9,850	$ 9,850	$ 2,445	-	★	04/01/16	11/21/19	11/21/19	11/21/19	-	★	See Section 10

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PL Planning	DS Design
BA Bid & Award	CN Construction

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Project Name	Active Phase (**)	2016 Baseline Budget (a)	‡ 2018 Approved Budget (b)	ǂCurrent Approved Budget (c)	Current Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f = c - d)	Cost Status (+)	2016 Baseline Completion (g)	‡ 2018 Approved Completion (h)	ǂCurrent Approved Completion (i)	Current Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
Treatment Facilities (cont'd)															
Oceanside Plant (OSP) Improvements															
CWWSIPTPOP02 - Westside Pump Station Reliability Improvements	DS	$ 70,500	$ 71,500	$ 71,500	$ 71,500	$ 12,988	-	★	06/13/13	06/30/23	06/30/23	06/30/23	-	★	See Section 10
CWWSIPTPOP03 - OSP Digester Gas Utilization Upgrade	BA	$ 39,688	$ 45,888	$ 45,888	$ 45,888	$ 5,419	-	★	10/01/13	06/04/21	06/04/21	06/04/21	-	★	See Section 10
CWWSIPTPOP05 - OSP Condition Assessment Repairs	CN	$ 15,843	$ 15,843	$ 15,843	$ 15,843	$ 8,908	-	★	07/31/14	06/28/19	06/28/19	06/28/19	-	★	See Section 10
CWWSIPTPOP06 - OSP Odor Control Optimization	DS	$ 5,129	$ 5,129	$ 5,129	$ 5,129	$ 468	-	★	07/31/14	09/23/20	09/23/20	09/23/20	-	★	See Section 10
North Point Facility (NPF) Improvements															
CWWSIPTPNP02 - North Shore Pump Station Wet Weather Improvements	DS	$ 69,803	$ 55,000	$ 55,000	$ 55,000	$ 4,178	-	★	08/15/13	07/30/21	07/30/21	07/30/21	-	★	See Section 10
Collection System															
Central Bayside System Improvement Project (CBSIP)															
CWWSIPCT01 - Central Bayside System Improvement Project - Phase 1	DS	$ 64,000	$ 64,000	$ 64,000	$ 64,000	$ 29,443	-	★	07/02/12	12/31/18	12/31/18	12/31/18	-	★	See Section 10
Interceptors / Tunnels and Odor Control															
CWWSIPCSSR02 - Collection System Condition Assessment	PL	$ 10,912	$ 10,912	$ 10,912	$ 10,912	$ 1,617	-	★	05/09/13	04/09/20	04/09/20	04/09/20	-	★	See Section 10
CWWSIPCSSR03 - Kansas and Marin Streets Sewer Improvements	DS	$ 7,734	$ 17,477	$ 17,477	$ 17,477	$ 2,119	-	★	06/10/13	12/15/21	12/15/21	12/15/21	-	★	See Section 10
CWWSIPCSSR09 - Drumm and Jackson Streets Sewer System Improvement	CN	$ 11,126	$ 8,333	$ 8,333	$ 8,333	$ 1,085	-	★	05/26/15	03/27/19	03/27/19	03/27/19	-	★	See Section 10
CWWSIPCSSR11 - Cargo Way Sewer Box Odor Reduction	PL	$ 6,442	$ 6,442	$ 6,442	$ 6,442	$ 405	-	★	04/13/15	07/12/21	07/12/21	07/12/21	-	★	See Section 10

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Collection System (cont'd)															
Interdepartmental Projects															
CWWSIPCSSR_N03 - Geary BRT Sewer Improvements Phase 2	PL	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 0	-	★	07/01/16	03/30/20	03/30/20	03/30/20	-	★	See Section 10
CWWSIPCSSR04 - Van Ness BRT Sewer Improvements	CN	$ 14,957	$ 21,100	$ 21,100	$ 21,100	$ 1,823	-	★	10/01/13	06/30/21	06/30/21	06/30/21	-	★	See Section 10
CWWSIPCSSR05 - Better Market Street Sewer Improvements - Phase 1	DS	$ 32,405	$ 9,753	$ 9,753	$ 9,753	$ 479	-	★	01/06/14	03/31/22	03/31/22	03/31/22	-	★	See Section 10
CWWSIPCSSR06 - Geary BRT Sewer Improvements Phase 1	BA	$ 17,043	$ 12,900	$ 12,900	$ 12,900	$ 768	-	★	01/06/14	02/12/21	02/12/21	02/12/21	-	★	See Section 10
CWWSIPCSSR07 - Central Subway Sewer Improvements	CN	$ 3,956	$ 3,956	$ 3,956	$ 3,956	$ 2,824	-	★	01/06/14	06/29/18	06/29/18	06/29/18	-	★	See Section 10
CWWSIPCSSR08 - Mission Bay Loop Sewer Improvement	CN	$ 1,794	$ 718	$ 718	$ 718	$ 284	-	★	05/02/14	12/31/18	12/31/18	12/31/18	-	★	See Section 10
CWWSIPCSSR10 - Masonic Avenue Sewer Improvements	CN	$ 3,921	$ 3,921	$ 3,921	$ 3,921	$ 2,302	-	★	10/27/14	12/31/18	12/31/18	12/31/18	-	★	See Section 10
CWWSIPCSSR13 - Taraval Sewer Improvements	DS	$ 20,400	$ 33,136	$ 33,136	$ 33,136	$ 624	-	★	03/14/16	04/09/21	04/09/21	04/09/21	-	★	See Section 10
Pump Stations and Forcemain Improvements															
CWWSIPCSPS02 - Force Main Rehab at Embarcadero and Jackson Streets	DS	$ 5,845	$ 9,909	$ 9,909	$ 9,909	$ 789	-	★	07/07/14	10/29/21	10/29/21	10/29/21	-	★	See Section 10
CWWSIPCSPS03 - Mariposa Dry-Weather Pump Station & Force Main Improvements	BA	$ 28,221	$ 28,221	$ 28,221	$ 28,221	$ 3,559	-	★	07/01/14	06/21/21	06/21/21	06/21/21	-	★	See Section 10
CWWSIPCSPS05 - Marin Street Sewer Replacement	CN	$ 3,926	$ 6,775	$ 6,775	$ 6,775	$ 4,503	-	★	07/01/15	11/02/18	11/02/18	11/02/18	-	★	See Section 10
CWWSIPCSPS06 - Griffith Pump Station Improvements	CN	$ 7,029	$ 14,977	$ 14,977	$ 14,977	$ 2,407	-	★	03/14/16	12/10/19	12/10/19	12/10/19	-	★	See Section 10

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Project Name	Active Phase (**)	2016 Baseline Budget (a)	‡ 2018 Approved Budget (b)	ǂCurrent Approved Budget (c)	Current Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f = c - d)	Cost Status (+)	2016 Baseline Completion (g)	‡ 2018 Approved Completion (h)	ǂCurrent Approved Completion (i)	Current Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
Collection System (cont'd)															
CSD and Transport/Storage Structures															
CWWSIPCSCD01 - Richmond Transport/Storage Tunnel Rehabilitation	PL	$ 4,873	$ 4,873	$ 4,873	$ 4,873	$ 336	-	★	06/01/15	05/13/19	05/13/19	05/13/19	-	★	See Section 10
CWWSIPCSCD03 - Beach and Sansome Street CSD Rehabilitation	DS	$ 2,523	$ 3,150	$ 3,150	$ 3,150	$ 328	-	★	03/14/16	04/30/20	04/30/20	04/30/20	-	★	See Section 10
CWWSIPCSCD04 - CSD Backflow Prevention and Monitoring	PL	$ 15,000	$ 13,617	$ 13,617	$ 13,617	$ 340	-	★	04/01/16	10/01/21	10/01/21	10/01/21	-	★	See Section 10
CWWSIPCSCD05 - 5th, North 6th and Division Street CSD Rehabilitation	DS	$ 4,635	$ 5,390	$ 5,390	$ 5,390	$ 329	-	★	07/01/16	07/13/20	07/13/20	07/13/20	-	★	See Section 10
Early Implementation Projects															
CWWSIPFCDB01 - Sunset Green Infrastructure	CN	$ 10,746	$ 8,439	$ 8,439	$ 8,439	$ 3,940	-	★	12/03/12	09/30/21	09/30/21	09/30/21	-	★	See Section 10
CWWSIPFCDB02 - North Shore Green Infrastructure	CN	$ 2,493	$ 1,905	$ 1,905	$ 1,905	$ 1,351	-	★	12/03/12	12/31/18	12/31/18	12/31/18	-	★	See Section 10
CWWSIPFCDB04 - Sunnydale Green Infrastructure	CN	$ 4,950	$ 4,299	$ 4,299	$ 4,299	$ 3,746	-	★	12/03/12	02/28/19	02/28/19	02/28/19	-	★	See Section 10
CWWSIPFCDB05 - Richmond Green Infrastructure	BA	$ 10,119	$ 12,060	$ 12,060	$ 12,060	$ 2,539	-	★	12/03/12	04/30/21	04/30/21	04/30/21	-	★	See Section 10
CWWSIPFCDB06 - Yosemite Green Infrastructure	PL	$ 12,804	$ 16,050	$ 16,050	$ 16,050	$ 2,530	-	★	12/03/12	04/05/24	04/05/24	04/05/24	-	★	See Section 10
CWWSIPFCDB08 - Channel Green Infrastructure	CN	$ 4,570	$ 3,106	$ 3,106	$ 3,106	$ 1,725	-	★	02/21/14	08/31/18	08/31/18	08/31/18	-	★	See Section 10
Watershed Stormwater Management															
CWWSIPFCDB12 - Wawona St and 15th Ave Stormwater Detention Project	DS	$ 22,710	$ 22,710	$ 22,710	$ 22,710	$ 453	-	★	07/01/16	12/30/21	12/30/21	12/30/21	-	★	See Section 10
CWWSIPFCGI01 - Watershed Stormwater Management (Planning Only)	PL	$ 7,000	$ 7,000	$ 7,000	$ 7,000	$ 814	-	★	07/11/16	12/30/20	12/30/20	12/30/20	-	★	See Section 10

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Project Name	Active Phase (**)	2016 Baseline Budget (a)	‡ 2018 Approved Budget (b)	‡Current Approved Budget (c)	Current Forecasted Cost (d)	Expenditures To Date (e)	Cost Variance (f = c - d)	Cost Status (+)	2016 Baseline Completion (g)	‡ 2018 Approved Completion (h)	‡Current Approved Completion (i)	Current Forecasted Completion (j)	Schedule Variance (k = i - j)	Schedule Status (+)	Project Data Sheet
Collection System (cont'd)															
Advanced Rainfall and Operation Decision System															
CWWSIPFCRP03 - Operational Decision System Phase 2	CN	$ 7,798	$ 8,721	$ 8,721	$ 8,721	$ 114	-	★	07/01/16	06/26/20	06/26/20	06/26/20	-	★	See Section 10
Flood Resilience Projects															
CWWSIPFCDB13 - Cayuga Ave Stormwater Detention Project	PL	$ 8,253	$ 8,253	$ 8,253	$ 8,253	$ 109	-	★	07/01/16	02/28/22	02/28/22	02/28/22	-	★	See Section 10
CWWSIPFCDB14 - Folsom Area Stormwater Improvement Project	PL	$ 36,265	$ 38,411	$ 38,411	$ 38,411	$ 581	-	★	07/01/16	06/01/20	06/01/20	06/01/20	-	★	See Section 10
CWWSIPFCDB15 - 17th and Folsom Permanent Barriers	DS	$ 2,656	$ 2,656	$ 2,656	$ 2,656	$ 125	-	★	04/01/16	07/31/19	07/31/19	07/31/19	-	★	See Section 10
CWWSIPFCDB16 - Hydraulic and Drainage Sewer Improvements	CN	$ 8,584	$ 8,584	$ 8,584	$ 8,584	$ 3,106	-	★	07/01/16	12/31/18	12/31/18	12/31/18	-	★	See Section 10
Land Reuse															
CWWSIPPRPL91 - Land Reuse of 1800 Jerrold Avenue	CN	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 52,655	-	★	09/30/13	02/01/19	02/01/19	02/01/19	-	★	See Section 10
CWWSIPPRPL92 - Land Reuse of 1801 Jerrold Avenue	BA	$ 8,244	$ 8,244	$ 8,244	$ 8,244	$ 500	-	★	09/30/13	08/31/18	08/31/18	08/31/18	-	★	See Section 10

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6. PROJECT NOT WITHIN BUDGET AND/OR SCHEDULE

All projects are within the current approved budget and schedule.

7. On-Going Construction**

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion	Current Forecasted Construction Final Completion*	Approved Contract Cost	Current Forecasted Cost*	Schedule (Cal. Days)	Cost	
New Headworks (Grit) Replacement								
CWWSIPSE02 - Southeast Water Pollution Control Plant New Headworks Facility+	11/15/17	02/05/20	02/05/20	$ 16,515,213	$ 16,515,213	-	-	0.0%
Southeast Plant (SEP) Improvements								
CWWSIPSE04 - Southeast Water Pollution Control Plant (SEP) Primary & Secondary Clarifier Upgrades	03/14/16	02/21/18	07/21/18	$ 25,854,726	$ 25,854,726	(150)	-	99.7%
CWWSIPSE05 SEP 521/522 and Disinfection Upgrades (SEP Building 521 Replacement)	03/07/16	03/01/19	03/01/19	$ 28,223,199	$ 29,870,498	-	($1,647,299)	75.0%
CWWSIPSE09 -Southeast Water Pollution Control Plant (SEP) Existing Digester Gas Handling Improvements	03/20/17	05/18/19	05/18/19	$ 10,897,301	$ 10,902,301	-	($5,000)	76.0%
CWWSIPSE11 SEP Oxygen Generation Plant 01	11/27/17	05/20/19	05/20/19	$ 6,547,000	$ 6,567,325	-	($20,325)	9.0%
Oceanside Plant (OSP) and Westside Pump Station (WSS) Improvements								
CWWSIPTPOP05 - Oceanside Water Pollution Control Plant & Westside Pump Station HVAC Upgrades	07/25/16	06/01/18	06/01/18	$ 6,138,000	$ 6,138,000	-	-	95.5%

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

** This table is reflecting Active construction contract with original contract amount greater than $1M.

\+ $16.5M represent cost associated with Scope I - Site Preparation trade packages this quarter.

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion	Current Forecasted Construction Final Completion*	Approved Contract Cost	Current Forecasted Cost*	Schedule (Cal. Days)	Cost	
Oceanside Plant (OSP) and Westside Pump Station (WSS) Improvements								
CWWSIPTPOP05 - OWPCP Door and Building 930 Exterior and Awning Improvements	03/14/17	10/18/18	10/18/18	$ 3,206,099	$ 3,206,099	-	-	47.4%
Interceptors / Tunnels and Odor Control								
CWWSIPCSSR09 - Drumm & Jackson Streets Sewer Improvements	03/19/18	10/04/18	10/04/18	$ 5,240,900	$ 5,240,900	-	-	1.0%
Interdepartmental Projects * **								
CWWSIPCSSR04 - Van Ness Corridor Transit Improvement Project (sewer only)	01/16/18	01/15/20	01/15/20	$ 14,646,000	$ 14,646,000	-	-	1.0%
CWWSIPCSSR07 - Central Subway Sewer Improvements Phase 1	02/16/15	05/31/18	05/31/18	$ 2,926,000	$ 2,926,000	-	-	99.0%
CWWSIPCSSR10 - Masonic Avenue Sewer Improvements	04/25/16	06/29/18	06/29/18	$ 2,461,242	$ 2,461,242	-	-	98.0%
Pump Stations and Forcemain Improvements								
CWWSIPCSPS05 - Marin Street Sewer Replacement	04/17/17	03/26/18	08/21/18	$ 4,860,250	$ 4,860,250	(148)	-	99.0%
CWWSIPCSPS06 - Griffith Pump Station Improvements	10/16/17	06/07/19	06/07/19	$ 10,941,000	$ 10,941,000	-	-	7.5%

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

** This table is reflecting Active construction contract with original contract amount greater than $1M.

*** Contracts performed under SFMTA/SFPW.

I. SSIP Quarterly Report — Q3-FY2017-2018 (01/01/18 - 03/31/18)

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion	Current Forecasted Construction Final Completion*	Approved Contract Cost	Current Forecasted Cost*	Schedule (Cal. Days)	Cost	
Stormwater Management								
CWWSIPFCDB02 North Shore Green Infrastructure AKA Chinatown Green Alley	08/08/16	06/30/18	06/30/18	$ 415,618	$ 415,618	-	-	40.0%
CWWSIPFCDB04 Visitacion Valley EIP - WW-610R	06/05/17	08/30/18	08/30/18	$ 2,035,337	$ 2,050,055	-	($14,718)	52.0%
CWWSIPFCDB08 - Wiggle Neighborhood Green Corridor	05/15/17	12/30/17	03/30/18	$ 1,170,567	$ 1,068,593	(90)	$ 101,974	96.0%
Flood Resilience Projects								
CWWSIPFCDB16 - Foerster Street Auxiliary and Mangels/ Hearst/ Detroit Sewer Replacement	05/01/17	10/27/17	06/29/18	$ 2,815,700	$ 2,815,700	(245)	-	86.8%

Program Total for On-Going Construction	Approved Contract Cost	Current Forecasted Cost	Variance	
			Cost	Percent
	$ 144,894,152	**$ 146,479,520**	**($1,585,368)**	**(1.1%)**

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

** This table is reflecting Active construction contract with original contract amount greater than $1M.

8. PROJECTS IN CLOSE-OUT

Project Title	2016 Baseline Construction Phase Completion	2018 Approved Construction Phase Completion	Current Approved Construction Phase Completion	Actual Construction Phase Completion	2016 Baseline Construction Phase Budget	2018 Approved Construction Phase Budget	Current Approved Construction Phase Budget	Construction Phase Expenditures To Date
Advanced Rainfall and Operation Decision System								
CWWSIPFCRP01 - Advanced Rainfall Prediction - Part 1	N/A	N/A	N/A	N/A	$ 0	$ 0	$ 0	$ 0
Early Implementation Projects								
CWWLID02/FCDB09 - Islais Creek Green Infrastructure	05/31/19	02/24/18	02/24/18	02/24/18	$ 5,550,300	$ 2,772,661	$ 2,772,661	$ 2,400,490
CWWSIPFCDB03 - Lake Merced Green Infrastructure	07/31/20	12/01/17	12/01/17	12/01/17	$ 4,137,300	$ 3,784,300	$ 3,784,300	$ 3,744,056
Interceptors / Tunnels and Odor Control								
CWWSIPCSSR12 - Rutland Sewer Improvements	10/27/17	01/26/18	01/26/18	01/26/18	$ 1,280,100	$ 1,259,164	$ 1,259,164	$ 0
North Point Facility (NPF) Improvements								
CWWSIPTPNP01 - NPF Outfall System Rehabilitation	02/26/18	03/07/18	03/07/18	03/07/18	$ 11,109,440	$ 13,784,580	$ 13,784,580	$ 12,081,689
TOTAL					$ 22,077,140	$ 21,600,705	$ 21,600,705	$ 18,226,235

9. COMPLETED PROJECTS

Project Title	2016 Baseline Project Completion	2018 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2016 Baseline Project Budget	2018 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
Southeast Plant (SEP) Improvements								
CWWBAE01 - Biofuel Alternative Energy	07/01/11	03/31/16	03/31/16	03/31/16	$ 1,855,143	$ 1,855,143	$ 1,855,143	$ 1,855,143
CWWSIPSE01 - SEP Oxygen Generation Plant	08/23/12	06/10/16	06/10/16	06/10/16	$ 11,781,151	$ 11,135,600	$ 11,135,600	$ 11,135,600
CWWSIPSE03 - SEP Existing Digester Roof Repairs	04/01/13	03/03/16	03/03/16	03/03/16	$ 16,625,297	$ 15,423,413	$ 15,423,413	$ 15,423,413
Interceptors / Tunnels and Odor Control								
CWWSIPCSSR01 - Richmond Transport Modeling	03/25/13	06/30/14	06/30/14	06/30/14	$ 86,883	$ 86,883	$ 86,883	$ 86,883
Pump Stations and Forcemain Improvements								
CWWSIPCSPS01 - Hudson Ave Pump Station and Outfall Improvements	03/31/14	10/31/17	10/31/17	10/31/17	$ 594,000	$ 281,500	$ 281,500	$ 277,859
CWWSIPCSPS04 - Cesar Chavez Pump Station	09/08/14	05/26/16	05/26/16	05/26/16	$ 185,000	$ 179,728	$ 179,728	$ 178,360
CWWSIPNC01 - North Shore to Channel F M Drainage Improvement	05/29/12	06/06/17	06/06/17	06/06/17	$ 29,800,000	$ 17,300,000	$ 17,300,000	$ 17,300,000
Early Implementation Projects								
CWWLID01 - Cesar Chavez Green Infrastructure	04/01/13	06/28/13	06/28/13	06/28/13	$ 1,374,143	$ 1,374,143	$ 1,374,143	$ 1,374,143
Urban Watershed Assessment								
CWWSIPUW00 - Urban Watershed Assessment and Planning Initiation	07/01/11	06/28/13	06/28/13	06/28/13	$ 3,102,671	$ 3,102,671	$ 3,102,671	$ 3,102,671
CWWSIPUW01 - Urban Watershed Assessment and Planning	10/07/11	06/30/17	06/30/17	06/30/17	$ 14,260,844	$ 14,260,844	$ 14,260,844	$ 14,155,141
Advanced Rainfall and Operation Decision System								
CWWSIPFCRP02 - Operational Decision System Phase 1	08/01/13	09/30/16	09/30/16	09/30/16	$ 1,000,921	$ 967,572	$ 967,572	$ 944,709
Flood Resilience Projects								
CWWSIPFCDB07 - 17th and Folsom Wet Weather Storage	04/01/13	05/06/16	05/06/16	05/06/16	$ 1,012,352	$ 898,623	$ 898,623	$ 898,623
CWWSIPFCDB10 - Flood Resilience Analysis (Planning Phase Only)	06/30/15	02/28/17	02/28/17	02/28/17	$ 2,505,999	$ 2,192,288	$ 2,192,288	$ 2,192,288
CWWSIPFCDB11 - Flood Resilience - Early Projects (Planning Phase Only)	10/26/15	12/30/16	12/30/16	12/30/16	$ 5,708,749	$ 3,990,330	$ 3,990,330	$ 2,708,535
TOTAL					$ 89,893,153	$ 73,048,738	$ 73,048,738	$ 71,633,368

10. PROJECTS WITHIN BUDGET AND SCHEDULE (THRESHOLD LIMITS)

CWWSIPDP01 - SEP Biosolids Digester Facilities Project (BDFP)

Description: The project is intended to address the deficiency of the existing medium voltage power distribution system, obtain a second redundant power feed to upgrade the treatment plant and nearby existing pump stations, construct a new primary switching station sized to provide adequate power to new facilities and replace aging unit substations. The project consists of installing a new redundant service from the Potrero substation by the Power Enterprise, upgrading the existing PG&E Hunters Point feed to 12 MW, replacing the existing main switchgear and eleven primary unit substations at SEP. Additionally, it provides an enhanced Energy Monitoring System, and coordination with other SEP projects (Headworks and BDFP).

Program: Biosolids Digester Facilities Project	**Project Status:** Design	**Environmental Status:** Active (EIR)

Project Cost:		**Project Schedule:**	
Approved	$1,276.45	Approved Jul-11	May-25
Forecast*	$1,276.45	Forecast* Jul-11	May-25
Actual	$112.95 M	Project Percent Complete: 11.2%	

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

Key Milestones:	**Environmental Approval**	**Bid+ Advertisement**	**Construction NTP+**	**Construction+ Final Completion**
Current Forecast	08/01/18	N/A	08/01/18	05/01/24

+ The project delivery method for this project is Construction Manager/General Contractor (CM/GC).

Progress and Status:

Project and SFPUC staff are coordinating with EPA staff overseeing the Water Infrastructure and Financing Innovation Act (WIFIA) loan and finalizing the project's loan agreement. The Response to Comments for the project's Draft Environmental Impact Report (EIR) were published on February 23. City Planning certified the EIR on March 8. Soon after on March 13, the San Francisco Public Utilities Commission approved the Biosolids Project, adopted the EIR findings and Mitigation and Monitoring Reporting Program and authorized the General Manager to proceed with construction. Board of Supervisors' approval is anticipated in the next quarter. Design team is proceeding with the 95% design phase. Coordination meetings are being held between the CM/GC, Wastewater Enterprise and design staff to review technical elements, optimize scope of work and discuss constructability and site challenges.

Preliminary Site Layout

Issues and Challenges:

None at this time.

CWWSIPSE02 - SEP New Headworks (Grit) Replacement

Description: This project involves the construction of a new all-weather 250 MGD Headworks facility, consisting of state of the art, screening, grit removal and odor control technologies. The project will include demolishing two existing antiquated Headworks facilities and existing influent lift station. The Headworks facility will install coarse screens, fine screens with washer/compactor units, and high efficiency grit removal and handling units. Also included are upgrades to the Bruce Flynn Pump Station and a new 50 MGD influent pump station. This project is being implemented in following distinct scopes:

Scope I – Site Preparation
Scope II.A – Bruce Flynn Pump Station
Scope II.B/C – Influent Sewer and 50 MGD Southeast Lift Station
Scope III – 250 MGD Headworks and Odor Control Facilities

The new odor control system will comprise of two stage odor treatment to minimize the odor impacts. The project will also improve visual aesthetics of the facility.

Program: New Headworks (Grit) Replacement	**Project Status:** Construction	**Environmental Status:** Completed (MND)

Project Cost:		**Project Schedule:**	
Approved	$418.83 M	Approved Mar-13	Sep-24
Forecast*	$418.83 M	Forecast* Mar-13	Sep-24
Actual	$34.93 M	Project Percent Complete: 8.8%	

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

Key Milestones:	**Environmental Approval**	**Bid+ Advertisement**	**Construction NTP+**	**Construction+ Final Completion**
Current Forecast	05/31/17✓	N/A	(A) 06/24/16✓ (B) 11/15/17✓	(A) 08/25/23 (B) 09/30/24

+ The project delivery method for this project is Construction Manager/General Contractor (CM/GC).
(A) CM/GC Construction (B) Demolition Contract

Progress and Status:

Scope I (Site Preparation) drawings and specifications set completed on 2/16/18. Completed construction of the 10-ft high security fence along Phelps Street, in front of Construction Management trailers. Scope II.A (Bruce Flynn Pump Station Improvements) 100% design package submitted on 3/15/18. Scope II.B/C (SEP-005 Trench Pump Station) Draft Conceptual Engineering Report submitted on 3/28/18. Construction Manager/General Contractor (CM/GC) advertised three of five remaining Scope I (Site Preparation) trade packages (Earthwork & Concrete, Process Piping and Gate/Fencing) on 3/30/18. Scope III (Main Headworks) 95% design is on-schedule to be completed during next quarter.

SEP Headworks Physical Model

Issues and Challenges:

None at this time.

CWWSIPSE04 - SEP Primary and Secondary Clarifier Upgrades

Description: This project will upgrade the mechanical, structural and electrical components at the primary and secondary sedimentation tanks (clarifiers) at SEP to address operational reliability and compliance with regulatory requirements for liquid treatment. The major upgrades taking place at the primary sedimentation tanks include replacing key mechanical and electrical equipment and addressing structural repairs such as concrete repairs and coating seven tanks and influent channel. Covers for the primary sedimentation tanks and ventilation system will also be installed. Similarly, major upgrades for the secondary clarifiers include replacing key equipment and retrofitting existing secondary clarifiers (8 of 16 included in this project). Structural repairs will also be addressed including concrete crack repairs and coating.

Program: Southeast Plant (SEP) Improvements	**Project Status:** Construction	**Environmental Status:** Completed (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$36.02 M	Approved Jul-13	Jan-19
Forecast*	$36.02 M	Forecast* Jul-13	Jan-19
Actual	$31.30 M	Project Percent Complete: 96.0%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	08/31/15✓	09/25/15✓	03/14/16✓	07/21/18

Progress and Status:

Completed installation of tank cover ducts and supports for Primary Sedimentation Tanks. Completed demolition of motor control center (MCC) in building SEP-260. Completed electrical system cutover for Secondary Clarifier Nos. 9 to 16. Completed installation and testing of wiring between Substation 2B and the MCC in SEP-042. SFPUC Commission approved (Resolution 18-0036) for a time extension on 3/13/2018. Communication functional test of Dilution Exhaust Fan control panel was performed on 3/20/18. Punchlist walk-thru for electrical work was held on 3/21/18.

Issues and Challenges:

None at this time.

New Primary Sedimentation Tank Odor Control Covers and Ductwork

CWWSIPSE05 - SEP 521/522 and Disinfection Upgrades (SEP Building 521 Replacement)

Description: This project includes upgrades to the Post-Chlorination Building as well as construction of a new building to house electrical and hydraulic controls, and replacement of valves and actuators in the Chlorine Contact Channel and stop logs at the Effluent Control Structure. The new building for electrical and hydraulic controls will be constructed to meet the SSIP seismic reliability goals. In addition, this project will upgrade and relocate the non-potable (W3) pump system by replacing four existing W3 pumps and motors with six new higher flow capacity pumps.

Program: Southeast Plant (SEP) Improvements	**Project Status:** Construction	**Environmental Status:** Completed

Project Cost:

Approved		$41.61 M
Forecast*		$41.61 M
Actual		$33.24 M

Project Schedule:

Approved Jun-13		Sep-19
Forecast* Jun-13		Sep-19

Project Percent Complete: 78.0%

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

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	08/18/15✓	10/29/15✓	03/07/16✓	03/01/19

Progress and Status:

Contractor continued installing hydraulic lines to the (2) new hydraulic control panels at existing Post-Chlorination Building (SEP 521) and the Terra Cotta panels at the exterior of new disinfection structure (SEP 522). They also installed overhead conduit for power and controls to the various electrical panels inside SEP 522. Contractor continued excavating soils and installing drain piping at the SEP 522 & Plant Water#3 Pump station (SEP 920) areas. Contractor replaced (E) wood stop logs with (N) pre-cast concrete sections at the SEP 540 Effluent Structure area and mounted the (2) new HVAC Units a top the roof of SEP 522. Factory witness re-testing of the SEP 522 Motor Control Center equipment were approved on 3/23/18.

SEP 920 W3 Water Piping, Strainers and Knife Gate Valves

Issues and Challenges:

None at this time.

CWWSIPSE07 - SEP Facility-wide Distributed Control System Upgrade

Description: This project addresses distributed control system (DCS) upgrades within the Southeast Pollution Control Plant (SEP), Oceanside Pollution Control Plant (OSP), North Point Wet Weather Facility (NPF), Channel Pump Station (CHS), Westside Pump Station (WSS), and Bruce Flynn Pump Station (BFS). Under this project, OSP, NPF, and WSS DCS upgrades include planning/design only to ensure system-wide consistency. Both hardware and software upgrades integrating field instrumentation, control devices, communications hardware, processing hardware, interface hardware, and associated software packages into a unified system are required to provide real-time, system-wide monitoring and control. Coordination of monitoring parameters in various systems to reflect geo-spatial relationships will also be required to maintain compatibility and consistency of the input data used for process control.

Program: Southeast Plant (SEP) Improvements	**Project Status:** Planning	**Environmental Status:** Not Applicable

Project Cost:

Approved		$62.99 M
Forecast*		$62.99 M
Actual		$3.69 M

Project Schedule:

Approved Feb-14		Aug-23
Forecast* Feb-14		Aug-23

Project Percent Complete: 8.9%

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

Key Milestones:	Environmental** Approval	Bid+ Advertisement	Construction NTP+	Construction+ Final Completion
Current Forecast	See Note	See Note+	N/A	08/31/22

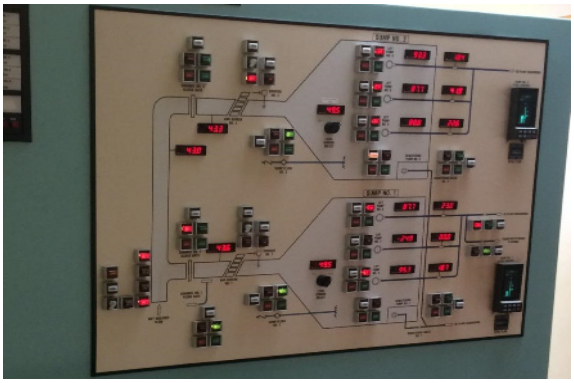
+ The project delivery method for this project is Progressive Design-Build with pre-design/design components.
*** BEM has determined upgrades to the DCS Controls involves primarily computer hardware and software which do not fall within the definition of a "project" under CEQA because there would be no physical change in the environment.*

Progress and Status:

Distributed Control System (DCS) design activities for Bruce Flynn Pump Station (BFS) have been accelerated. Field verification of existing Southeast Water Pollution Control Plant (SEP) process facilities were initiated and will continue throughout the next quarter. The DCS project team continued submittal reviews and coordination efforts with Wastewater Enterprise (WWE) staff and other SSIP project teams.

Issues and Challenges:

None at this time.



Existing pump station panel

CWWSIPSE08 - SEP Seismic Reliability and Condition Assessment Improvements

Description: As part of the condition assessment effort, numerous seismic, conditional and operational issues associated with the existing facilities will require remedial attention before other program projects are completed. This project represents immediate improvements to the existing facilities at SEP identified as part of the condition assessment effort that are not specifically included as part of another near-term SSIP Phase 1 project. This project includes items for rehabilitation such as concrete spalling repair and seismic retrofit of priority process buildings. Seismic retrofit and structural repairs to the Sedimentation Building and channel structures (SEP 530 Contact Channel, SEP 540 Effluent Control Structure, 6' reinforced concrete pipe from SEP 540 to Booster Pump Station, Conduits C/D/E, SEP 525 Box Channel, and 9' reinforced concrete pipe to Junction Structure #5) will be completed.

Program: Southeast Plant (SEP) Improvements	**Project Status:** Design	**Environmental Status:** Completed (CatEx)

Project Cost:

Approved	$53.15 M
Forecast*	$53.15 M
Actual	$5.04 M

Project Schedule:

Approved	Jun-13	Sep-21
Forecast*	Jun-13	Sep-21

Project Percent Complete: 9.9%

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

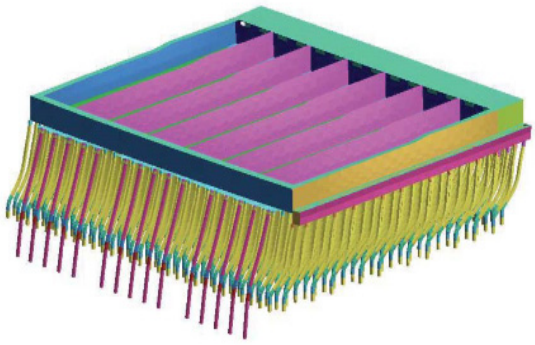
Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	03/25/16✓	01/02/19	05/01/19	03/31/21

Progress and Status:

The project team continued working on the 95% design package for Southside retrofit work. They are also coordinating with WWE regarding the channel work. That will be incorporated into same contract.

Issues and Challenges:

None at this time.



Analysis of SEP 042

CWWSIPSE09 - SEP Existing Digester Gas Handling Improvements

Description: As part of the SSIP, a new biosolids handling facility will be built to replace the existing system. However, the existing digesters and associated facilities must continue to handle all biosolids generated by primary and secondary treatment operations at SEP until all planning, design, construction, and commissioning activities for new facilities are completed. The project consists of process upgrades addressing deficiencies related to digester gas compressors, heat exchangers and controllers, combined primary activated sludge (CPAS) tank, boiler and boiler stacks, waste flare and cogeneration cooling water system, and B100 biofuel tank. Building systems and odor control unit (OCU) upgrades such as replacing roof drains, OCUs and upgrading ventilation and OCUs, roof replacement and air compressor will also be completed. Electrical upgrades related to external lighting and fire alarms, as well as control upgrades such as carbon monoxide gas monitors and digester gas flow meters are included. Also, 300 feet of waste gas piping and appurtenances to replace leaking pipes.

Program: Southeast Plant (SEP) Improvements	**Project Status:** Construction	**Environmental Status:** Completed (CatEx)

Project Cost:

Approved	$22.14 M
Forecast*	$22.14 M
Actual	$11.19 M

Project Schedule:

Approved	Jun-14	Nov-19
Forecast*	Jun-14	Nov-19

Project Percent Complete: 46.3%

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

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	01/29/16✓	10/17/16✓	03/20/17✓	05/18/19

Progress and Status:

Project team completed testing HVAC Equipment, Gas Compressor Replacements (SEP 620 & 680), Wireless Notification System (SEP 800), Boiler No. 3 burner and control panel, Cooling Water & Water Booster Pumps (SEP 810), and factory witnessed testing of CPAS Control Panel. Project team also completed coating of new sludge blending tank (SEP 780) and Digester 8 and 9 piping modifications. Completed training on HVAC Equipment, Gas Compressor Replacements, and Boiler No. 3 burner and control panel. Commenced installation of replacement waste gas piping between SEP 740 and SEP 821 and installation of cover at sludge blending tank (SEP 780).

Issues and Challenges:

None at this time.

Installation of 18" Waste Gas Piping from Gas Booster Station (SEP 740) to Waste Gas Burners (SEP 821)

CWWSIPSE10 - SEP Power Feed and Primary Switchgear Upgrades

Description: The project is intended to address the deficiency of the existing medium voltage power distribution system (MV PDS), obtain a second redundant power feed from PG&E to upgrade the treatment plant with redundant electrical feeds, construct a new main switchgear sized to provide adequate power to new facilities, replace aging unit substations, and integrate the electric services of the nearby pump stations to the SEP medium voltage network. The project consists of installing a new redundant PG&E service, upgrading the existing Hunters Point feed to 12 MW, upgrading the main switchgear, and replacing fifteen aging existing primary unit substations at SEP. Additionally, it involves integration of Bruce Flynn Station and Booster Pump Station to SEP MV PDS, enhanced Energy Monitoring and Management System (EMMS), coordination with other SEP projects (particularly BDFP) to plan the need for emergency generators for critical processes, and construction of a new duct bank from the main switchgear to an electrical manhole.

Program: Southeast Plant (SEP) Improvements	**Project Status:** Design	**Environmental Status:** Completed (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$84.34 M	Approved Jun-14	Dec-22
Forecast*	$84.34 M	Forecast* Jun-14	Dec-22
Actual	$4.38 M	Project Percent Complete: 5.8%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	02/22/18✓	10/02/18	04/01/19	06/30/22

Progress and Status:

SF Arts Commission Civic Design Review Committee approved the final Phase 3 of Primary Switchgear Building 032 architectural design on 2/12/18. SF Planning Department completed their environmental review and determined this project as categorically exempt on 2/22/18. Project team continues to work on 100% design.

Issues and Challenges:

Project team continues to coordinate with Bay Corridor Transmission and Distribution (BCTD) project and the Power Enterprise for the delivery of the Potrero feed. The cost for upgrade of the existing Hunters Point feed is still being evaluated. In addition, project team will further clarify with PG&E regarding the use of utility power from the two power providers (PG&E and SFPUC).

SEP Building 032 Conceptual Rendering

CWWSIPSE11 - SEP Oxygen Generation Plant 01

Description: The existing liquid oxygen (LOX) facility at SEP does not meet current safety codes and is in need of replacement. The LOX system is a mandatory redundant system to the on-site oxygen generation to ensure full compliance with the NPDES permit. This project includes the demolition of the LOX facility (three horizontal LOX storage tanks, four vaporization systems, and ancillary equipment); demolition of SEP 270 Oxygen Generation Building; installation of structural piles; construction of concrete slabs and utility trench; and installation of a new packaged LOX system consisting of four vertical LOX storage tanks, vaporizers and an unloading station.

Program: Southeast Plant (SEP) Improvements	**Project Status:** Construction	**Environmental Status:** Completed (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$9.85 M	Approved Apr-16	Nov-19
Forecast*	$9.85 M	Forecast* Apr-16	Nov-19
Actual	$2.44 M	Project Percent Complete: 19.8%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	08/11/16✓	03/31/17✓	11/27/17✓	05/20/19

Progress and Status:
Contractor has completed temporary electrical feeds to the existing LOX facility and finished Phase One demolition of the Cryogenic Facility. Installation of the 39 Torque Down Piles for the new LOX Equipment pad is complete, and Contractor has begun installation of the final subgrade material.

Issues and Challenges:
None at this time.

Completed Torque Down Piles and remainder of the Cryogenic Building SEP 270 shown

CWWSIPTPOP02 - Westside Pump Station Reliability Improvements

Description: The project consists of screenings improvements including, replacement of existing bar screens, and addition of screening washing and compaction systems. The project also includes replacement of existing wet-weather pumps to provide pump redundancy. The construction would take place within the existing structure and includes four new submersible pumps and 200 linear feet (LF) of discharge force main. Other improvements under this project include increasing the power feeder capacity at WSS to account for additional wet weather pumping capacity and provide a reliable redundant power source from PG&E, and replacement of the existing odor control units at the WSS with dilution ventilation fans and ducting.

Program: Oceanside Plant (OSP) Improvements	**Project Status:** Design	**Environmental Status:** Completed (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$71.50 M	Approved Jun-13	Jun-23
Forecast*	$71.50 M	Forecast* Jun-13	Jun-23
Actual	$12.99 M	Project Percent Complete: 19.1%	

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

Key Milestones:	Environmental** Approval	Bid+ Advertisement	Construction NTP+	Construction+ Final Completion
Current Forecast	(A) 06/13/13✓ (B) 04/20/17✓	(A) 05/06/14✓ (B) 08/31/18	(A) 10/15/14✓ (B) 02/04/19	(A) 03/27/17✓ (B) 12/02/22

+ Project includes multiple construction contracts.
(A) WW-572R Westside Pump Station Discharge Pipe Manifold Upgrade; (B) WW-645 Westside Pump Station Reliability Improvements
*** The Environmental Approval for Contract A - Westside Pump Station Discharge Pipe Manifold Upgrade was achieved in Project CWWRNRTF47. The Environmental Approval for Contract B – Westside Pump Station Reliability Improvements is shown in the above table.*

Progress and Status:

(A) Construction Contract WW-572R WSS Discharge Pipe Manifold Upgrade contract closeout has been completed, the final payment was released to contractor in February 2018.

(B) WW-645 Westside Pump Station Reliability Improvements revised 95% design was issued in January 2018. The revised 95% design included scope refinements required a delay to the construction start to align the sequence of key construction activities that are required to occur during dry weather season resulting in a change in project completion from December 2021 to June 2023. Updated cost estimates at 95% resulted in a project cost of $71.5M

WW-572R - new hydraulic operated 54-inch Knife Gate Valve installation

Issues and Challenges:

None at this time.

CWWSIPTPOP03 - OSP Digester Gas Utilization Upgrade

Description: In this project, the gas storage vessel and digester gas conditioning equipment will be replaced. The existing cogeneration Internal-Combustion units (IC engines) and controls will also be replaced. Other improvements include providing an ancillary exhaust gas conditioning and heat exchanger systems to comply with regulatory air board requirements. Improved reliability and redundancy of hot water and electrical energy production systems, as well as, ventilation upgrades will maximize process efficiency within the energy recovery building. The electrical gear at Sub-Station No. 5 will be replaced to provide parallel electrical gear and power system reliability. A 500 kw standby diesel generator and diesel fuel storage system will also be provided for electrical redundancy of critical plant electrical loads.

Program: Oceanside Plant (OSP) Improvements	**Project Status:** Bid and Award	**Environmental Status:** Completed (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$45.89 M	Approved Oct-13	Jun-21
Forecast*	$45.89 M	Forecast* Oct-13	Jun-21
Actual	$5.42 M	Project Percent Complete: 14.6%	

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

Key Milestones:	**Environmental+ Approval**	**Bid+ Advertisement**	**Construction NTP+**	**Construction+ Final Completion**
Current Forecast	06/14/17✓	04/20/18	09/04/18	12/02/20

+ The key milestone dates reflect the main construction contract for this project (WW-639 Oceanside Water Pollution Control Plant Digester Gas Utilization Upgrade)

Progress and Status:

WW-639 Oceanside Water Pollution Control Plant Digester Gas Utilization Upgrade project is targeting advertisement in April 2018. The WW-625 contract obtained the Bay Area Air Quality Management District permit in March 2018.

Issues and Challenges:

None at this time.

Oceanside Building 800 existing digester and natural gas compressors to be replaced as part of this project.

CWWSIPTPOP05 - OSP Condition Assessment Repairs

Description: The OSP Condition Assessment Repairs project will include major improvements to the plant, aimed to address the reliability of existing assets that have deteriorated over the years. This project includes planning, design and environmental review of improvements to address the age, deterioration and reliability of existing assets at OSP that are not specifically included in the other SSIP projects. This project includes rehabilitation of building structures, rehabilitation or replacement of mechanical and electrical equipment, and seismic retrofit of process tanks and buildings. Improvements focus on maintaining operational reliability and extending the service life of buildings that are required to remain in operation for 30 years or more.

Program: Oceanside Plant (OSP) Improvements	**Project Status:** Construction	**Environmental Status:** Not Initiated

Project Cost:

Approved		$15.84 M
Forecast*		$15.84 M
Actual		$8.91 M

Project Schedule:

Approved Jul-14		Jun-19
Forecast* Jul-14		Jun-19

Project Percent Complete: 56.6%

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

Key Milestones:	Environmental** Approval	Bid** Advertisement	Construction NTP+	Construction+ Final Completion
Current Forecast	(A) 12/18/18 (B) 07/03/13✓ (C) 12/19/15✓	N/A 01/15/16✓ 09/23/16✓	N/A 07/25/16✓ 03/14/17✓	N/A 06/29/18 11/02/18

+ Project includes multiple construction contracts.
(B) WW-570 Oceanside Water Pollution Control Plant and Westside Pump Station HVAC Upgrades and (C) WW-606R2 Oceanside Water Pollution Control Plant Door and Building 930 Exterior and Awning Improvements
*** The Environmental Approval & Bid Advertisement for Contract B were achieved in Project CWWRNRTF48, and the Environmental Approval & Bid Advertisement for Contract C were achieved in Project CWWRNRTF67. The Environmental Approval shown in the above table refers to other improvements to the Oceanside Water Pollution Control Plant.*

Progress and Status:

The Oceanside Water Pollution Control Plant Condition Assessment Repairs draft CER was issued in November 2017. As part of the final CER, the project team is including an evaluation of the existing MSE walls at the facility, seismic anchorage of process pipe supports, and a listing of prioritized project scopes into contract packages to be funded by subsequent phases of the SSIP.

(A) Construction Contract WW-570 OSP-WSS HVAC Upgrades - Construction is underway. The Contractor is finalizing field installation and performing field start-up and training activities of HVAC mechanical and electrical equipment.

(B) Construction Contract WW-606R2 OSP Door and Building 930 Exterior and Awning Improvements – Construction is underway. The Contractor completed the selective demolition of the existing building 930 awning assembly, and awaiting delivery of new awning assemblies. The stainless steel frame was released for fabrication in March 2018.

Issues and Challenges:

None at this time.

CWWSIPTPOP06 - OSP Odor Control Optimization

Description: Although the odor control facilities at OSP have been effective at collecting and treating odors generated in various locations throughout the facility, the efficacy evaluation of the process identified inherent inefficiencies that can result in opportunities for significant O&M cost reduction. Currently, the air from the entire building is exchanged and scrubbed for odor. Based on the results of the alternative analysis, the project will forego covering the primary clarifiers and implement other optimization measures in its place. The primary (Building 042) and secondary clarifiers (Building 230) will be partially covered and concentrated foul air will be scrubbed by the existing odor control units. While the room air in Building 042 will continued to be treated, the room air in Building 230 will contain very low odor/moisture concentrations and therefore will be transferred to Building 530 as makeup air and then exhausted outdoors without treatment, therefore significantly reducing the volume of air treated for odor. In addition, heating coils to pre-heat the foul air from below the covered channels prior to the odor control units will result in prolonged carbon media life.

Program: Oceanside Plant (OSP) Improvements	**Project Status:** Design	**Environmental Status:** Active (TBD)

Project Cost:		**Project Schedule:**	
Approved	$5.13 M	Approved Jul-14	Sep-20
Forecast*	$5.13 M	Forecast* Jul-14	Sep-20
Actual	$0.47 M	Project Percent Complete: 14.9%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	07/02/18	08/02/18	01/24/19	03/23/20

Progress and Status:

The 65% Design was completed in January 2018. The refined project scope includes optimizing odor control collection and treatment system operations, implementation of new lower energy usage technologies, and new ventilation strategies to optimize efficiency.

Issues and Challenges:

None at this time.

Existing OSP Odor Control Unit carbon media vessels

CWWSIPTPNP02 - North Shore Pump Station Wet Weather Improvements

Description: The purpose-of this project is to provide redundant effluent pumping capacity at North Shore Pump Station (NSS) during wet weather. This project will replace existing four (4) dry weather pumps with larger capacity units so that 3 of the 4 pumps are capable of pumping 75 MGD during wet weather. The project also includes upgrades to the motor control centers (MCCs) and distributed control system (DCS). The implementation of this project will ensure reliable and efficient operation in keeping with the LOS and maintain regulatory compliance.

Program: North Point Facility (NPF) Improvements	**Project Status:** Design	**Environmental Status:** Completed (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$55.00 M	Approved Aug-13	Jul-21
Forecast*	$55.00 M	Forecast* Aug-13	Jul-21
Actual	$4.18 M	Project Percent Complete: 13.9%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	10/13/17✓	10/31/18	04/01/19	01/29/21

Progress and Status:
Project team completed with 65% design of the refined scope, and commenced with 95%.

Issues and Challenges:
None at this time.

Existing North Point Facility Pump Station

CWWSIPCT01 - Central Bayside System Improvement Project - Phase 1

Description: The CBSIP will provide collection system enhancements to both the Channel and Islais Creek watersheds including redundancy for the existing 66-inch Channel Force Main, infrastructure improvements to sewers and pump stations, and stormwater management. The new Channel Tunnel will include a gravity tunnel approximately 24-feet in diameter and up to 10,000 feet long, extending from the existing Channel Pump Station (CHS) near Mission Creek to the SEP. It will also include a new Channel Tunnel Lift Station (CTLS) with approximately 120 MGD capacity, located in the vicinity of the SEP at the southern end of the Channel Tunnel. In addition, the existing CHS will be retrofitted. This project will provide planning, environmental review, and preliminary design for the improvements. Design and construction of CBSIP will be completed in Phase 2 of SSIP.

Program: Central Bayside System Improvement Project (CBSIP)	**Project Status:** Design	**Environmental Status:** Active (EIR)

Project Cost:		**Project Schedule:**	
Approved	$64.00 M	Approved Jul-12	Dec-18
Forecast*	$64.00 M	Forecast* Jul-12	Dec-18
Actual	$29.44 M	Project Percent Complete: 54.1%	

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

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

*** Environmental approval and permitting, and all construction related activities will be completed under SSIP Phase 2.*

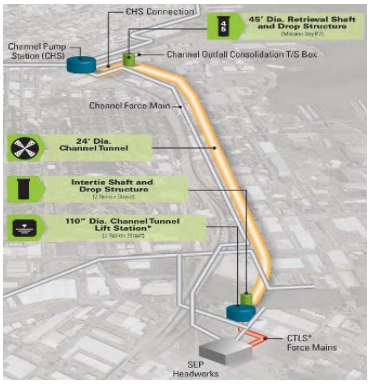
Progress and Status:

Third party reviews on 35% Design technical memorandums, including the 35% Design cost estimate, is mostly completed in this quarter.

The soil borings within Islais Creek was completed and the utilities investigation at the P7 shaft location will continue through next quarter.

Baseline (CEQA consultant) has continued work on the Draft Initial Study for the EIR.

Planning and Design efforts for Oak/Fell and Wiggle Green Infrastructure projects are completed under this project. For construction progress of these two projects, please refer to CWWSIPFCDB08 – Channel Green Infrastructure.



CBSIP Site Map

Issues and Challenges:

None at this time.

CWWSIPCSSR02 - Collection System Condition Assessment

Description: There are over 80-miles of major sewers that have been in service for over 100-years. Using Collection System Asset Management Program (CSAMP) data, major sewers were prioritized by expanding the existing consequence of failure scores. Using this method, approximately 13-miles of the 80-miles of major sewers are considered to be the most critical and have an average age of 127-years. The project will include condition assessment with available funding and up to 13-miles of sewers. The project will include various locations throughout San Francisco, and fulfill the Needs Assessment effort in the Planning Phase. Upon completion of the condition assessment, the needs and methods of rehabilitation or replacement will be used to initiate sewer improvement projects in SSIP Sewer Improvement Projects.

Program: Interceptors / Tunnels and Odor Control	**Project Status:** Planning	**Environmental Status:** Not Initiated

Project Cost:		**Project Schedule:**	
Approved	$10.91 M	Approved May-13	Apr-20
Forecast*	$10.91 M	Forecast* May-13	Apr-20
Actual	$1.62 M	Project Percent Complete: 15.9%	

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

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

*** Future projects recommended by this assessment will have new project numbers and BEM anticipates CEQA Documentation for these projects as CATEXs or MNDs.*

Progress and Status:

During this quarter, the Contractor continues with the cleaning and inspection of large sewers, and has completed some inspection work. The project team has begun reviewing available CCTV tapes of sewers and are preparing recommendations for replacement or rehabilitation of certain sewers.

Issues and Challenges:

None at this time.

CWWSIPCSSR03 - Kansas and Marin Streets Sewer Improvements

Description: The purpose of this project is to increase the wet-weather flow conveyance for a minor drainage basin within the Islais Creek Watershed Basin to meet the Level of Service storm. The project consists of land acquisition for sewer construction and permanent sewer easement, temporary construction easement for construction of the new auxiliary sewer and relocation assistance associated with sewer easement and displacements of existing lease-holders who occupy SFPUC's property above the C-Box Transport Storage Structure (Lot 031). Additionally, it will include construction of 900 linear feet of 8-foot diameter tunnel installed using conventional road-header construction method in an easement under the SFPW's Maintenance Yard. Two new reinforced concrete junction structures will also be constructed to connect the proposed tunnel with the existing sewers, along with surface restoration work associated with construction and installation of the above assets.

Program: Interceptors / Tunnels and Odor Control	**Project Status:** Design	**Environmental Status:** Completed (CatEx)

Project Cost:

Approved		$17.48 M
Forecast*		$17.48 M
Actual		$2.12 M

Project Schedule:

Approved Jun-13		Dec-21
Forecast* Jun-13		Dec-21

Project Percent Complete: 13.6%

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

Key Milestones:	Environmental** Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	04/23/19	07/01/19	12/02/19	06/14/21

***Environmental approval (CatEx) was previously obtained for the existing alignment and a new CEQA document would be needed for a new alignment.*

Progress and Status:

The project team is incorporating comments from the Draft CER. Meanwhile, discussion with SFPW continues regarding the proposed tunnel under their Maintenance Yard.

Issues and Challenges:

None at this time.

CWWSIPCSSR09 - Drumm and Jackson Streets Sewer System Improvement

Description: Under this project, 800 linear-feet of the Drumm Street Box Sewer (between Commercial and Jackson Streets) and 200 linear-feet of the Jackson Street Box Sewer (between Drumm Street and the Embarcadero) will be rehabilitated. Increasing the reliability of these major assets help meet the NPDES permit requirement to maximize use of the collection system for storage and to maximize flows to the wastewater treatment plant. Associated work for rehabilitation will include performing necessary cleaning for trenchless rehabilitation, bypassing sewer flow by damming and piping through the existing box sewer and performing surface restoration. Coordination will also be needed with WWE to ensure worker safety and preventing wet-weather impacts. CEQA approval and public outreach for the project will also be required. As needed, a Memorandum of Understanding (MOU) with SF Port for work near the intersection of the Embarcadero and Jackson Street may be executed. The project includes planning, environmental approval, design, and construction phases.

Program: Interceptors / Tunnels and Odor Control	**Project Status:** Construction	**Environmental Status:** Completed

Project Cost:		**Project Schedule:**	
Approved	$8.33 M	Approved May-15	Mar-19
Forecast*	$8.33 M	Forecast* May-15	Mar-19
Actual	$1.09 M	Project Percent Complete: 14.3%	

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

Key Milestones:	**Environmental Approval**	**Bid** Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	11/10/16✓	10/06/17✓	03/19/18✓	10/04/18

*** Contract was originally advertised on 5/15/17 and was re-bid.*

Progress and Status:

The project was awarded to Anvil Builders in January. In March, NTP for construction was issued and the pre-construction meeting was held. The Contractor has started submission of submittals and RFIs. The construction team met with the Port of San Francisco tenants and the residents along the project alignment.

Issues and Challenges:

None at this time.

Interior of Jackson Street Box Sewer

CWWSIPCSSR11 - Cargo Way Sewer Box Odor Reduction

Description: The Needs Assessment Report for Bayside Collection System Odor and Corrosion Control will be completed under this project to identify odor control opportunities in the Bayside collection system, and improvements will be implemented with available funding based on the recommendations detailed in the report. Odor control improvements identified by WWE Operations Staff for the sewer box located at Cargo Way includes identification of flow sources and potential infiltration and inflow issues, and installation of a tee at Booster Pump Station Effluent manifold. Additionally, the project includes trenchless installation of 50 LF of 12-inch DIP inside 18-inch steel casing beneath SFMTA tracks, installation of 3,950 LF of 12-inch DIP, and installation of backflow preventer and control valves.

Program: Interceptors / Tunnels and Odor Control	**Project Status:** Planning	**Environmental Status:** Active (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$6.44 M	Approved Apr-15	Jul-21
Forecast*	$6.44 M	Forecast* Apr-15	Jul-21
Actual	$0.40 M	Project Percent Complete: 7.9%	

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

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	01/04/19	08/06/19	01/09/20	01/11/21

Progress and Status:

During this quarter, the project team continues the preparation of the draft CER.

Issues and Challenges:

None at this time.

CWWSIPCSSR_N03 - Geary BRT Sewer Improvements Phase 2

Description: Phase 2 of SFMTA's Geary BRT Project includes the addition of center-running BRT lanes on Geary Boulevard between Palm Avenue and 27th Avenue, followed by dedicated BRT lanes along each sides of the street between 27th and 34th Avenue. The center-running BRT lanes on Geary Boulevard would be located directly above the existing sewer lines and severely impact SFPUC's ability to perform future maintenance, repair and/or replacement. The purpose of the Phase 2 sewer work is to coordinate with Geary BRT Project to relocate (or replace as needed) main sewers outside of the transit lanes, platforms and bulb-outs. Approximately 2.2 miles of aging sewers on this Geary corridor (Stanyan Street to 34th Avenue) and on nearby cross streets have been identified as possibly needing replacement. SFPUC will determine sewer conditions along the Geary Corridor. Any sewer work required, whether it is sewer relocation, sewer rehabilitation or sewer replacement, will be undertaken as part of SFMTA's project. Only initial costs for planning and design has been allocated for this project under Phase 1 of SSIP.

Program: Interdepartmental Projects	**Project Status:** Planning	**Environmental Status:** Not Initiated

Project Cost:		**Project Schedule:**	
Approved	$2.00 M	Approved Mar-18	Mar-20
Forecast*	$2.00 M	Forecast* Mar-18	Mar-20
Actual	$0.00 M	Project Percent Complete: 0.0%	

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

Key Milestones:	**Environmental Approval**	**Bid+ Advertisement**	**Construction NTP+**	**Construction+ Final Completion**
Current Forecast	04/19/19	N/A	N/A	N/A

+ All construction related activities will be completed under Phase 2 of SSIP.

Progress and Status:

During this quarter, SFPW initiated the Planning phase with a kickoff meeting.

Issues and Challenges:

None at this time.

CWWSIPCSSR04 - Van Ness BRT Sewer Improvements

Description: The Van Ness Bus Rapid Transit (BRT) Project will be implemented by SFMTA in conjunction with the Van Ness BRT Sewer Improvements Project, which will be implemented by SFPUC as part of SSIP. SFPUC will replace and relocate existing sewer utilities located along Van Ness Avenue, between Lombard Street and Mission Street, from the center of the street to outside of the BRT right-of-way to allow for future sewer service maintenance and repair/replacement without impacting SFMTA's BRT operations. The scope of the project includes constructing approximately 20,000 linear feet (LF) of 12-inch to 54-inch diameter VCP, RCP or HDPE (in steel casing) sewer mains and associated manholes, catch basins and culverts; and retrofitting and connecting existing sewer laterals and catch basins to the aforementioned new sewer mains. Closed-circuit television (CCTV) technology will be used to inspect the newly constructed sewer mains, sewer laterals and culverts. Abandoned sewers (approximately 1,800 LF) will be plugged-and-filled.

Program: Interdepartmental Projects	**Project Status:** Construction	**Environmental Status:** Completed (EIR)

Project Cost:		**Project Schedule:**	
Approved	$21.10 M	Approved Oct-13	Jun-21
Forecast*	$21.10 M	Forecast* Oct-13	Jun-21
Actual	$1.82 M	Project Percent Complete: 11.7%	

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

Key Milestones:	**Environmental** Approval**	**Bid Advertisement**	**Construction NTP*****	**Construction Final Completion**
Current Forecast	See Note	N/A	10/27/16✓	01/15/20

*** The San Francisco County Transportation Authority (SFCTA) and the Federal Transit Administration (FTA) completed an EIR/EIS for the Van Ness BRT project (NOD filed on September 13, 2013). SFMTA is the project lead and SFCTA prepared an EIR for CEQA approval, which includes the SFPUC funded sewer improvement.*

**** CMGC contract was awarded by SFMTA and NTP was given to Walsh Construction on 10/27/16. NTP for the sewer work was obtained on January 16, 2018.*

Progress and Status:

Sewer field work began in January 2018. Pre-excavation pot holing was performed to identify/resolve the utility conflicts. Claim/delay negotiations continue with SFMTA and general contractor.

Issues and Challenges:

None at this time.

Van Ness BRT – Rendering of proposed green infrastructure rain gardens along City Hall

CWWSIPCSSR05 - Better Market Street Sewer Improvements - Phase 1

Description: San Francisco's vision for a Better Market Street (BMS) is a comprehensive program to reconstruct the City's premier boulevard and the region's most important transit corridor from Octavia Boulevard to The Embarcadero. The program will advance several key City policies: Transit First, Complete Streets, the SF Pedestrian Strategy/Walk First and the SF Bicycle Plan. The BMS Sewer Improvements will be completed under SSIP to replace aging sewer infrastructure beneath Market Street, especially brick sewers that are over 100 years old. Phase 1 will consist of a two-block pilot project on Market Street between 6th Street and 8th Street.

Program: Interdepartmental Projects	**Project Status:** Design	**Environmental Status:** Not Initiated

Project Cost:

Approved		$9.75 M
Forecast*		$9.75 M
Actual		$0.48 M

Project Schedule:

Approved Jan-14		Mar-22
Forecast* Jan-14		Mar-22

Project Percent Complete: 6.7%

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

Key Milestones:	Environmental** Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	03/29/19	02/01/19	07/01/19	07/06/21

*** SFPW is the project lead and will prepare the CEQA approval, including SFPUC funded sewer improvements.*

Progress and Status:

SFPW is proceeding with the design of Phase 1 Project Pilot Blocks on Mid-Market (from 6th to 8th Streets). The 30% Design documents are forecasted to be completed in April 2018 with 100% Design targeted for December 2018.

Issues and Challenges:

None at this time.

CWWSIPCSSR06 - Geary BRT Sewer Improvements Phase 1

Description: SFMTA's Geary BRT Project will improve the 38-Geary bus services, accessibilities, and pedestrian safety. The project includes collaboration from SFPUC, SFPW, and San Francisco County Transportation Authority (SFCTA). Phase 1 of the SFMTA Geary BRT Project is comprised mostly of transit and pedestrian bulbs. The addition of concrete and/or curb alignment change may trigger the needs to relocate existing catch basins, side sewers vents, and manholes. SFPW and SFPUC will be determining the condition of water and sewer utilities along the Geary Corridor. It is anticipated that approximately 1.5 miles of aging sewers (6-inch to 18-inch diameter circular sewers and 3-foot by 5-foot egg-shaped brick sewers) along the Geary corridor and nearby cross streets will need to be replaced.

Program: Interdepartmental Projects	**Project Status:** Bid and Award	**Environmental Status:** Completed

Project Cost:

Approved	$12.90 M
Forecast*	$12.90 M
Actual	$0.77 M

Project Schedule:

Approved	Jan-14	Feb-21
Forecast*	Jan-14	Feb-21

Project Percent Complete: 6.5%

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

Key Milestones:	Environmental** Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	04/17/17✓	03/21/18✓	08/06/18	08/10/20

*** SFMTA is the project lead and SFCTA will prepare the CEQA approval, which includes the SFPUC funded sewer improvements.*

Progress and Status:

SFMTA/SFPW decided to split off the Sewer and Water scopes into a separate contract to be issued prior to a later transit and street scopes contract. The Sewer and Water scopes will be issued as a SFPUC construction contract. The 100% Design for the Sewer/Water contract was completed in February. The construction contact was advertised in March and bids are anticipated to be received next quarter. The project communications team met with SFMTA outreach team for coordination for public noticing and outreach to the public.

Coordination between SFPUC, SFMTA and PW is ongoing for future construction milestones to minimize the duration of lane closures on Geary Boulevard by starting the transit and street scope contract when this construction contract is approximately midway complete.

Issues and Challenges:

None at this time.

CWWSIPCSSR07 - Central Subway Sewer Improvements

Description: This project is related to the SFMTA Central Subway Phase 2 of the Third Street Long Range Transportation Plan Project that will extend rail service from Fourth and King Streets to a northern terminal at Stockton and Jackson Streets. The purpose of this project is to include sewer improvements to avoid conflicts with the proposed light rail scope and to minimize future repair and replacement impacts. The sewer improvement project includes reconstructing existing 78-inch sewer (Fourth Street between Brannan Street and King Street), and relocating/ replacing existing 30-inch force main (Fourth Street between Bryant Street and King Street) and 48-inch gravity sewer (Fourth Street between Bryant Street and Brannan Street).

Program: Interdepartmental Projects	**Project Status:** Construction	**Environmental Status:** Completed (EIR)

Project Cost:		**Project Schedule:**	
Approved	$3.96 M	Approved Jan-14	Jun-18
Forecast*	$3.96 M	Forecast* Jan-14	Jun-18
Actual	$2.82 M	Project Percent Complete: 92.7%	

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

Key Milestones:	**Environmental** Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	See Note	N/A	02/16/15✓	05/31/18

*** The San Francisco County Transportation Authority (SFCTA) and the Federal Transit Administration (FTA) completed a supplemental EIR/EIS for the Central Subway project in September 2008. SFMTA is the project lead and SFCTA prepared the CEQA approval, which includes the SFPUC funded sewer improvements.*

Progress and Status:

Substantial Completion for the sewer work, at the 4th/Bryant and 4th/Brannon intersections, was completed in October 2017. Final Completion has been extended due to finalizing all sewer costs/change orders.

Issues and Challenges:

None at this time.

78" Sewer Work

CWWSIPCSSR08 - Mission Bay Loop Sewer Improvement

Description: SFMTA's Mission Bay Loop Project will install light rail track on Illinois Street between 18th and 19th Streets. The improvements will support the future operations of the Third Street Light Rail in anticipation of the activation of the new Central Subway segment. The existing gravity sewers and force mains on Illinois Street will need to be relocated and/or replaced to avoid future conflicts with light rail operations. This sewer improvement project includes planning, environmental review, design, and construction phases.

Program: Interdepartmental Projects	**Project Status:** Construction	**Environmental Status:** Completed (EIR)

Project Cost:		**Project Schedule:**	
Approved	$0.72 M	Approved May-14	Dec-18
Forecast*	$0.72 M	Forecast* May-14	Dec-18
Actual	$0.28 M	Project Percent Complete: 42.1%	

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

Key Milestones:	**Environmental** Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	N/A	N/A	12/08/14✓	05/31/18

*** SFMTA is the project lead and obtained the CEQA approval by relying on the 3rd Street Light Rail EIR. Sewer NTP was issued on March 10, 2017*

Progress and Status:

During this quarter, the wet weather force main sewer work was completed and cathodic protection scope is scheduled for early April. Substantial Completion is anticipated for next quarter.

Issues and Challenges:

None at this time.

Insertion of the HDPE Force Main

CWWSIPCSSR10 - Masonic Avenue Sewer Improvements

Description: The Masonic Avenue Complete Streets Project will take place on Masonic Avenue between Geary Boulevard and Fell Street. The project includes sidewalk and streetscape improvements; median and bicycle lane additions on Masonic Avenue; construction of a small park on the southwest corner of Geary Boulevard and Masonic Avenue; and incorporation of public art elements along this corridor. In conjunction with the aforementioned Masonic Avenue Complete Streets Project, the Masonic Avenue Sewer Replacement Project includes rehabilitating/ realigning existing sewers as well as constructing new sewer mains, manholes, side sewers and catch basins. The sewer scope includes approximately 4,700 linear feet of sewers ranging from 12-inch to 24-inch in diameter.

Program: Interdepartmental Projects	**Project Status:** Construction	**Environmental Status:** Not Applicable

Project Cost:		**Project Schedule:**	
Approved	$3.92 M	Approved Oct-14	Dec-18
Forecast*	$3.92 M	Forecast* Oct-14	Dec-18
Actual	$2.30 M	Project Percent Complete: 86.2%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP****	**Construction Final Completion**
Current Forecast	N/A	N/A	04/25/16✓	06/29/18

*** SFPW is the contract lead.*

Progress and Status:

Substantial Completion for the sewer work was obtained on March 9, 2018. Final Completion is targeted for end of the June 2018.

Issues and Challenges:

None at this time.

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CWWSIPCSSR13 - Taraval Sewer Improvements

Description: SFMTA has proposed a pedestrian safety and transit improvements project along Muni's "L Taraval" route. The project includes construction/extension of boarding islands; addition of dedicated transit-only lanes; and replacement of aging tracks, overhead wires and trolley poles. The Taraval Sewer Improvements Project will relocate existing sewer facilities from the center of the street to outside of the tracks to allow for ease of maintenance and repair/replacement without impacting future SFMTA's Muni operations. The scope of the sewer work includes replacing approximately 19,000 LF of 12-inch to 36-inch diameter ISP, VCP, RCP, or concrete sewers along Taraval Street between 15th Avenue and 46th Avenue, and Ulloa Street between Forest Side Avenue and 15th Avenue for a twin sewer system.

Program: Interdepartmental Projects	**Project Status:** Design	**Environmental Status:** Completed

Project Cost:

Approved		$33.14 M
Forecast*		$33.14 M
Actual		$0.62 M

Project Schedule:

Approved Mar-16		Apr-21
Forecast* Mar-16		Apr-21

Project Percent Complete: 1.9%

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

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	04/17/17✓	05/01/18	10/01/18	10/30/20

Progress and Status:

The additional potholing, to confirm exact locations of utilities, was completed in February 2018. Therefore, the completion of the 100% Design documents is targeted for April 2018.

Issues and Challenges:

None at this time.

CWWSIPCSPS02 - Force Main Rehab at Embarcadero and Jackson Streets

Description: The purpose of this project is to rehabilitate or replace 240 linear feet of the North Shore Force Main (NSFM) that is most susceptible to failure. At the completion of this project, the entire portion of the NSFM located outside the Jackson Street Transport/Storage Box (JST) will have complete redundancy. The project consists of rehabilitating approximately 190 LF of the NFSM that is located outside the Jackson Street Transport/Storage Box (JST) by installing a 28-inch outside diameter, DR26 HDPE pipe. Approximately 190 LF of the NFSM that is located outside the JST and underneath the Jackson combined sewer discharge will be replaced. Valve, valve-vault and associated mechanical/electrical controls will be constructed to allow WWE Operations to direct combined sewage flows to either the NSCFM or to the existing NSFM. A MOU will be established with SF Port (and/or its tenant) for the temporary construction and permanent O&M easement for the NSFM asset. CEQA approval will need to be obtained. Public outreach to the community will also be conducted, including stakeholders along SF Port's waterfront area.

Program: Pump Stations and Forcemain Improvements	**Project Status:** Design	**Environmental Status:** Completed (MPM)

Project Cost:		**Project Schedule:**	
Approved	$9.91 M	Approved Jul-14	Oct-21
Forecast*	$9.91 M	Forecast* Jul-14	Oct-21
Actual	$0.79 M	Project Percent Complete: 8.5%	

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

Key Milestones:	**Environmental Approval**	**Bid** Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	08/16/16✓	N/A	N/A	N/A

*** Contract was originally advertised on 5/15/17 and will be re-bid after the field investigations are completed under CWWSIPCSSR09.*

Progress and Status:

To further inform the team of the force main location and condition and to minimize the possible unforeseen conditions on the Embarcadero, additional field investigation is required for the forcemain before the contract will be re-advertised. The field investigation will be conducted as part of the CWWSIPCSSR09 – Drumm and Jackson Streets Sewer System Improvement construction contract, which was issued NTP in March. The project team is coordinating with the construction contract to schedule the field investigation during the next quarter. The project team is continuing to coordinate with Port of San Francisco for a MOU and with property tenants for a permit for construction work areas.

Issues and Challenges:

None at this time.

CWWSIPCSPS03 - Mariposa Dry-Weather Pump Station & Force Main Improvements

Description: The project will increase the current dry weather capacity of the Mariposa dry-weather pump station and dry-weather force main to accommodate the peak design flow rate of 5.0 MGD. The scope consists of demolishing the existing pump station building, underground structure, wet well, electrical system, and associated assets to make room for a new pump station. CEQA approval will also be needed along with other necessary permits (such as BCDC, Maher Ordinances etc.) to construct the improvements. A new pump station building, underground structures, and wet well, along with new MCCs, DCS, PLC, panels, power service, level monitoring system, HVAC and odor control system will be constructed. The existing dry-weather force main will be replaced with a larger diameter force main downstream of the new dry-weather pump station. Utility coordination and/or relocation may be necessary with the replacement of the force main. Obtain permanent power supply from the Power Enterprise. A MOU (or encroachment permit) will be established for temporary construction easement within SF Port's jurisdiction, as well as an expansion of the existing SF Port easement to accommodate the new pump station footprint. Public outreach to the community will be conducted including SF Port and its stakeholders.

Program: Pump Stations and Forcemain Improvements	**Project Status:** Bid and Award	**Environmental Status:** Completed (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$28.22 M	Approved Jul-14	Jun-21
Forecast*	$28.22 M	Forecast* Jul-14	Jun-21
Actual	$3.56 M	Project Percent Complete: 14.5%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	04/25/17✓	04/04/18	09/04/18	01/12/21

Progress and Status:

During this quarter, the project team completed the 100% design for the pump station scope of work. The MOU between SFPUC and SF Port for additional right-of-way from SF Port was presented and approved by the SF Port Commission. The project team continues coordination with Mission Bay Development Group (MBDG) and Power Enterprise to secure power during construction and for the future operation of the pump station.

The design-builder for the Bay Corridor Transmission Distribution Contract DB-128R2 continues to prepare the design for the Mariposa dry-weather force main.

Existing Dry Weather Pumps

Issues and Challenges:

None at this time.

CWWSIPCSPS05 - Marin Street Sewer Replacement

Description: The project will upsize the 24-inch diameter sewer (located between the intersection of 3rd Street and Marin Street and the Marin Street Outfall Structure) and associated sewers to handle the additional dry-weather flows projected from the tributary area. The wet-weather conveyance associated with this sewer system would also be evaluated but any identified scope for addressing wet-weather conveyance issues is not included in this project.

Hydraulic studies of the watershed area will be performed to determine the hydraulic adequacy of the pipelines in the area based on expected flows from approved developments, as well as to confirm the necessary pipe size. The existing 24-inch diameter sewer, in the vicinity of Marin Street, between Indiana Street and Marin Street CSD (located under southbound Highway 280) will also be upsized. The existing 24-inch diameter sewer on Marin Street, between 3rd street and Indiana Streets, will be replaced with a larger diameter sewer.

Program: Pump Stations and Forcemain Improvements	**Project Status:** Construction	**Environmental Status:** Completed

Project Cost:		**Project Schedule:**	
Approved	$6.77 M	Approved Jul-15	Nov-18
Forecast*	$6.77 M	Forecast* Jul-15	Nov-18
Actual	$4.50 M	Project Percent Complete: 86.5%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	09/12/16✓	12/07/16✓	04/17/17✓	08/21/18

Progress and Status:

The Contractor has issued Substantial Completion in January. The contractor is continuing to complete punchlist items. The project team is continuing to negotiate with the contractor for change orders for Final Completion.

Issues and Challenges:

None at this time.

Preparation for Replacement of the Existing Sewer with New Reinforced Concrete Pipe

CWWSIPCSPS06 - Griffith Pump Station Improvements

Description: The aging mechanical and electrical systems at Griffith Pump Station will be refurbished and its expected service life will be extended. The facility will also be modernized by upgrading most of the instrumentation and controls systems, which would reduce energy use and future maintenance requirements. The scope of the project includes replacing the dry-weather pumps and rebuilding the wet-weather pump, including installing new sump pumps to maintain the existing capacity of 11.5 MGD and 120 MGD, new bar screens, two new bridge cranes in the manifold room and main pump area, and a new tamper-proof roof access ladder. The bar rack room crane will be replaced with a new monorail system. Structural modifications, as necessary, will be performed in support of mechanical systems installations. The project will also involve construction of two canopy systems to protect outdoor equipment, including chemical tanks, metering pumps, ultraviolet light, and associated deteriorating elements. The project will also provide new MCC and electrical connections needed due to a PG&E transformer failure.

Program: Pump Stations and Forcemain Improvements	**Project Status:** Construction	**Environmental Status:** Completed (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$14.98 M	Approved Mar-16	Dec-19
Forecast*	$14.98 M	Forecast* Mar-16	Dec-19
Actual	$2.41 M	Project Percent Complete: 17.8%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	11/21/16✓	05/03/17✓	10/16/17✓	06/07/19

Progress and Status:

During this quarter, the Contractor began construction work at the pump station, and the project team continues processing RFIs and submittals from the contractor.

Issues and Challenges:

None at this time.

Existing sump pump area inside the Griffith Pump Station.

CWWSIPCSCD01 - Richmond Transport/Storage Tunnel Rehabilitation

Description: Under the Richmond Transport Modeling Project, recommendations for handling the reported issues within this system were developed. The purpose of this project is to execute the recommendations of the Modeling Project. The scope of this project includes the evaluation of rehabilitation methods for the Richmond/Transport Storage Tunnel to confirm the previous findings and recommendations included in the physical modeling performed by PMC and presented in October 2013 to resolve historical surge issues identified. The model identified the causes of geysering through vent holes and dislodged manhole covers in various areas, and included modification recommendations including odor solutions that will be verified during the Planning Phase of this project.

Program: CSD and Transport/Storage Structures	**Project Status:** Planning	**Environmental Status:** Active (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$4.87 M	Approved Jun-15	May-19
Forecast*	$4.87 M	Forecast* Jun-15	May-19
Actual	$0.34 M	Project Percent Complete: 8.6%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	06/26/18	07/02/18	08/06/18	10/05/18

Progress and Status:

Team completed the final CER draft in this quarter. The draft design for mist eliminator and its support is being distributed for review. The final design will be completed in the next quarter.

Issues and Challenges:

None at this time.

CWWSIPCSCD03 - Beach and Sansome Street CSD Rehabilitation

Description: A program-wide assessment was performed of the combined sewer discharge (CSD) structures through the Collections System Reliability (CSR) programmatic effort. Inspections and analysis provided specific information about lack of or deficient baffles to control floatables per the NPDES permit. Scope of work for these CSDs are based on historical performance and WWE Operations video inspection records and include several items at both Beach Street and Sansome Street CSDs. Under this project, cleaning and specific condition assessment of the CSDs will be completed. Inspection of baffles and weirs will be performed, and necessary repairs or replacements will be made accordingly. Corroded metal ceiling will also be repaired. Similar improvements will be carried out for the Sansome Street CSD. Concrete cracks and spalling, exposed rebar, and I-beam will be repaired along with replacement of butterfly valve seals. Under this project, backflow prevention systems will be installed at Beach each Sansome CSD's.

Program: CSD and Transport/Storage Structures	**Project Status:** Design	**Environmental Status:** Active (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$3.15 M	Approved Mar-16	Apr-20
Forecast*	$3.15 M	Forecast* Mar-16	Apr-20
Actual	$0.33 M	Project Percent Complete: 13.4%	

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

Key Milestones:	**Environmental Approval**	**Bid+ Advertisement**	**Construction NTP+**	**Construction+ Final Completion**
Current Forecast	(A) 02/16/18✓ (B) 08/31/18	03/01/18✓ 09/04/18	05/01/18 03/01/19	10/31/18 10/31/19

+ Project includes multiple construction contracts: (A) Beach Street (JOC-59-23) and (B) Sansome Street

Progress and Status:

(A) The Cat Ex document for Beach St. CSD was completed in this reporting quarter and approved by Planning Department. Team completed 95% design of the Beach St. CSD. The construction of this CSD will be initiated in the upcoming quarter under JOC-59-23.

(B) The 35% design was completed in this quarter.

Issues and Challenges:

None at this time.

Beach St. CSD: Sewer structural corrosion and other deficiencies

CWWSIPCSCD04 - CSD Backflow Prevention and Monitoring

Description: Collection system assets that contribute to saltwater intrusion fall into two categories: conveyance and CSD structures. A component of this project involves developing and implementing a CSD and conveyance monitoring plan to gather data on the salinity in the whole collection network to be able to locate potential infiltration sources in the collection system and then verify performance once improvements (implemented through SFPUC's R&R Program) have been completed. The scope also includes planning, design and installation backflow preventers at selected CSD outfalls. Backflow preventers will be installed in a phased and monitored approach, with the following priority CSD outfalls considered based on locations with the potential for highest inflow in the system for the same tide: 17 – Jackson Street, 10 – Pierce Street, 29 – Mariposa Street, 31A – Islais Creek North, 32 – Marin Street, 33 – Selby Street, and 41 – Yosemite. The project scope will be fluid and subject to change based on monitoring results.

Program: CSD and Transport/Storage Structures	**Project Status:** Planning	**Environmental Status:** Active (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$13.62 M	Approved Jul-16	Oct-21
Forecast*	$13.62 M	Forecast* Jul-16	Oct-21
Actual	$0.34 M	Project Percent Complete: 4.7%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	09/30/19	10/01/19	04/01/20	10/30/20

Progress and Status:

The receiving water sampling for Pierce CSD is completed and the analysis to assess the impact of the closure continued. Team assessed that permanent closure of this outfall is the most economical alternative, due to age and poor condition of the structure. The Planning phase for Jackson and Griffith CSD's started last quarter and will be concluded in the upcoming quarter.

Issues and Challenges:

None at this time.

Typical backflow preventer device installed over the weir

CWWSIPCSCD05 - 5th, North 6th and Division Street CSD Rehabilitation

Description: A program-wide assessment was performed of the CSD structures through the Collections System Reliability (CSR) programmatic effort. Based on video inspections by WWE Operations personnel, three CSD structures, CSD 24, 25, and 26 (5th, North 6th, and Division Street) were identified as priority structures due to their age (built in 1947, 1934, and 1963, respectively), the importance of the CSD structure based on amount of discharge and sensitivity of the receiving water body, structural conditions, compliance with permit requirements, and other operational deficiencies. These CSDs were combined into one project due to proximity and hydraulic interconnectedness.

Hydraulic modeling of the three CSDs will be performed as their functions are related. Scope of work for these CSDs are based on historical performance and WWE Operations video inspection records and include cleaning and specific condition assessment of the asset, including preliminary seismic evaluation, provide necessary ventilation and repair necessary concrete crack, spalling and exposed rebar. Additionally, the project will also aim to provide safe access, replace the flap gate at 5th St. CSD and North 6th St. CSD, refurbish flap gate at Division CSD and repair the baffle at Division CSD. Backflow prevention system will also be implemented at the 5th Street and 6th Street CSD structures.

Program: CSD and Transport/Storage Structures	**Project Status:** Design	**Environmental Status:** Active (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$5.39 M	Approved Jul-16	Jul-20
Forecast*	$5.39 M	Forecast* Jul-16	Jul-20
Actual	$0.33 M	Project Percent Complete: 9.0%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	08/31/18	09/04/18	03/01/19	10/31/19

Progress and Status:

The 35% design was completed in this quarter. The construction of this project will be combined with Sansome St. CSD and is forecasted to be advertised later in 2018.

Issues and Challenges:

None at this time.

Extensive structural cracks at 5th St CSD

CWWSIPFCDB01 - Sunset Green Infrastructure

Description: The Sunset Boulevard Greenway project will construct a series of tiered bioretention rain gardens in the western stretch of landscaped parcels along 12 blocks stretching from Golden Gate Park to Lake Merced. The rain gardens will manage stormwater runoff on the west side of Sunset Boulevard from the street, paths, and a portion of the landscaped parcel area. The project will also incorporate a "Learning Lab" to supplement elementary school curriculum. This project is also referred to as "Sunset Boulevard Greenway."

Program: Early Implementation Projects	**Project Status:** Construction	**Environmental Status:** Completed (CatEx)

Project Cost:

Approved		$8.44 M
Forecast*		$8.44 M
Actual		$3.94 M

Project Schedule:

Approved	Dec-12	Sep-21
Forecast*	Dec-12	Sep-21

Project Percent Complete: 50.7%

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

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction NTP+	Construction+ Final Completion
Current Forecast	12/02/14✓	N/A	08/10/15✓	03/31/21

+ Construction led by San Francisco Public Works (in-house)

Progress and Status:
Coordinating with SFPW to progress design of Phase 2.

Issues and Challenges:
None at this time.

Sunset Phase 1 rain garden located along Sunset Blvd. between Vicente and Wawona streets

CWWSIPFCDB02 - North Shore Green Infrastructure

Description: This project is will route stormwater to flow-through bioretention planters with surfaces set lower than the surrounding grade. During large storm events, ponded water at the surface of the planters will reach a maximum depth of 6 inches before it crests an overflow weir, either to a lower planter tier or to a concrete valley gutter running the length of the alley. To protect the adjacent building foundations, an impermeable waterproof liner will be placed along the bottom and sides of the planters. New street surfacing and furnishings will also provide improved community space for local residents and visitors. This project is also referred to as "Chinatown Green Alley".

Program: Early Implementation Projects	**Project Status:** Construction	**Environmental Status:** Completed (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$1.90 M	Approved Dec-12	Dec-18
Forecast*	$1.90 M	Forecast* Dec-12	Dec-18
Actual	$1.35 M	Project Percent Complete: 74.8%	

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

Key Milestones:	**Environmental Approval**	**Bid+ Advertisement**	**Construction NTP+**	**Construction+ Final Completion**
Current Forecast	12/08/15✓	11/05/15✓	08/08/16✓	06/30/18

+ This is a SFPW lead construction contract.

Progress and Status:

Construction on the green infrastructure planters, road base, sidewalks, and raised cross walks is nearing completion. The Contractor has committed to completing construction next quarter.

Issues and Challenges:

None at this time.

Spofford Alley, pouring regraded road base

CWWSIPFCDB04 - Sunnydale Green Infrastructure

Description: This project includes two green nodes in Sunnydale watershed; a mini plaza on Sunnydale Ave. and a rain garden at the eastern end of McLaren Park. These green nodes are being designed to maximize the removal of street stormwater runoff from the combined sewer system. At the Sunnydale Avenue Mini-Plaza, bulb-outs containing bioretention planters will be installed to remove stormwater while also providing traffic calming and pedestrian safety. At the Leland Avenue Rain Garden, terraced bioretention facility will be created to capture, store, and infiltrate runoff from the impervious roadway and an adjacent vegetated sloped area. Approximately one block of local sewer work on Rutland Street will be included into the construction contract to minimize construction impact; however, the project cost of that sewer improvement is accounted for separately. This project is also referred to as "Visitacion Valley Green Nodes".

Program: Early Implementation Projects	**Project Status:** Construction	**Environmental Status:** Completed (CatEx)

Project Cost:

Approved		$4.30 M
Forecast*		$4.30 M
Actual		$3.75 M

Project Schedule:

Approved Dec-12		Feb-19
Forecast* Dec-12		Feb-19

Project Percent Complete: 88.6%

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

Key Milestones:	Environmental Approval	Bid* Advertisement	Construction NTP	Construction Final Completion
Current Forecast	08/26/14✓	11/17/16✓	06/05/17✓	08/30/18

** Contract was originally advertised on 8/19/16 and no bids were received.*

Progress and Status:

Sewer work on Rutland was completed last quarter. Construction work on bioretention planters along Sunnydale Avenue and Rutland Street will continue this quarter. Paving of Rutland Street between Sunnydale and Visitacion Avenues is forecasted to be completed next quarter.

Issues and Challenges:

None at this time.

Rain Gardens being constructed at Sunnydale Avenue and Rutland Street

CWWSIPFCDB05 - Richmond Green Infrastructure

Description: Specific work that will be completed at El Camino Del Mar includes providing new pedestrian crosswalks, terraced rain gardens, subsurface infiltration galleries, soil stabilization techniques in selected locations, sewer main upsizing between Lands End Trailhead and manhole east of 32nd Avenue, and upgrading existing crosswalks to comply with the Americans with Disabilities Act. Specific work that will be completed at Beach Terrace includes permeable pavement, rain garden bulb outs at the eastern & western ends of the permeable pavement, a flow-through rain garden, traditional (infiltrative) rain garden bulb-outs, improved catch basins, and a traditional rain garden. This project is also referred to as "Baker Beach Green Street".

Program: Early Implementation Projects	**Project Status:** Bid and Award	**Environmental Status:** Completed (CatEx)

Project Cost:

Approved	$12.06 M
Forecast*	$12.06 M
Actual	$2.54 M

Project Schedule:

Approved Dec-12	Apr-21
Forecast* Dec-12	Apr-21

Project Percent Complete: 24.2%

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

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	06/29/15✓	03/22/18✓	08/01/18	10/30/20

Progress and Status:

WW-627 Construction Contract was advertised 3/22/2018, bids are due 5/3/2018.

Issues and Challenges:

None at this time.

Rain gardens along El Camino Del Mare at Lands End trail head

CWWSIPFCDB06 - Yosemite Green Infrastructure

Description: The upper reach of the Yosemite Creek Daylighting project would daylight the creek along a portion of the historic creek path, from Yosemite Marsh in McLaren Park to Woolsey and Hamilton Streets. This project diverts flows from the sewer using swales, vegetated channels, rain gardens, piped sections and a constructed wetland/detention basin/bio-swale system. This project is also referred to as "Upper Yosemite Creek Daylighting". This project will provide plant establishment and/or monitoring of the following GI projects, Islais Creek, Sunset, North Shore, Lake Merced, Sunnydale, Richmond, Channel and Yosemite.

Program: Early Implementation Projects	**Project Status:** Planning	**Environmental Status:** Completed (CatEx)

Project Cost:

Approved		$16.05 M
Forecast*		$16.05 M
Actual		$2.53 M

Project Schedule:

Approved	Dec-12	Apr-24
Forecast*	Dec-12	Apr-24

Project Percent Complete: 17.0%

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

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	08/15/17✓	03/31/20	10/01/20	02/28/22

Progress and Status:
Awaiting review comments by SFRPD to complete Planning Phase CER.

Issues and Challenges:
None at this time.

Yosemite Station along Wayland Street provides outdoor educational opportunities for creek restoration and ecology.

CWWSIPFCDB08 - Channel Green Infrastructure

Description: This project is also referred to as "Wiggle Neighborhood Green Corridor". The purpose of the Wiggle Neighborhood Green Corridor project is to implement low impact stormwater management along the Wiggle bike route between Duboce Street and Fell Street in order to reduce flooding, and provide additional stormwater management benefits to the SSIP. Key features of this project will include installation of bulb-outs on selected street corners, bioretention planters, and permeable pavement.

Program: Early Implementation Projects	**Project Status:** Construction	**Environmental Status:** Not Applicable

Project Cost:		**Project Schedule:**	
Approved	$3.11 M	Approved Feb-14	Aug-18
Forecast*	$3.11 M	Forecast* Feb-14	Aug-18
Actual	$1.72 M	Project Percent Complete: 63.0%	

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

Key Milestones:	**Environmental Approval**	**Bid+ Advertisement**	**Construction NTP+**	**Construction+ Final Completion**
Current Forecast	N/A	(A) 02/21/14✓ (B) 11/15/16✓	08/05/14✓ 05/15/17✓	(A) 04/15/15✓ (B) 05/31/18

+ Project includes SFPW lead multiple construction contracts. (A) Phase 1 – Fell/Oak Streetscape Enhancements and (B) Phase 2 – Wiggle Neighborhood Green Corridor

Progress and Status:

Construction is complete, substantial completion issued this quarter and Final Completion to be issued next quarter. All punchlist items have been completed.

Issues and Challenges:

None at this time.

Completed rain garden and permeable paving parking strips at Waller and Steiner Streets

CWWSIPFCDB12 - Wawona St and 15th Ave Stormwater Detention Project

Description: The neighborhood surrounding the intersection of 15th Avenue and Wawona Street is topographically lower in elevation compared to its adjacent neighborhoods, and has been subjected to flooding during large storms. When the capacity of the sewers are exceeded during large storms, significant volumes of overland flow upstream of the intersection cannot enter the catch basins and sewer system, causing flooding and property damage. The purpose of this project is to convert the Arden Wood Natural Area to a flood water detention basin by collecting the upstream surface water and diverting it into the area, using a series of pipe and inlet systems on the upstream, and a large pipe/micro-tunnel at the intersection of Wawona Street and 15th Avenue.

Program: Watershed Stormwater Management	**Project Status:** Design	**Environmental Status:** Active (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$22.71 M	Approved Jul-16	Dec-21
Forecast*	$22.71 M	Forecast* Jul-16	Dec-21
Actual	$0.45 M	Project Percent Complete: 7.4%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	05/31/19	11/04/19	04/01/20	06/30/21

Progress and Status:
Geotechnical and slope stability analysis started in this quarter and will continue through the next quarter. 35% design has started and will be completed by end of summer. The design schedule for this project is extended to address the scope of retention basin in the ravine.

Issues and Challenges:
None at this time.

This project is using a portion of the ravine in the Arden Wood to detain stormwater.

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CWWSIPFCGI01 - Watershed Stormwater Management (Planning Only)

Description: This project will address long term GI development process and how it will be integrated and prioritized in the Collection System Plan and UWA report.

Program: Watershed Stormwater Management	**Project Status:** Planning	**Environmental Status:** Not Applicable

Project Cost:		**Project Schedule:**	
Approved	$7.00 M	Approved Jul-16	Dec-20
Forecast*	$7.00 M	Forecast* Jul-16	Dec-20
Actual	$0.81 M	Project Percent Complete: 46.5%	

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

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

Progress and Status:

Project team is addressing staff comments received on draft document summarizing the collection system strategy and has initiated planning activities for the Watershed Improvement Grant Program (WIGP).

Issues and Challenges:

None at this time.

CWWSIPFCRP03 - Operational Decision System Phase 2

Description: This project would integrate available data in the collection system (levels, flows, pump status, etc.) with rainfall prediction data (from National Oceanic and Atmospheric Administration). The rainfall prediction data will be coupled with WWE's collection system hydraulic model to project the likely impact of approaching storms and generate specific operational recommendations for managing flows. Phase 2 builds upon Phase 1 (CWWSIPFCRP02) for a citywide installation.

Program: Advanced Rainfall and Operation Decision System	**Project Status:** Construction	**Environmental Status:** Not Applicable

Project Cost:

Approved	$8.72 M
Forecast*	$8.72 M
Actual	$0.11 M

Project Schedule:

Approved	Feb-17	Jun-20
Forecast*	Feb-17	Jun-20

Project Percent Complete: 2.1%

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

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction NTP+	Construction+ Final Completion
Current Forecast	N/A	12/18/17✓	02/22/18✓	03/30/20

+This is a software development project. NTP represents the date of award for software development agreement.

Progress and Status:

The software development contract has been awarded and notice-to-proceed was issued in February 2018. Kick-off meetings between project stakeholders and the contractor are scheduled in the next quarter.

Issues and Challenges:

None at this time.

CWWSIPFCDB13 - Cayuga Ave Stormwater Detention Project

Description: The neighborhood surrounding the northeastern end of Cayuga Avenue has been susceptible to recurring flooding associated with moderate to heavy storms. Due to its low land topography, the area can experience up to a few feet of water on the streets and sidewalks during rain events. This project will improve the stormwater detention by re-grading the I-280 embankment at the foot of Cayuga to create a low lying detention field. This project will provide surface detention of flows during flooding and includes an overflow relief connection into the College Hill Tunnel as well and a retaining wall to support the roadway.

Program: Flood Resilience Projects	**Project Status:** Planning	**Environmental Status:** Active (CatEx)

Project Cost:		**Project Schedule:**	
Approved	$8.25 M	Approved Jul-16	Feb-22
Forecast*	$8.25 M	Forecast* Jul-16	Feb-22
Actual	$0.11 M	Project Percent Complete: 1.9%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	08/21/20	09/30/20	10/01/20	08/24/21

Progress and Status:

Team is still coordinating with Caltrans to complete the co-op. The co-op agreement is necessary for Caltrans review of PID (Project Initiation Document).

Issues and Challenges:

None at this time.

CWWSIPFCDB14 - Folsom Area Stormwater Improvement Project

Description: The neighborhood surrounding Folsom Street from 14th to 18th has been susceptible to recurring flooding associated with moderate to heavy storms. This project will include planning and design to improve stormwater conveyance away from the 17th and Folsom neighborhood to minimize flooding in the Level of Service storm. This project is to be developed based on the preferred alternative identified in Flood Resilience - Early Projects.

Program: Flood Resilience Projects	**Project Status:** Planning	**Environmental Status:** Not Initiated

Project Cost:

Approved		$38.41 M
Forecast*		$38.41 M
Actual		$0.58 M

Project Schedule:

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

Project Percent Complete: 24.1%

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

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction NTP+	Construction+ Final Completion
Current Forecast	07/31/19	N/A	N/A	N/A

+ Project includes Planning, Environmental, and Design Phases only.

Progress and Status:

The team has completed Conceptual Engineering and presented it to the Technical Steering Committee and received its approval. The RFP for tunnel engineering design is being advertised and the pre proposal session will be held in early April.

Issues and Challenges:

None at this time.

There is a very large and highly urbanized area that contributes stormwater to the Folsom area

CWWSIPFCDB15 - 17th and Folsom Permanent Barriers

Description: SFPUC has purchased off-the-shelf plastic temporary flood barriers for 2015 and 2016 wet seasons. At locations where temporary plastic flood barriers were installed and proven effective in mitigating floods, SFPUC plans to install more durable custom aluminum or steel barriers before a permanent solution (Folsom Area Stormwater Improvement Project) can be implemented. The aluminum or steel barriers would be installed during wet seasons and removed during dry seasons. The sidewalk would be graded and outfitted with recessed and covered receptacles for mounting flood barrier poles. Interlocking aluminum logs would be installed between the poles. The flood barrier system would be custom built based on site-specific pole intervals, barrier height, and other characteristics.

Program: Flood Resilience Projects	**Project Status:** Design	**Environmental Status:** Completed

Project Cost:		**Project Schedule:**	
Approved	$2.66 M	Approved May-16	Jul-19
Forecast*	$2.66 M	Forecast* May-16	Jul-19
Actual	$0.13 M	Project Percent Complete: 20.4%	

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

Key Milestones:	**Environmental Approval**	**Bid** Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	12/30/16✓	N/A	10/01/18	01/31/19

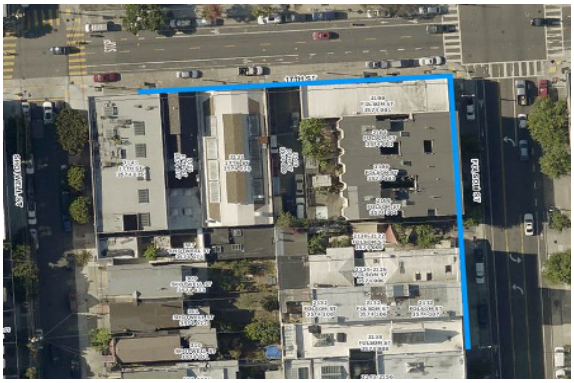
*** Construction will be performed using JOC.*

Progress and Status:

Design documents are complete, however, the project is being deferred by one wet season to provide the opportunity for property owners to explore, develop and install projects on their respective properties. In the meantime, the plastic temporary barriers will continue to be deployed for the upcoming wet season.

Issues and Challenges:

None at this time.



This project would replace the plastic temporary flood barriers currently deployed along the blue alignment during wet weather

CWWSIPFCDB16 - Hydraulic and Drainage Sewer Improvements

Description: This project includes awarding "As-Needed Construction Contracts" to implement small and non-specialty sewer improvement projects at critical flood-prone neighborhoods. Examples of non-specialty, small infrastructure construction include improvement of drainage features, upsizing/expansion of sewer pipes, and surface grading modifications. Two preliminary projects (areas) were identified: Joost/Foerster Sewer Expansion, and Urbano/Victoria Drainage Project. Additional projects will be added as the needs arise.

Program: Flood Resilience Projects	**Project Status:** Construction	**Environmental Status:** Not Applicable

Project Cost:		**Project Schedule:**	
Approved	$8.58 M	Approved Jul-16	Dec-18
Forecast*	$8.58 M	Forecast* Jul-16	Dec-18
Actual	$3.11 M	Project Percent Complete: 89.8%	

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

Key Milestones:	**Environmental Approval**	**Bid+ Advertisement**	**Construction NTP+**	**Construction+ Final Completion**
Current Forecast	N/A	(A) 12/07/16✓ (B) N/A	(A) 05/01/17✓ (B) 05/15/17✓	(A) 06/29/18 (B) 06/29/18

+ Project includes construction projects in two neighborhoods (A) Joost/Foerster (WW-650); (B) Urbano/Victoria (JOC-60-05, and Public Works contracts 2696J, and 2703J)

Progress and Status:

Victoria/Urbano (2703J) reached final completion in March. Victoria/Urbano (2696J) anticipated substantial completion in June. Joost/Foerster (WW-650) reached substantial completion in December. The construction work under JOC 60 on Ocean Ave. reached final completion.

Issues and Challenges:

None at this time.

The project includes constructing new inlets to improve surface drainage in the Victoria/Urbano neighborhood

CWWSIPPRPL91 - Land Reuse of 1800 Jerrold Avenue

Description: This project includes the acquisition of this site for possible near-term and long-term SFPUC use. This 6.04 acre site on Jerrold Avenue between Quint and Rankin, is adjacent to the Southeast Plant and is currently occupied by another city department, Fleet Management under the Office of Contract Administration. The site is used as a central shop for vehicle repairs. Acquisition of the site by the SFPUC would be beneficial because there are very few empty or underutilized sites around the SEP; and, after completion of any necessary planning and environmental review, this site can serve a variety of functions to support the SEP's short and long term efforts.

Program: Land Reuse	**Project Status:** Construction	**Environmental Status:** Completed

Project Cost:		**Project Schedule:**	
Approved	$90.00 M	Approved Sep-13	Feb-19
Forecast*	$90.00 M	Forecast* Sep-13	Feb-19
Actual	$52.66 M	Project Percent Complete: 59.2%	

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

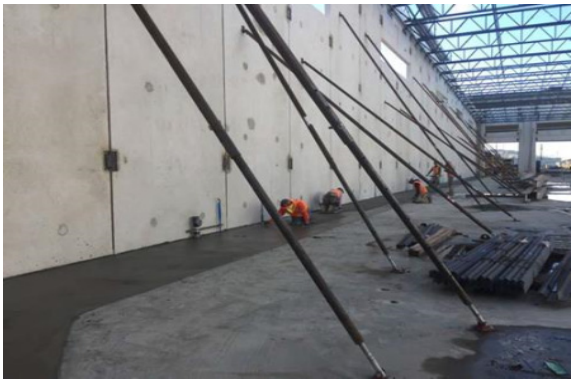
Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction+ Final Completion**
Current Forecast	10/30/15✓	N/A	05/01/17✓	06/30/18

Progress and Status:

Construction contracts for the new Central Shop facilities at Selby and tenant improvements at Toland is 82% and 90% complete, respectively. These contracts are being implemented through SFPW contracting and remain on schedule for substantial completion of May and June, respectively. Central Shop relocation and delivery of 1800 Jerrold property to SFPUC is anticipated by August 2018.

Issues and Challenges:

None at this time.



New Central Shops in construction

CWWSIPPRPL92 - Land Reuse of 1801 Jerrold Avenue

Description: This project includes the acquisition of this site for SFPUC both near-term and long-term use. This 1.54 acre site is currently under the jurisdiction of the Department of Public Works. It was formerly used as an asphalt plant that has not been operational for many years. Acquisition of the site by the SFPUC would be beneficial because there are very few empty or underutilized sites around the SEP; and, after completion of any necessary planning and environmental review, this site can serve a variety of functions to support the SEP's short and long term efforts.

Program: Land Reuse	**Project Status:** Bid and Award	**Environmental Status:** Completed (CatEx)

Project Cost:		**Project Schedule:**		
Approved	$8.24 M	Approved Sep-13		Aug-18
Forecast*	$8.24 M	Forecast* Sep-13		Aug-18
Actual	$0.50 M	Project Percent Complete: 12.1%		

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

Key Milestones:	**Environmental Approval**	**Bid* Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	06/10/16✓	N/A	06/01/18	07/31/18

** This may be done under a JOC contract.*

Progress and Status:

The outcome of SFPW effort to salvage some of the asphalt plant equipment has reduced the scope for the initial demolition plans. Current strategy for removal of remaining equipment at 1801 Jerrold (Asphalt Plant) is pending relocation of Public Works from the site. Griffith Yard was opened on 3/29/2018 and the relocation of Sewer Operations to Griffith Yard will be completed by April.

Relocation of Sewer Operations from 160 Napoleon to Griffith Yard and then relocation of San Francisco Public Work's Street Repair facilities from the 1801 Jerrold Avenue (Asphalt Plant) to 160 Napoleon began in late March 2018.

Asphalt plant after salvage

Issues and Challenges:

None at this time.

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II. Wastewater Capital Improvement Program

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1. PROGRAM DESCRIPTION

The Wastewater Capital Improvement Programs (WWE CIP) addresses immediate wastewater needs in the areas of flood control, odor control, and aging facilities. The WWE CIP precedes the Sewer System Improvement Program (SSIP), which is a long-term plan to address the City's wastewater long-term needs. The SSIP was initiated in 2011 and construction of the first SSIP project was not anticipated until after 2013. Because a number of critical projects had already been identified to address the immediate needs of the wastewater system, the SFPUC approved funding in Spring of 2005 for the WWE CIP Program to begin work.

The WWE CIP (previously called "the 5-year CIP" or "Interim CIP") program budget and schedule were originally adopted in December 2005. The original WWE CIP had 36 projects, $150M in budget, and a five-year duration in anticipation of the upcoming SSIP. Over time, additional work was identified by the Wastewater Enterprise before the SSIP initiation; therefore, new projects and funding were added to the WWE CIP through supplemental appropriations for fiscal years (FY) 2009/10, 2010/11, 2011/12 and 2012/13. The reported budgets are summarized in Table 1.1 below and shown in detail in Appendix 1.2-2 (Section II).

In summary, the current WWE CIP has 72 projects, $399M in approved budget and an anticipated completion in June 2018. No changes to the overall program budget, but a one-and-one-half year delay to the program schedule. Final Completion was obtained for the last construction project cenmscic37 (WW-556) on December 26, 2017. All construction activities have now been completed for the program. The program has been extended six months to perform financial closeout of the projects, reconciling F$P issues and finalizing the Prop 1E Grant reimbursement invoices.

The projects identified in the WWE CIP are divided into four major categories:

1) Odor Control
2) Treatment Facilities
3) Pump Stations, and
4) Sewer/Collection System

The Odor Control/Treatment/Pump Stations projects will improve odor control, ensure reliability of critical equipment and improve structural integrity at treatment facilities and pumping stations. Projects at the Southeast Treatment Facility are mostly related to odor control and reliability. Projects at the Oceanside Treatment Facility are for controlling corrosion, improving HVAC, and meeting biosolids disposal requirements. Pump station projects are specific to improving reliability and efficiency or providing redundancy.

The Sewer/Collection System Projects will

Table 1.1 Program Baseline Summary

Program Revisions	Commission Reported	Budget ($Million)	Schedule[1]	Number of Projects
FY 2005/06 (Orig BSLN)	January 10, 2006	$150.2	12/28/10	36
FY 2009/10	November 23, 2010	$222.4	02/20/14	50
FY 2010/11	March 8, 2011	$307.6	12/18/14	58
FY 2011/12	September 13, 2011	$386.0	08/15/14	62
FY 2012/13	September 11, 2012	$412.7	03/16/16	71
FY 2012/13	September 10, 2013	$399.9	03/16/16	72
FY 2012/13	February 25, 2014	$399.0	12/08/16	72

[1] Final Program Completion Date

enhance the collection and conveyance of sewage and storm water in San Francisco. The completed projects will increase sewer capacity, allowing flow to be captured and transported to the wastewater treatment plants and minimizing potential flooding in city streets. Approximately fifty percent of the sewer system in San Francisco is over 70 years old. Replacing and increasing the sizes of sewer pipelines throughout the City will enhance the reliability of the sewer collection system.

Refer to Appendix 1.2-1 (Section II) for detailed descriptions of the WWE CIP projects.

2. PROGRAM STATUS

This third (3rd) quarterly report for Fiscal Year (FY) 2017-2018 presents the progress made on the WWE CIP projects for the period of January 1, 2018 through March 31, 2018. The program's schedule and budget were last reported to SFPUC on March 13, 2018.

Figure 2.1 shows the total Approved Budget for the projects remaining in each phase of the program as of March 31, 2018. The number of projects in each phase is shown in parenthesis.

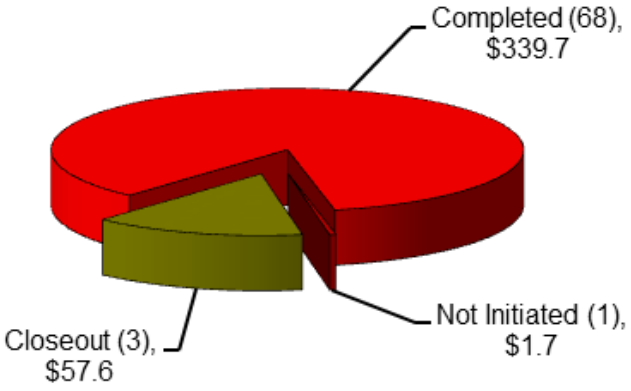

Figure 2.1 Total Approved Budget for Projects Each Phase ($ Million)

Figure 2.2 shows the number of projects in the following stages of the program as of March 31, 2018: Pre-construction, Construction, and Post-construction. Pre-construction includes all projects in Planning, Design, Bid & Award, and in Multiple Phases.

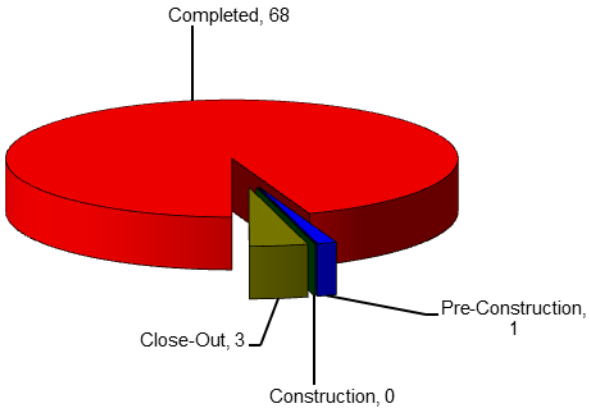

Figure 2.2 Number of Projects in Pre-construction, Construction, and Post-construction

3. PROGRAM COST SUMMARY

Table 3.1 provides an overall program-level cost summary of the WWE CIP. It shows: the expenditures to date; the 2005 Baseline Budget, the FY 2013-14 Approved Budget, the Current Forecasted Costs; and the Cost Variance between the Approved and Forecasted Budgets for each cost category. The cost categories include construction costs, program delivery costs, and other costs.

The total approved WWE CIP Budget (not including Financing Costs) remains at $399 million (which includes funding from FY 2009/10, FY 2010/11, FY 2011/12, and FY 2012/13 and a reduction of $12.7M through the Supplemental Budget Process in May 2013.

Table 3.1 Program Cost Summary

Cost Categories	**Expenditures To Date ($ Million)** (A)	**2005 Baseline Budget ($ Million)** (B)	**FY 2014-15 Approved Budget[2] ($ Million)** (C)	**Current Forecasted Cost ($ Million)** (D)	**Cost Variance ($ Million)** (E = D - C)
WWE CIP					
Construction Cost	$289.9	$110.2	$299.8	$300.4	$0.6
Program Delivery Cost	$93.9	$37.0	$95.7	$95.0	($0.7)
Other Costs [1]	$3.3	$3.0	$3.5	$3.6	$0.1
PROGRAM TOTAL	**$387.1**	**$ 150.2**	**$399.0**	**$399.0**	-

Notes: [1] Other Costs cover expenditures associated with Environmental Mitigation, Arts Commission Program, Security Improvements, and Right-of-Way/Real Estate Requirements.
[2] The 2014-15 budget and forecast costs include FY 2009/10, FY 2010/11, FY 2011/12, and FY 2012/13 funding.

4. PROGRAM SCHEDULE SUMMARY

Figure 4.1 and Table 4.1 compare the 2005 Baseline, the 2014 Current Approved and Current Forecasted Schedules for the WWE CIP. Refer to the "Cost and Schedule Status" notes in Section 5 for the criteria associated with the three color-coded Forecast Status levels in Figure 4.1 – Meet Requirements, Need Attention, and Exceed Limits.

The Approved Schedule completion for the overall WWE CIP is December 2016 and the Current Forecasted completion is June 2018, a 1 ½ year delay. Refer to Appendix 2.2 (Section II) for a graphical presentation of the WWE CIP 2014 Project-Level Schedule.

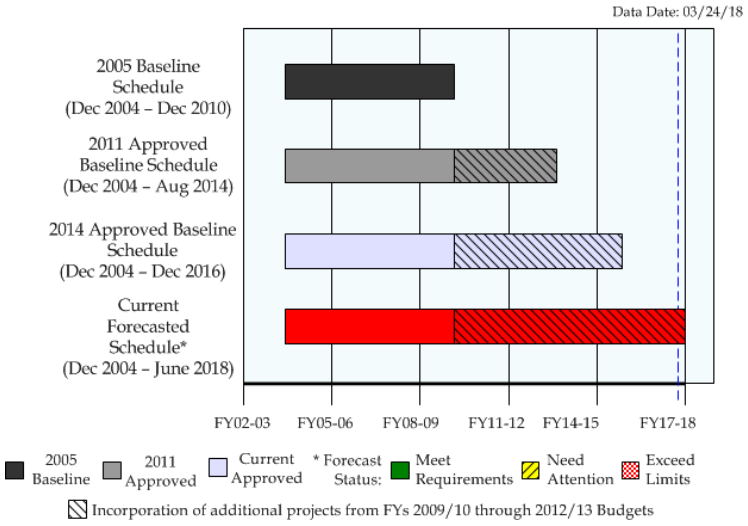

Figure 4.1 Program Schedule Summary

Table 4.1 2014 Approved vs. Current Forecasted Schedule Dates

Program	**2005 Baseline Start**	2014 Approved Start	Current Approved Start	Actual Start	2005 Baseline Completion	2014 Approved Completion	Current Approved Completion	Current Forecasted Completion	Schedule Variance (Months)
WWE CIP	12/31/04	12/31/04	12/31/04	12/31/04✓	12/28/10	12/08/16	12/08/16	06/29/18	18.9

5. PROJECT PERFORMANCE SUMMARY

No projects to report under this section.

6. PROJECTS NOT WITHIN BUDGET AND/OR SCHEDULE (THRESHOLD LIMITS)

No projects to report under this section.

7. ON-GOING CONSTRUCTION

No projects are currently in construction.

8. PROJECTS IN CLOSE-OUT

Project Title	2005 Baseline Construction Phase Completion	2014 Approved Construction Phase Completion	Current Approved Construction Phase Completion	Actual Construction Phase Completion	2005 Baseline Construction Phase Budget	2014 Approved Construction Phase Budget	Current Approved Construction Phase Budget	Construction Phase Expenditures To Date
Treatment Facilities								
CENMSCIC37 WWE Facility Reliability Impr - SEP Northside		08/29/16	08/29/16	12/26/17		$ 36,303,511	$ 36,303,511	$ 34,785,193
CENMSCIC47 WWE Mechanical / Electrical Upgrade		09/08/16	09/08/16	11/30/17		$ 5,253,825	$ 5,253,825	$ 4,672,818
CENMSCIC72 Facility Security Upgrades Contract 2		11/23/16	11/23/16	09/15/17		$ 1,557,720	$ 1,557,720	$ 173,750
TOTAL						$ 43,115,056	$ 43,115,056	$ 39,631,762

9. COMPLETED PROJECTS

Project Title	2005 Baseline Project Completion	2014 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2014 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
Odor Control								
CENMSCIC05 Oceanside WPCP HVAC Imprv	04/03/09	04/13/10	04/13/10	04/13/10	$ 3,300,000	$ 18,545,650	$ 18,545,650	$ 18,545,650
CENMSCIC07 Chemical Feed Sys Imprv - Ph 1	07/28/06	04/10/07	04/10/07	04/10/07	$ 523,067	$ 583,027	$ 583,027	$ 583,027
CENMSCIC16 WS PS VFDs and Pumps	09/10/07	07/14/09	07/14/09	07/14/09	$ 1,830,753	$ 1,786,082	$ 1,786,082	$ 1,786,082
CENMSCIC20 Chemical Feed Sys Imprv - Ph 2	09/30/08	08/30/07	08/30/07	08/30/07	$ 2,450,000	$ 499,661	$ 499,661	$ 499,661
CENMSCIC22 Embarcadero Vent Elements Ph 1	06/04/07	09/28/07	09/28/07	09/28/07	$ 625,000	$ 562,364	$ 562,364	$ 562,364
CENMSCIC28 SEWPCP Bldg 010 Odor Control Improvements	09/30/09	08/16/12	08/16/12	08/16/12	$ 5,000,000	$ 6,674,261	$ 6,674,261	$ 6,674,261
CENMSCIC31 SEWPCP 620 & 680 Digester Compressor		01/08/13	01/08/13	01/08/13		$ 2,445,940	$ 2,445,940	$ 2,445,940
Treatment Facilities								
CENMSCIC06 SEP Gas Handling Imprv	09/30/08	09/22/09	09/22/09	09/22/09	$ 13,000,000	$ 11,061,999	$ 11,061,999	$ 11,061,999
CENMSCIC08 SEP Secondary Clarifiers Concrete Repairs	02/29/08	09/28/07	09/28/07	09/28/07	$ 3,000,000	$ 1,810,483	$ 1,810,483	$ 1,810,483
CENMSCIC09 SEP Mixed Liquor and Odor Control Imprv	09/30/09	07/31/07	07/31/07	07/31/07	$ 7,420,272	$ 545,724	$ 545,724	$ 545,724
CENMSCIC17 OSP / WS Bar Screens	09/28/07	07/14/09	07/14/09	07/14/09	$ 2,450,000	$ 5,573,615	$ 5,573,615	$ 5,573,615
CENMSCIC29 SEWPCP Gas Handling Improvements - Ph 2		06/08/10	06/08/10	06/08/10		$ 2,818,043	$ 2,818,043	$ 2,818,043
CENMSCIC36 WWE Facility Security/Emergency Response		07/09/14	07/09/14	01/14/15		$ 9,982,547	$ 9,982,547	$ 9,267,933
CENMSCIC38 SEP Solid Handling (Digester Roof, Gas Mixing, etc)		12/31/15	12/31/15	09/23/16		$ 16,282,213	$ 16,282,213	$ 16,021,221
CENMSCIC39 OSP Solids Handling and Coating		05/20/16	05/20/16	07/26/16		$ 31,671,201	$ 31,671,201	$ 32,174,590
CENMSCIC41 MV-SWGR SEP Electrical Reliability		09/30/15	09/30/15	09/12/16		$ 3,600,601	$ 3,600,601	$ 3,411,017
CENMSCIC42 GHW Stabilization Emergency		09/02/12	09/02/12	09/02/12		$ 1,792,500	$ 1,792,500	$ 1,792,443
CENMSCIC45 OPS: FOG to Biodiesel		12/31/14	12/31/14	09/23/16		$ 1,000,000	$ 1,000,000	$ 983,246
CENMSCIC70 OS Plant Improvements - Aeration Syst Upgrade		12/31/15	12/31/15	09/25/15		$ 1,362,452	$ 1,362,452	$ 321,132
Int03 Contract 4 OSP Gas Compressors ($ included in IC17)	11/30/06	09/30/08	09/30/08	09/30/08	$ 400,000	$ 0	$ 0	$ 0
Pump Stations								
CENMSCIC19 Tennessee Pump Station Reliability - Ph 1	06/30/08	08/30/07	08/30/07	08/30/07	$ 1,550,000	$ 190,117	$ 190,117	$ 190,117
CENMSCIC21 Channel Pump Station Odor Control	06/30/09	10/31/07	10/31/07	10/31/07	$ 5,000,000	$ 2,516,287	$ 2,516,287	$ 2,516,287
CENMSCIC30 Channel Pump Station Odor Control - Phase 2		10/11/12	10/11/12	10/11/12		$ 21,710,944	$ 21,710,944	$ 21,710,944
CENMSCIC33 North Shore to Channel Force Main Improvement		07/14/11	07/14/11	07/14/11		$ 2,014,336	$ 2,014,336	$ 2,014,336
CENMSCIC40 North Shore and Mariposa Pump Station Improvements		06/30/14	06/30/14	09/23/16		$ 7,619,497	$ 7,619,497	$ 6,982,864
CENMSCIC48 Channel Pump Sta Improvements Phase 3		11/12/13	11/12/13	11/12/13		$ 6,548,684	$ 6,548,684	$ 6,550,798
CENMSCIC52 North Shore Force Main, Phase 2		05/27/16	05/27/16	12/08/16		$ 8,771,203	$ 8,771,203	$ 8,720,838

Project Title	2005 Baseline Project Completion	2014 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2014 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
Pump Stations								
CENMSCIC61 North Shore Force Main Emergency		04/04/13	04/04/13	04/04/13		$ 721,739	$ 721,739	$ 721,561
CENMSCIC62 Emergency NSFM Rehabilitation		07/01/14	07/01/14	09/25/15		$ 8,035,821	$ 8,035,821	$ 7,508,190
Sewer/Collection System								
CENMSCIC01 Vicente St. Sewer Sys Imprv Ph 2	05/24/07	11/30/07	11/30/07	11/30/07	$ 4,663,000	$ 4,295,061	$ 4,295,061	$ 4,295,061
CENMSCIC02 Teresita Blvd "South" Sewer Replc	12/29/06	10/15/07	10/15/07	10/15/07	$ 2,628,000	$ 2,374,788	$ 2,374,788	$ 2,374,788
CENMSCIC03 Shotwell & 18th St. Drainage Imprv	03/30/07	03/27/08	03/27/08	03/27/08	$ 6,445,155	$ 6,516,357	$ 6,516,357	$ 6,516,357
CENMSCIC10 Brotherhood Way/St Charles Sewer Improvement	09/30/08	10/08/09	10/08/09	10/08/09	$ 1,984,000	$ 2,417,216	$ 2,417,216	$ 2,417,216
CENMSCIC11 Cesar Chavez Sewer Imprv Ph 1	03/31/09	12/31/14	12/31/14	09/23/16	$ 8,000,000	$ 23,610,423	$ 23,610,423	$ 23,911,931
CENMSCIC12 Vicente St. Ph 1 Sewer Imprv	07/28/06	03/16/07	03/16/07	03/16/07	$ 3,405,000	$ 2,851,895	$ 2,851,895	$ 2,851,895
CENMSCIC13 Monterey, Baden, & Circular Sewer Imprv	06/30/06	09/29/06	09/29/06	09/29/06	$ 1,035,000	$ 778,790	$ 778,790	$ 778,790
CENMSCIC14 Mission & Foote Sewer Imprv	08/17/06	11/14/06	11/14/06	11/14/06	$ 769,409	$ 574,359	$ 574,359	$ 574,359
CENMSCIC15 Mission & Mt. Vernon Sewer Imprv Ph I	09/16/08	09/22/09	09/22/09	09/22/09	$ 11,402,780	$ 10,270,282	$ 10,270,282	$ 10,270,282
CENMSCIC18 Justin Dr/Marietta Ave/Del Vale Ave Sewer Imprv	09/28/07	05/28/08	05/28/08	05/28/08	$ 885,000	$ 1,372,540	$ 1,372,540	$ 1,372,540
CENMSCIC23 Sunnydale Auxiliary Sewer	09/28/10	03/26/15	03/26/15	09/23/16	$ 25,500,000	$ 59,937,553	$ 59,937,553	$ 58,121,239
CENMSCIC24 Phelps/Topeka/Pomona Sewer Imprv	11/27/07	06/01/09	06/01/09	06/01/09	$ 2,220,000	$ 902,607	$ 902,607	$ 902,607
CENMSCIC25 Colon/Greenwood/Plymouth /Southwood/Miramar Sewer Improvement	08/29/08	01/19/12	01/19/12	01/19/12	$ 3,949,000	$ 1,921,706	$ 1,921,706	$ 1,921,706
CENMSCIC26 Alemany & Sickles Sewer Improvements	06/30/09	03/28/08	03/28/08	03/28/08	$ 2,500,000	$ 52,078	$ 52,078	$ 52,078
CENMSCIC27 Ocean Ave Sewer Improvement	03/31/09	02/28/08	02/28/08	02/28/08	$ 1,400,000	$ 59,714	$ 59,714	$ 59,714
CENMSCIC32 Spot Sewer Repair Contract #23		05/12/11	05/12/11	05/12/11		$ 1,818,960	$ 1,818,960	$ 1,818,960
CENMSCIC34 Folsom St Sewer Replacement		02/24/12	02/24/12	02/24/12		$ 1,560,906	$ 1,560,906	$ 1,560,906
CENMSCIC35 Minna/Natoma/Russ Sewer Replacement		08/19/11	08/19/11	08/19/11		$ 735,402	$ 735,402	$ 735,402
CENMSCIC43 Richmond Drainage Improvement Ph2		01/16/14	01/16/14	01/16/14		$ 799,664	$ 799,664	$ 799,664
CENMSCIC44 Cesar Chavez Sewer Improvements Ph2		02/07/14	02/07/14	02/07/14		$ 256,416	$ 256,416	$ 256,416
CENMSCIC46 Fell St Sewer Replacement		08/19/11	08/19/11	08/19/11		$ 220,059	$ 220,059	$ 220,059
CENMSCIC49 Vallejo St Emergency St Replacement		05/10/11	05/10/11	05/10/11		$ 272,560	$ 272,560	$ 272,560
CENMSCIC50 As Needed Sewer Replacement Contract #1		11/15/13	11/15/13	11/15/13		$ 3,220,635	$ 3,220,635	$ 3,220,635
CENMSCIC51 Spot Sewer Repair Contract #25		04/02/12	04/02/12	04/02/12		$ 4,530,383	$ 4,530,383	$ 4,530,383
CENMSCIC53 Downtown District Aging Sewer Replacement/Rehabilitation		12/30/13	12/30/13	12/30/13		$ 3,222,960	$ 3,222,960	$ 2,630,580

II. WWE CIP Quarterly Report

Project Title	2005 Baseline Project Completion	2014 Approved Project Completion	Current Approved Project Completion	Actual Project Completion	2005 Baseline Project Budget	2014 Approved Project Budget	Current Approved Project Budget	Project Expenditures To Date
Sewer/Collection System								
CENMSCIC54 Sunnydale Auxiliary Sewer Phase 2		07/20/16	07/20/16	09/27/16		$ 5,369,192	$ 5,369,192	$ 5,205,003
CENMSCIC55 Church St/Duboce Sewer Replacement		09/09/13	09/09/13	09/09/13		$ 1,168,000	$ 1,168,000	$ 899,347
CENMSCIC56 Powell and Mason Sewer Improvements (SHI)		05/15/15	05/15/15	05/15/15		$ 1,698,104	$ 1,698,104	$ 1,698,104
CENMSCIC57 Sewer Staff Facility Improvements		05/30/14	05/30/14	08/11/14		$ 743,387	$ 743,387	$ 708,722
CENMSCIC58 Vactor Waste Staging Area		09/30/14	09/30/14	09/13/16		$ 361,613	$ 361,613	$ 367,999
CENMSCIC59 Spot Sewer Repair Contract #26		12/26/12	12/26/12	12/26/12		$ 4,404,774	$ 4,404,774	$ 4,404,774
CENMSCIC60 Spot Sewer Repair Contract #27		06/28/13	06/28/13	06/28/13		$ 4,290,621	$ 4,290,621	$ 4,290,876
CENMSCIC63 Plymouth Avenue Sewer Replacement		03/16/13	03/16/13	03/16/13		$ 753,754	$ 753,754	$ 753,754
CENMSCIC64 As-Needed Sewer Replacement		11/04/13	11/04/13	11/04/13		$ 2,742,529	$ 2,742,529	$ 2,444,174
CENMSCIC65 Western Addition/Beach/Marina District Sewer Replacement		09/08/13	09/08/13	10/25/13		$ 2,882,000	$ 2,882,000	$ 2,565,627
CENMSCIC66 Greenwich/Leavenworth/Lombard Sewer Repl		05/13/13	05/13/13	05/13/13		$ 736,015	$ 736,015	$ 736,015
CENMSCIC67 Block 2169 Emergency Easement Sewer Repl		11/04/12	11/04/12	11/04/12		$ 248,344	$ 248,344	$ 248,344
CENMSCIC68 24th Street Sewer Replacement		09/29/13	09/29/13	11/27/13		$ 734,560	$ 734,560	$ 675,710
CENMSCIC69 Various Location Replacement No.4		02/04/14	02/04/14	02/04/14		$ 1,703,992	$ 1,703,992	$ 1,515,878
CENMSCIC71 Folsom Street Sewer Replacement		07/12/13	07/12/13	08/22/13		$ 576,440	$ 576,440	$ 576,439
TOTAL					$ 123,335,436	$ 339,713,630	$ 339,713,630	$ 333,351,260

10. PROJECTS WITHIN BUDGET AND SCHEDULE (THRESHOLD LIMITS)

No projects to report under this section.

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III. Facilities and Infrastructure Program

1. PROGRAM DESCRIPTION

The Wastewater Facilities and Infrastructure Program will encompass those capital improvements that fall outside of the Sewer System Improvement and Renewal and Replacement Programs. These capital projects are intended to provide for necessary upgrades to aging facilities which are not addressed by the SSIP or R&R to maintain their intended functions. Projects will include improvement to Treasure Island wastewater facilities and improvements to wastewater support facilities (office consolidation, Southeast Community Facility).

The Wastewater Facilities and Infrastructure Program will address the following challenges:

- Uphold the SFPUC Wastewater Enterprise Levels of Service (LOS);
- Protect the structural integrity of critical City infrastructure;
- Streamline core operational functions and processes;
- Employ energy efficiency components, stormwater management enhancements, seismic upgrades, spatial improvements, safety and security improvements, and other essential improvements to modernize existing facilities to current standards;
- Provide benefits to surrounding communities.

2. PROGRAM STATUS

This Quarterly Report presents the progress made on the Facilities and Infrastructure program between January 1, 2018 and March 31, 2018.

The approved project budget and schedule were developed and approved by the appropriate Wastewater Enterprise Manager on March 31, 2018. This is based on the project team's assessment at this time. However, it should be noted that the project team is currently focused on validating these estimates.

3. PROGRAM COST SUMMARY

Table 3.1 provides an overall program-level cost summary of the Facilities and Infrastructure Program. It shows the Expenditures to Date, Current Approved Budget and Current Forecasted Cost; and the Cost Variance between the Approved Budget and Forecasted Budgets. The Current Approved Budget is $230.5 million and the currently Forecast Cost (based on the proposed project list) at completion is the same.

Table 3.1 Program Cost Summary

Program	Expenditures to Date ($ Million) (A)	Current Approved Budget ($ Million) (B)	Current Forecasted Cost ($ Million) (D)	Cost Variance ($ Million) (E = B - D)
Facilities and Infrastructure Program	$42.01	$230.47	$230.47	-

4. PROGRAM SCHEDULE SUMMARY

Figure 4.1 and Table 4.1 compare the Current Approved, Current Forecasted Schedules for the Facilities and Infrastructure Program. Refer to the "Cost and Schedule Status" notes in Section 5 for the criteria associated with the three color-coded Forecast Status Levels in Figure 4.1 – Meet Requirements, Need Attention, and Exceed Limits. The Program schedule is under development, the overall time frame is 20-30 years.

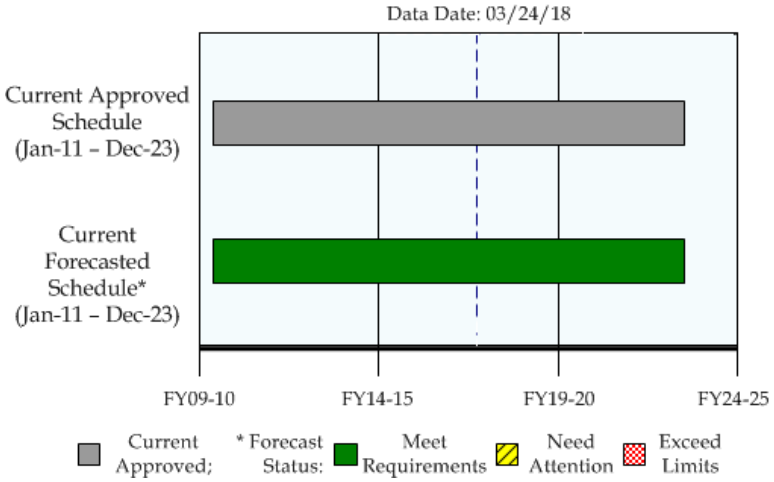


Figure 4.1 Program Schedule Summary

Table 4.1 Current Approved vs. Current Forecasted Schedule Dates

Program	Current Approved Project Start	Actual Start	Current Approved Completion	Current Forecasted Completion	Schedule Variance (Months)
Facilities and Infrastructure Program	01/01/11	01/01/11✓	12/29/23	12/29/23	-

5. PROJECT PERFORMANCE SUMMARY*

All costs are shown in $1,000s as of 03/24/18

Project Name	Active Phase (**)	Current Approved Budget (a)	Current Forecasted Cost (b)	Expenditures To Date (c)	Cost Variance (d= a - b)	Cost Status (+)	Current Approved Completion (e)	Current Forecasted Completion (f)	Schedule Variance (g = e - f)	Schedule Status (+)	Project Data Sheet
Facilities and Infrastructure											
CWP11001 - Treasure Island - Existing Wastewater Facilities	DS	$ 67,398	$ 67,398	$ 391	-	★	11/01/22	11/01/22	-	★	See Section 10
CWWFAC01 - Ocean Beach Project	PL	$ 24,071	$ 24,071	$ 5,094	-	★	02/19/18	06/30/21	40.3 mo. Late	●	See Section 6
CWWFAC02 - Collection Division Consolidation (Griffith Yard Improvements)	CN	$ 49,000	$ 49,000	$ 31,613	-	★	02/23/18	04/15/19	13.7 mo. Late	●	See Section 6
CWWFAC03 - Southeast Community Center and Greenhouses (SECF)	DS	$ 75,000	$ 75,000	$ 4,915	-	★	12/29/23	12/29/23	-	★	See Section 10
CWWFAC04 - SEP Southeast Outfall	DS	$ 15,000	$ 15,000	$ 0	-	★	02/07/22	02/07/22	-	★	See Section 10

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

**** Phase Status Legend**

PL Planning | DS Design | BA Bid & Award | CN Construction | MP Multi-Phases

+ Cost and Schedule Status

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

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

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

6. PROJECTS NOT WITHIN BUDGET AND/OR SCHEDULE (THRESHOLD LIMITS)

CWWFAC01 - Ocean Beach Project

Description: The objective of the project is to protect existing SFPUC facilities, utilities, and infrastructure (including the Lake Merced Tunnel (LMT)) along Ocean Beach against bluff erosion and sea level rise consistent with the recommendations in the Ocean Beach Master Plan (OBMP). The project will provide interim erosion control and mitigate bluff erosion via sand nourishment and sand backpass/stabilization of existing bluff. Additionally, an emergency bluff erosion mitigation plan of up to 750 sand bags can be deployed if extreme coastal erosion is experienced.

Program: Facilities and Infrastructure	**Project Status:** Planning	**Environmental Status:** Active

Project Cost:		**Project Schedule:**	
Approved	$24.07 M	Approved Jul-12	Feb-18
Forecast*	$24.07 M	Forecast* Jul-12	Jun-21
Actual	$5.09 M	Project Percent Complete: 12.0%	

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

Key Milestones:	**Environmental Approval**	**Bid Advertisement**	**Construction NTP**	**Construction Final Completion**
Current Forecast	10/13/15✓	07/24/17✓	01/02/18✓ - 05/08/18	03/26/18 - 12/31/20

Progress and Status:

The South Ocean Beach Coastal Erosion and Wastewater Infrastructure Protection (long-term) Final Alternative Analysis Report (AAR) is obtaining approval signatures. Advertisement for CER/Design RFP expected in late April 2018. Environmental consultant (part of BEM pool of readily available consultants) preparing SOW for CEQA/NEPA and regulatory permitting. Key team members attend routine inter-agency (NPS, GGNRA, Rec-Park, SFPW, SFMTA, City Planning Dept) coordination meetings for the area of the beach South of Sloat Blvd to Skyline Blvd/Highway 35. Short-term protection measures are currently being implemented via WW-663.

(A) WW-607 Ocean Beach Immediate Action Plan As-Needed; contract remains open if sand bag deployment is triggered.

(B) WW-663 Ocean Beach Coastal Erosion and Wastewater Infrastructure Protection Notice-To-Proceed received; work to move sand and place sand bags is in process. This year's efforts in the multi-year contract expected to be completed by end of May 2018.

Issues and Challenges:

None at this time.

Contractor excavator and dump trucks loaded with surplus sand collected at North Ocean Beach

CWWFAC02 - Collection Division Consolidation (Griffith Yard Improvements)

Description: This project includes the following improvements to the 4.4 acre yard at 1601 Griffith Street, which will transform use of site from storage and stockpiling to productive operations:
provision of grading, paving, utilities, fencing and lighting services, design and construction of a new decanting station (VWS) that minimizes handling, design and construction of a confined space training facility, renovation of 11,520 square feet modular office building and installation of a pre-fabricated building for vehicle maintenance.

Program: Facilities and Infrastructure	**Project Status:** Construction	**Environmental Status:** Completed (CatEx)

Project Cost:

Approved		$49.00 M
Forecast*		$49.00 M
Actual		$31.61 M

Project Schedule:

Approved Mar-13		Feb-18
Forecast* Mar-13		Apr-19

Project Percent Complete: 96.7%

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

Key Milestones:	Environmental Approval	Bid+ Advertisement	Construction NTP+	Construction+ Final Completion
Current Forecast	04/12/16✓	(A) 05/31/16✓ (B) 10/31/17✓	11/02/16✓ 05/31/18	06/29/18 10/12/18

+ Project includes multiple construction contracts. (A) Griffith Yard Improvements and (B) Greenhouses Demolition

Progress and Status:

Project A - Griffith Yard Improvements: Construction continues and the delay due to getting permanent power for the site was resolved on March 20. Relocation of Sewer Operations started in late March and is expected to be completed in the next quarter. Project will be completed to relocate Sewer Operations in time for the BDFP Project to begin construction.

Project B - Greenhouses Demolition: This project includes the Greenhouse Demolition at 1150 Phelps as a sub-project. The greenhouses were previously included under the Southeast Community Center prior to an assessment that they were beyond repair. Contract was awarded and NTP is to be issued in April 2018.

Issues and Challenges:

Project A - None to report.

Project B - Greenhouses Demolition: The project schedule variance between the Approved and Forecasted Finish Date is due to including the Greenhouses Demolition.

7. On-Going Construction**

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion	Current Forecasted Construction Final Completion*	Approved Contract Cost	Current Forecasted Cost*	Schedule (Cal. Days)	Cost	
Facilities and Infrastructure								
CWWFAC02 - Collection Division Consolidation (Griffith Yard Improvements)	11/02/16	06/29/18	06/29/18	$ 12,019,807	$ 12,985,533	-	($965,726)	95.0%

Program Total for On-Going Construction	Approved Contract Cost	Current Forecasted Cost	Variance	
			Cost	Percent
	$ 12,019,807	**$ 12,985,533**	**($965,726)**	**(8.0%)**

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

** This table is reflecting Active construction contract with original contract amount greater than $1M.

8. PROJECTS IN CLOSE-OUT

No projects are currently under close-out.

9. COMPLETED PROJECTS

No projects are currently completed.

10. PROJECTS WITHIN BUDGET AND SCHEDULE (THRESHOLD LIMITS)

CWP11001 - Treasure Island - Existing Wastewater Facilities

Description: The objective of the project is to improve the reliability of the existing collection system and treatment facility at Treasure Island. The major mechanical and electrical infrastructure at the Treasure Island treatment plant have reached the end of their useful life and are no longer reliable. Additionally, a replacement wastewater treatment plant with recycled water treatment capability has been prescribed to address flows from new developments targeted to begin occupancy within the next 5 years.

Program: Facilities and Infrastructure	**Project Status:** Design	**Environmental Status:** Not Initiated

Project Cost:

Approved	$67.40 M
Forecast*	$67.40 M
Actual	$0.39 M

Project Schedule:

Approved Jan-11	Nov-22
Forecast* Jan-11	Nov-22

Project Percent Complete: 0.6%

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

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	01/31/18✓	N/A	11/01/19	05/02/22

Progress and Status:

Project planning activities for the new wastewater treatment plant and associated recycled water facility are on-going. A consultant team led by Carollo Engineers was selected to assist with specialty engineering planning and design services.

Issues and Challenges:

None at this time.

At the Existing Wastewater Treatment Plant, installation of a new rock trickle filter rotary distributor arm was completed in the Summer of 2016.

CWWFAC03 - Southeast Community Center and Greenhouses (SECF)

Description: The Southeast Community Center project will serve to address the SFPUC's commitment to the mitigation measure for the expansion of the Southeast Plant (SEP). An assessment of existing conditions of the community center and greenhouses will be conducted. Based on the assessments and community outreach, a determination will be made to renovate or rebuild the community center and greenhouse facilities.

Program: Facilities and Infrastructure	**Project Status:** Design	**Environmental Status:** Active

Project Cost:		**Project Schedule:**	
Approved	$75.00 M	Approved Jul-12	Dec-23
Forecast*	$75.00 M	Forecast* Jul-12	Dec-23
Actual	$4.91 M	Project Percent Complete: 14.4%	

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

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

Progress and Status:

Design is underway and on schedule for starting construction in 2019.

Issues and Challenges:

None at this time.

CWWFAC04 - SEP Southeast Outfall

Description:

This Wastewater Enterprise Capital Improvement Program project will include major improvements to the Southeast Water Pollution Control Plant (SEP) effluent force main crossings at Islais Creek and modifications to the Booster Pump Station. SEP is the SFPUC's largest wastewater facility treating almost 80% of the City's dry and wet weather flows.

Major improvements are planned to ensure that the SEP facilities maintain permit compliance and operate reliably. This project primarily addresses the effluent discharge outfall into the San Francisco Bay through the series of pipes at Pier 80. Following improvements are needed to address aging infrastructure:

- Pipeline replacement within the Islais Creek
- Rehabilitation of existing pipelines and mechanical devices
- Restoration of access manholes
- Improving flow velocity with new pipeline material
- Providing redundancy with new operational capabilities
- Piping isolation improvements to the Booster Pump Station

Program: Facilities and Infrastructure	**Project Status:** Design	**Environmental Status:** Active

Project Cost:

Approved	▬	$15.00 M
Forecast*	▬	$15.00 M
Actual	|	$0.00 M

Project Schedule:

Approved Sep-16	▬	Feb-22
Forecast* Sep-16	▬	Feb-22

Project Percent Complete: 7.5%

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

Key Milestones:	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	TBD	02/15/19	07/29/19	07/30/21

Progress and Status:

A consultant service request-for-proposal was awarded in May 2017 for specialty engineering design services. Kick-off for the project design phase was held in January 2018. Design team has started review of background information and utility location information. Environmental review and permitting for the geotechnical investigation was initiated. Project environmental review and permitting is targeted to begin late Summer/Early Fall 2018

Issues and Challenges:

The project is encountering many challenges related to project site access and constructability. In addition, the multi-governmental jurisdiction of the project area will require extensive environmental review, potentially requiring an Environmental Impact Report. The existing pipeline has previously had several urgent temporary repairs at various locations due to deteriorating conditions. CEQA review, permitting and seasonal constraints may delay the in-water geotechnical work, which is targeted for late Summer 2018.

IV. Renewal and Replacement Program

1. PROGRAM DESCRIPTION

The Wastewater Enterprise (WWE) Renewal and Replacement Program (R&R) is a continuing annual program that seeks to address deficiencies in two wastewater infrastructure categories: R&R Collection System and R&R Treatment Facilities. The goal of the R&R Program is to meet the endorsed levels of service goals, regulatory permit compliance, system reliability and functionality, and sustainable operations of the City's sewer system. The R&R Program also complies with the State requirement that a provision be made for the periodic repair and replacement of sewer system facilities.

San Francisco's sewer collection system was installed in phases beginning in the early 1870's. Many of the sewers are near the end of their useful life and are in need of urgent attention in order to continue to function at proper capacity and to meet regulatory standards. An asset management approach was developed to prioritize which assets within the sewer system should get attention first. For the R&R Collection System, the asset management base approach factors in the physical condition of the sewer, age, location, risk, public safety, Department of Public Work's street paving schedule, and various other factors. Approximately 12.4 miles of sewer replacement work was awarded in FY 13-14. In FY 14-15 the sewer replacement mileage target subsequently increases to 15 miles to meet Commission endorsed Level of Service goals.

The R&R Treatment Facilities projects are prioritized based upon regulatory compliance, condition assessments, Operation staff recommendations, and Level of Service goals. These projects seek to extend the useful life of treatment facility assets throughout San Francisco by helping to maintain their treatment capacity and performance and enable WWE to maintain regulatory compliance with Regional Water Quality Control Board (RWQCB) National Pollutant Discharge Elimination System (NPDES) permits and Bay Area Air Quality Management District (BAAQMD) requirements.

2. PROGRAM STATUS

This Quarterly Report presents the progress made on the Renewal and Replacement Program (R&R) projects between January 1, 2018 and March 31, 2018.

The approved project budget and schedule were developed and approved by the appropriate Wastewater Enterprise Manager on March 31, 2018. This is based on the project team's best assessment of the projects at this time. However, it should be noted that the project team is currently focused on validating these estimates.

Figures 2.1 and 2.2 show the total number of active projects remaining in each phase of the R&R Collection systems and R&R Treatment Facilities programs as of March 31, 2018.

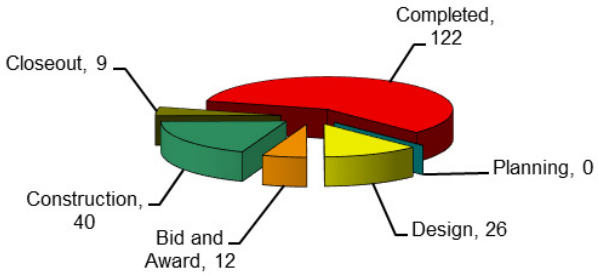


Figure 2.1 Total Number of Active R&R Collection Systems Projects in R&R Program

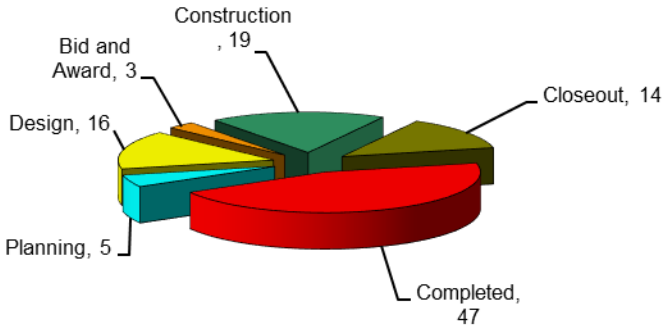
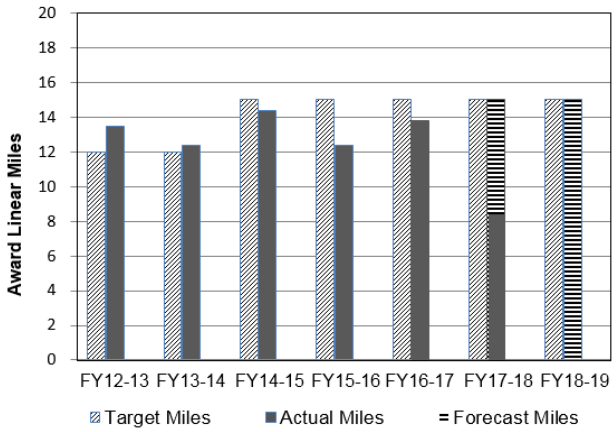


Figure 2.2 Total Number of Active R&R Treatment Facilities Projects in R&R Program

The Wastewater R&R Collection System Sewer Replacement Program has an annual budget of $59.9 million in FY18 to award a target of 15 miles of sewer replacement work in San Francisco.

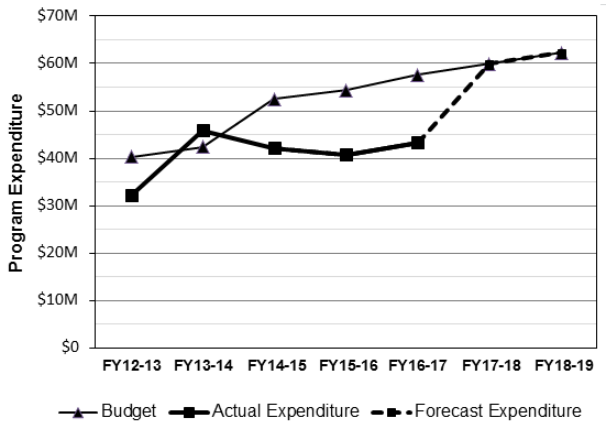
Figure 2.3 shows the target and actual award miles of sewer improvement projects that have been awarded to date and are forecasted to be awarded. The Wastewater R&R Collection System Sewer Replacement Program has been awarded 8.4 miles of sewer replacement work in FY18.



	FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19
Target Miles	12.0	12.0	15.0	15.0	15.0	15.0	15.0
Actual Miles	13.5	12.4	14.4	12.4	13.8	8.4	
Forecast Miles						15.0	15.0

Figure 2.3 Wastewater R&R Collection System - Sewer Improvements - Award Linear Miles by Fiscal Year

Figure 2.4 shows the annual total program expenditure by fiscal year for the R&R Collection System Sewer Replacement program.



	FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19
Budget	$40.3M	$42.3M	$52.5M	$54.3M	$57.6M	$59.9M	$62.3M
Actual Expenditure	$32.1M	$45.8M	$42.1M	$40.8M	$47.7M		
Forecast Expenditure						$59.9M	$62.3M

Figure 2.4 Wastewater R&R Collection System - Sewer Improvements - Program Expenditure by Fiscal Year

3. PROGRAM COST SUMMARY

Table 3.1 provides an overall program-level cost summary of the R&R Program. It shows the Expenditures to Date; Current Approved Budget and Current Forecasted Cost; and the Cost Variance between the Approved Budget and Forecasted Cost.

The total Approved Budget for the R&R Program is $594 million and the Current Forecasted Cost at completion is also $594 million.

Table 3.1 Program Cost Summary

Sub-Program	Expenditures to Date ($ Million) (A)	Current Approved Budget ($ Million) (B)	Current Forecasted Cost ($ Million) (C)	Cost Variance ($ Million) (D = B - C)
R&R Collection Systems	$310.89	$503.45	$503.45	-
R&R Treatment Facilities	$62.56	$90.46	$90.46	-
Program Total	**$373.46**	**$593.91**	**$593.91**	**-**

4. PROGRAM SCHEDULE SUMMARY

Figure 4.1 and Table 4.1 compare the Current Approved and Current Forecasted Schedules for the R&R program. Refer to the "Cost and Schedule Status" notes in Section 5 for the criteria associated with the three color-coded Forecast Status levels in Figure 4.1 – Meet Requirements, Need Attention, and Exceed Limits.

The Approved Schedule completion for the overall R&R program is March 2019. The overall R&R Program is currently forecasted to be completed in March 2019.

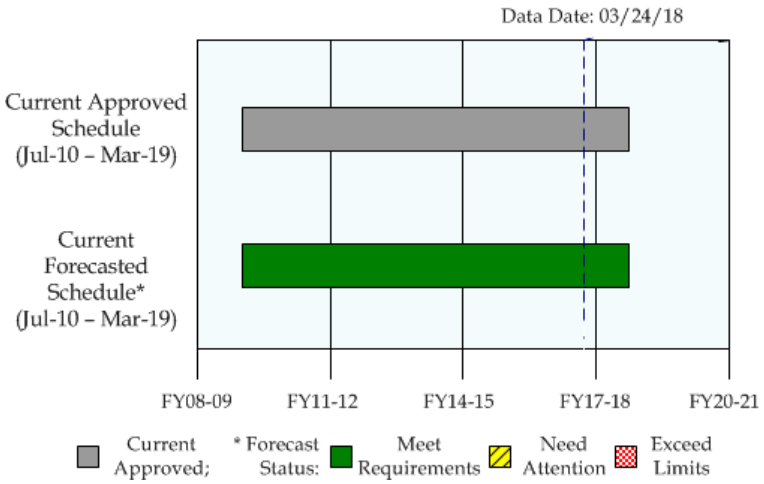


Figure 4.1 Program Schedule Summary

Table 4.1 Current Approved vs. Current Forecasted Schedule Dates

Sub-Program	Current Approved Project Start	Actual Start	Current Approved Completion	Current Forecasted Completion	Schedule Variance (Months)
R&R Collection Systems	07/01/10	07/01/10✓	03/29/19	03/29/19	-
R&R Treatment Facilities	07/01/10	07/01/10✓	02/14/19	02/14/19	-
Overall Program	**07/01/10**	**07/01/10✓**	**03/29/19**	**03/29/19**	**-**

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5. PROGRAM PERFORMANCE SUMMARY*

All costs are shown in $1,000s as of 03/24/18

Program Name	Active Phase (**)	Current Approved Budget (a)	Current Forecasted Cost (b)	Expenditures To Date (c)	Cost Variance (d= a - b)	Cost Status (+)	Current Approved Completion (e)	Current Forecasted Completion (f)	Schedule Variance (g = e - f)	Schedule Status (+)	Project Data Sheet
Renewals and Replacements											
CWWRNRCS - R&R Collection Systems	MP	$ 503,450	$ 503,450	$ 310,891	-	★	03/29/19	03/29/19	-	★	See Section 10
CWWRNRTF - R&R Treatment Facilities	MP	$ 90,460	$ 90,460	$ 62,565	-	★	02/14/19	02/14/19	-	★	See Section 10

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

**** Phase Status Legend**

PL Planning | DS Design | BA Bid & Award | CN Construction | MP Multi-Phases

+ Cost and Schedule Status

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

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

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

6. PROGRAMS NOT WITHIN BUDGET AND/OR SCHEDULE

All programs are within the current approved budget and schedule.

7. On-Going Construction**

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion	Current Forecasted Construction Final Completion*	Approved Contract Cost	Current Forecasted Cost*	Schedule (Cal. Days)	Cost	
R&R Collection System								
10015661-Richmond/Sunset Districts Sewer Replacement (WW-618)	08/16/16	07/01/18	07/01/18	$ 7,142,398	$ 7,142,398	-	-	86.5%
10015663-Haight-Ashbury/Tenderloin / Diamond Heights Districts Sewer Replacement (WW-622)	09/06/16	05/23/18	05/23/18	$ 3,678,830	$ 3,678,830	-	-	91.5%
10015673-Various Locations Sewer Replacement No. 1 (WW-629)	09/18/17	02/11/19	02/11/19	$ 7,404,605	$ 7,404,605	-	-	38.0%
10015674-Various Locations Sewer Replacement No. 2 (WW-633)	05/01/17	07/05/18	07/05/18	$ 5,789,665	$ 5,789,665	-	-	77.7%
10015676-Various Locations Sewer Replacement No. 4 (WW-636)	10/23/17	11/11/18	11/11/18	$ 5,062,012	$ 5,062,012	-	-	41.4%
10015678-As-Needed Main Sewer Replacement No. 6 (WW-621R)	02/21/17	05/22/18	05/22/18	$ 10,787,800	$ 10,787,800	-	-	88.6%
10015680-As-Needed Sewer Cleaning and Inspection (FY17) (WW-640)	08/31/16	05/23/18	05/23/18	$ 1,587,700	$ 1,587,700	-	-	91.6%
10015681-As-Needed Sewer Sealing (WW-644)	02/06/17	05/05/20	05/05/20	$ 3,834,500	$ 3,834,500	-	-	35.3%
10029247-As-Needed Spot Sewer Replacement No. 36 (WW-646)	10/24/17	11/25/18	11/25/18	$ 7,796,038	$ 7,796,038	-	-	39.8%

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

** This table is reflecting Active construction contract with original contract amount greater than $1M.

IV. WWE R&R Quarterly Report — Q3-FY2017-2018 (01/01/18 - 03/31/18)

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Actual % Complete
	NTP Date	Approved Construction Final Completion	Current Forecasted Construction Final Completion*	Approved Contract Cost	Current Forecasted Cost*	Schedule (Cal. Days)	Cost	
R&R Collection System								
10031245-Crocker Amazon/Excelsior/ Ingleside Districts Sewer Replacement (WW-631)	02/27/17	06/17/18	06/17/18	$ 6,608,018	$ 6,608,018	-	-	83.6%
R&R Treatment Plants								
10015733-Oceanside Water Pollution Control Plant Flare Control and Stack Upgrade (WW-625)	10/17/16	06/08/18	06/08/18	$ 3,437,000	$ 3,437,000	-	-	66.0%

Program Total for On-Going Construction	Approved Contract Cost	Current Forecasted Cost	Variance	
			Cost	Percent
	$ 63,128,567	**$ 63,128,567**	**$0**	**0 %**

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

** This table is reflecting Active construction contract with original contract amount greater than $1M.

8. PROGRAMS IN CLOSE-OUT

No program is currently under close-out.

9. COMPLETED PROGRAMS

No Program is currently completed.

10. PROGRAMS WITHIN BUDGET AND SCHEDULE

CWWRNRCS - R&R Collection Systems

Description: The purpose of the Wastewater Enterprise (WWE) Renewal and Replacement Program (R&R) Collection System Sewer Improvements project is maintain the existing functionality of the sewage collection system and address planned and emergency projects for repair and replacement of structurally inadequate sewers. This project in combination with the WWE Renewal and Replacement Program (R&R) Spot Sewer Repair replaces aging failed portions of the collection system. The portions of the collection system are identified utilizing an asset management approach, which factors in: physical condition, age, location, risk, public safety, paving schedule and other factors.

Program: Renewals and Replacements	**Program Status:** Multiple Phases	**Environmental Status:** Completed

Project Cost:		**Project Schedule:**	
Approved	$503.45 M	Approved Jul-10	Mar-19
Forecast*	$503.45 M	Forecast* Jul-10	Mar-19
Actual	$310.89 M	Project Percent Complete: 79.0%	

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

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

+ See Section 7 for the active construction contracts information.

++On-Going Construction Projects identified in Section 7. were all covered under exemption determinations.

Progress and Status:

The summary below shows the total number of projects in each phase of the program as of March 31, 2018.

The two hundred nine (209) WWE Collection Systems projects are distributed as follows:

Planning: 0
Design: 26
Bid & Award: 12
Construction: 40
Closeout: 9
Completed: 122

During this Quarter, 7 new projects were initiated, 7 projects were advertised, 1 project was awarded/awaiting NTP, 6 projects received NTP, 1 project completed construction and 5 projects closed out.

Issues and Challenges:

None at this time.

CWWRNRTF - R&R Treatment Facilities

Description: The purpose of the Wastewater Enterprise (WWE) Renewal and Replacement (R&R) Treatment Program is to extend the useful life of the WWE treatment facility assets. The R&R Treatment Facilities projects are prioritized based upon regulatory compliance, condition assessments, Operation staff recommendations and Level Of Service goals.

Program: Renewals and Replacements	**Program Status:** Multiple Phases	**Environmental Status:** On-going

Project Cost:		**Project Schedule:**	
Approved	$90.46 M	Approved Jul-10	Feb-19
Forecast*	$90.46 M	Forecast* Jul-10	Feb-19
Actual	$62.56 M	Project Percent Complete: 83.0%	

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

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

+ See Section 7 for the active construction contracts information.

++ Projects will be reviewed for CEQA compliance as they proceed.

Progress and Status:

The summary below shows the total number of the remaining projects in each phase of the program as of March 24, 2018.

The one-hundred four (104) active WWE Treatment Facility Repair projects distributed as follows:

Planning: 5
Design: 16
Bid/Award: 3
Construction: 19
Closeout: 14
Completed: 47

The one-hundred twelve (112) active WWE Treatment Facility Equipment Replacements projects distributed as follows:

Pending: 44
Completed: 68

Issues and Challenges:

None at this time.

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APPENDICES

1. **PROJECT DESCRIPTIONS**
2. **APPROVED PROJECT-LEVEL SCHEDULE**
3. **LIST OF ACRONYMS**

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APPENDIX 1. PROJECT DESCRIPTION

APPENDIX 1.1 SEWER SYSTEM IMPROVEMENT PROGRAM

BIOSOLIDS DIGESTER FACILITIES PROJECT

CWWSIPDP01 - SEP Biosolids Digester Facilities Project (BDFP)

The existing digester and solids handling facilities are operating well beyond their useful lives and do not meet seismic codes. The goal of the BDFP is to fully replace the existing aged and failing facilities with new Biosolids Digester Facilities. The BDFP proposes to construct new facilities to meet the projected solids wastewater treatment needs through 2045.

Planning, engineering, and construction of the new solids processing facilities will include solids pretreatment; thermal hydrolysis; anaerobic digestion; biosolids dewatering; biosolids product storage and loadout; biogas handling, energy generation and recovery; odor control; automated control systems; and supporting Operations, Engineering, and Maintenance (OEM) staff facilities.

Key BDFP facilities and processes consist of:

•Primary sludge and waste activated sludge pumping to the solids treatment processes, which includes improvement to the existing waste activated sludge pumping facilities

•Consolidated Solids Pretreatment Building

•Thermal hydrolysis of dewatered, screened combined primary and activated sludge and cooling of the thermally hydrolyzed sludge

•Mesophilic anaerobic digestion and digested sludge storage using digesters

•A Biosolids Dewatering building that will include the following processes/equipment:

(1) Dewatering of digested biosolids using belt filter presses

(2) Storage and load-out of dewatered biosolids product using silos, screw conveyors, and truck hauling

•Beneficial use of the biogas produced during the digestion process. Energy recovery through combined heat and power using gas turbines and/or boilers. Biogas storage is also included.

•Pre-Digestion and Post-Digestion odor control

•Process systems to support the BDFP facilities including chlorinated and filtered plant secondary effluent system upgrade, plant air, polymer systems, and cooling water system

•Maintenance Facilities to support OEM of BDFP facilities

NEW HEADWORKS (GRIT) REPLACEMENT

CWWSIPSE02 - SEP New Headworks (Grit) Replacement

The new 250 MGD headworks consist of major components / facilities as follows:

• New Influent Junction Structure and Influent Monitoring:

o Construction of a new Influent Junction Structure that will include a temporary overflow weir for excess wet weather flow.

o Construction of a temporary connection between the Influent Junction Structure and Influent Control Structure.

o Construction of a new connection from Influent Junction Structure to the new bypass,

o Demolition of the existing Influent Control Structure.

o Installation of a new influent monitoring and sampling system including: influent flowmeters, pH and conductivity insertion probes, automatic samplers, and manual sample ports.

• A new Primary Influent Distribution Structure:

o Construction of a new bypass around the wet weather Headworks facility from the Influent Control Structure to the primary influent conduits that lead to the wet weather primary sedimentation basins (SEP 040/041).

• Upgrades to the Bruce Flynn Pump Station:

o Modifications to sewer connections and mechanical/electrical modifications.

o Addition of new bar screens and upgrades to the electrical system.

o Upon completion of these modifications, demolish the Southeast Lift Station (SELS).

• A new Bar Screens, Washer-Compacters and Screenings Handling Facility consisting of four multi-rake bar fine screens (three duty plus one standby), four screenings washer compactors, two shuttle hoppers, and a grit influent splitter structure.

• A new Grit Basins, Grit Washers and Grit Handling Facility using either the HeadCell (modular multi-tray grit tanks) or Pista360 (grit

vortex) technology. This includes 12 HeadCell grit tanks with 24 grit pumps or six Pista360 tanks with 18 grit pumps. Both technologies involve 6 grit washers and two grit storage hoppers.

- A new Odor Control Facility, consisting of a two-stage system with bioscrubbers followed by carbon adsorption.
- New 50 mgd influent pump station, including influent piping and effluent force main, electrical building and odor control.
- Two new primary substations, each with a 15-kV vacuum circuit breaker, substation type, liquid-filled transformer, and a low-voltage power circuit breaker on the secondary side of the transformer.
- Electrical, Instrumentation and Control Rooms/Building.
- Demolition of both existing Headworks Facilities (SEP-011 and SEP-012).
- New Influent Junction Structure and Influent Monitoring
- A new Primary Influent Distribution Structure
- Upgrades to the Bruce Flynn Station and demolition of the Southeast Lift Station
- New Bar Screens, Washer-Compacters and Screenings Handling
- New Grit Basins, Grit Washers and Grit Handling Facility using either the HeadCell (modular multi-tray grit tanks) or Pista360 (grit vortex) technology
- A new Odor Control Facility, consisting of a two-stage system with bioscrubbers followed by carbon absorption
- Two new primary substations, each with a 15-kV vacuum circuit breaker, substation type, liquid-filled transformer, and a low-voltage power circuit breaker on the secondary side of the transformer
- Electrical, Instrumentation and Control Rooms/Building
- Demolition of both existing Headworks Facilities

SOUTHEAST PLANT (SEP) IMPROVEMENTS

CWWBAE01 - Biofuel Alternative Energy (Completed)

A recent trend in the wastewater industry involves the addition of fats, oil, and grease (FOG) or other high-strength waste (HSW) directly into digesters to increase digester gas production and maximize the amount of renewable energy production from cogeneration. Due to the existing capacity constraints and condition of the biosolids facilities at the SEP, the addition of large quantities of FOG or other HSW is not currently feasible. While inedible kitchen grease (IKG) is currently accepted at the SEP Yellow Grease Facility, only the marginal grease is directly injected to the digesters, which consists of residual solids and moisture that is removed from the raw IKG and represents less than one percent of the daily volatile suspended solids loading to the digesters. Therefore, while not an option for the existing biosolids facilities, FOG and HSW addition could be a component of the new biosolids digesters project. The Biofuel Alternative Energy Project aims to determine if it is feasible and cost-effective for the SFPUC to generate bioenergy (e.g. biofuel or cogenerated power) as a byproduct of processing the FOG and/or food waste collected throughout the City. This project was originally initiated in 2011 before SSIP Phase 1 validation efforts began in 2012, but has been placed on hold until considered necessary.

CWWSIPSE01 - SEP Oxygen Generation Plant (Completed)

As a result of the Clean Water Act of 1972, the secondary treatment process, which is achieved through the use of high purity oxygen (HPO), was implemented at Southeast Plant. During wet weather the regulatory permit requires that the Southeast Plant treat up to 150 million gallons per day, to the secondary level. The two existing, 66 tons per day (TPD), cryogenic oxygen generation plants that were placed in operation in 1981 are becoming extremely difficult to maintain, and have failed two times in the past year. Replacing the antiquated oxygen plants with two technologically advanced 45 TPD oxygen generation plants, will allow WWE Operations to have optimum control on the utilization of oxygen (based on the influent variations), thus significantly reducing the energy consumption.

CWWSIPSE03 - SEP Existing Digester Roof Repairs (Completed)

As part of the SSIP, a new biosolids handling facility will be built to replace the existing system. However, the existing digesters and associated facilities must continue to handle all biosolids generated by primary and secondary treatment operations at SEP until all planning, design, construction, and commissioning activities for new facilities are completed. Under this project, work will be completed to maintain existing digestion facilities in operation with sufficient capacity and reliability to produce Class B biosolids until new facilities are available for service. The project consists of repairs to the existing floating roof and associated appurtenances (Digester 8), and replacement of the existing floating roofs and associated appurtenances (Digesters 4, 6, 7 and Cake Bins 3 & 4). This project is currently at the closeout stage.

CWWSIPSE04 - SEP Primary and Secondary Clarifier Upgrades

This project will upgrade the mechanical, structural and electrical components at the primary and secondary sedimentation tanks (clarifiers) at SEP to address operational reliability and compliance with regulatory requirements for liquid treatment. The major upgrades taking place at the primary sedimentation tanks include replacing key mechanical and electrical equipment and addressing structural repairs such as concrete repairs and coating seven tanks and influent channel. Covers for the primary sedimentation tanks and ventilation system will also be installed. Similarly, major upgrades for the secondary clarifiers include replacing key equipment and retrofitting existing secondary clarifiers (8 of 16 included in this project). Structural repairs will also be addressed including concrete crack repairs and coating.

CWWSIPSE05 - SEP 521/522 and Disinfection Upgrades (SEP Building 521 Replacement)

This project includes upgrades to the Post-Chlorination Building as well as construction of a new building to house electrical and hydraulic controls, and replacement of valves and actuators in the Chlorine Contact Channel and stop logs at the Effluent Control Structure. The new building for electrical and hydraulic controls will be constructed to meet the SSIP seismic reliability goals. In addition, this project will upgrade and relocate the non-potable (W3) pump system by replacing four existing W3 pumps and motors with six new higher flow capacity pumps.

CWWSIPSE07 - SEP Facility-wide Distributed Control System Upgrades

This project addresses distributed control system (DCS) upgrades within the Southeast Pollution Control Plant (SEP), Oceanside Pollution Control Plant (OSP), North Point Wet Weather Facility (NPF), Channel Pump Station (CHS), Westside Pump Station (WSS), and Bruce Flynn Pump Station (BFS). Under this project, OSP, NPF, and WSS DCS upgrades include planning/design only to ensure system-wide consistency. Both hardware and software upgrades integrating field instrumentation, control devices, communications hardware, processing hardware, interface hardware, and associated software packages into a unified system are required to provide real-time, system-wide monitoring and control. Coordination of monitoring parameters in various systems to reflect geo-spatial relationships will also be required to maintain compatibility and consistency of the input data used for process control.

CWWSIPSE08 - SEP Seismic Reliability and Condition Assessment Improvements

As part of the condition assessment effort, numerous seismic, conditional and operational issues associated with the existing facilities will require remedial attention before other program projects are completed. This project represents immediate improvements to the existing facilities at SEP identified as part of the condition assessment effort that are not specifically included as part of another near-term SSIP Phase 1 project. This project includes items for rehabilitation such as concrete spalling repair and seismic retrofit of priority process buildings. Seismic retrofit and structural repairs to the Sedimentation Building and channel structures (SEP 530 Contact Channel, SEP 540 Effluent Control Structure, 6' reinforced concrete pipe from SEP 540 to Booster Pump Station, Conduits C/D/E, SEP 525 Box Channel, and 9' reinforced

concrete pipe to Junction Structure #5) will be completed.

CWWSIPSE09 - SEP Existing Digester Gas Handling Improvements

The project consists of:

- Process upgrades addressing deficiencies related to Digester Gas Compressors, Heat Exchangers and Controllers, Combined Primary Activated Sludge (CPAS) Tank, Boiler and Boiler Stacks, Waste Flare and Cogeneration Cooling Water System, and B100 Biofuel Tank (EPA permit compliance).
- Building systems and odor control unit (OCU) upgrades such as replacing Roof Drains, OCUs and upgrading ventilation and OCUs, Roof Replacement and Air Compressor (BAAQMD Permit Application).
- Electrical Upgrades related to External Lighting Upgrades and installing Fire Alarm Building 800 (safety).
- Control Upgrades such as installing CO Gas Monitors and Replacing Digester Gas Flow Meters (safety).
- 300 feet of waste gas piping and appurtenances.

CWWSIPSE10 - SEP Power Feed and Primary Switchgear Upgrades

The project is intended to address the deficiency of the existing medium voltage power distribution system (MV PDS), obtain a second redundant power feed from PG&E to upgrade the treatment plant with redundant electrical feeds, construct a new main switchgear sized to provide adequate power to new facilities, replace aging unit substations, and integrate the electric services of the nearby pump stations to the SEP medium voltage network. The project consists of installing a new redundant PG&E service, upgrading the existing Hunters Point feed to 12 MW, upgrading the main switchgear, and replacing fifteen aging existing primary unit substations at SEP. Additionally, it involves integration of Bruce Flynn Station and Booster Pump Station to SEP MV PDS, enhanced Energy Monitoring and Management System (EMMS), coordination with other SEP projects (particularly BDFP) to plan the need for emergency generators for critical processes, and construction of a new duct bank from the main switchgear to an electrical manhole.

CWWSIPSE11 - SEP Oxygen Generation Plant 01

The existing liquid oxygen (LOX) facility at SEP does not meet current safety codes and is in need of replacement. The LOX system is a mandatory redundant system to the on-site oxygen generation to ensure full compliance with the NPDES permit. This project includes the demolition of the LOX facility (three horizontal LOX storage tanks, four vaporization systems, and ancillary equipment); demolition of SEP 270 Oxygen Generation Building; installation of structural piles; construction of concrete slabs and utility trench; and installation of a new packaged LOX system consisting of four vertical LOX storage tanks, vaporizers and an unloading station.

OCEANSIDE PLANT (OSP) IMPROVEMENTS

CWWSIPTPOP02 - Westside Pump Station Reliability Improvements

The project consists of:

- Replacement of existing bar screens and addition of screening washing and compaction systems.
- Construct an interconnection between the existing dry weather and wet weather channels downstream of the new screens.
- New HVAC system (cooling improvements) to manage rejected heat from electrical equipment.
- Replacement of existing wet weather pumps to provide pump redundancy. The construction would take place within the existing structure and includes the following major components:

(1) Four new submersible pumps

(2) 200 linear feet of 54-inch force main

- Increasing the power feeder capacity at WSS to account for additional wet weather pumping capacity to allow power source redundancy. The two new power sources from PG&E would run approximately 3,000 feet along the Sloat Blvd.
- Replacement of the existing odor control units (OCUs) at the WSS with dilution ventilation fans and ducting. An improved ventilation system would be installed within the pump station.

CWWSIPTPOP03 - OSP Digester Gas Utilization Upgrade

The project consists of:

• Replacement of the gas storage vessel and digester gas condition equipment. The gas cleaning system includes a 350 cfm system for moisture, H2S, and siloxanes removal. The project includes replacement of the gas holder with new gas holding tank that will provide compressed digester gas storage at an average digester gas production of approximately 450,000 cf/day.

• Replacement of the existing cogeneration Internal-Combustion units (IC engines) and controls. The existing IC engines will be replaced by three (2)-new 620 kW IC engines to accommodate the amount of digester gas anticipated during the maximum month condition.

• Provide ancillary exhaust gas conditioning system and heat exchanger systems to comply with regulatory air board requirements, maximize process efficiency and hot water production.

• Upgrade ventilation within the energy recovery building.

• Replace electrical gear at Sub-Station No. 5; provide paralleling electrical gear and power system reliability improvements.

• 500 kw standby diesel generator and diesel fuel storage system.

CWWSIPTPOP05 - OSP Condition Assessment Repairs

The OSP Condition Assessment Repairs project will include major improvements to the plant, aimed to address the reliability of existing assets that have deteriorated over the years. This project includes planning, design and environmental review of improvements to address the age, deterioration and reliability of existing assets at OSP that are not specifically included in the other SSIP projects. This project includes rehabilitation of building structures, rehabilitation or replacement of mechanical and electrical equipment, and seismic retrofit of process tanks and buildings. Improvements focus on maintaining operational reliability and extending the service life of buildings that are required to remain in operation for 30 years or more.

CWWSIPTPOP06 - OSP Odor Control Optimization

This project includes planning, design, environmental review and construction/upgrades to inefficiencies identified in Building 042 (Primary Clarifiers). Currently, the air from the entire building is exchanged and scrubbed for odor. In order to significantly reduce the volume of air treated for odor, the primary clarifiers should be covered and only air from the primary clarifier basins scrubbed. The main components of this project included:

• New covers for the five primary clarifiers (each cover would be approximately 190 feet long by 38 feet wide).

• Duct work to connect the head space in each clarifier basin to the odor control system.

Current plans involve the completion of an odor control study as part of the Alternative Analysis Report (AAR) planning phase. Opportunities may exist for reducing energy consumption while maintaining effective performance and meeting offsite odor limits. These include optimizing system operation, consideration of different reduced backpressure media, implementation of new lower energy usage technologies, and ventilation strategies including reduced turnover, covers for reducing volume, and air transfer. Based on the results of the alternative analysis, the project will forego covering the primary clarifiers and implement other optimization measures in its place.

NORTH POINT FACILITY (NPF) IMPROVEMENTS

CWWSIPTPNP01 - NPF Outfall System Rehabilitation

Rehabilitation of the outfall system includes removal of sediment/debris inside subterranean reinforced concrete sewers and repair of concrete spalls, cracks and damaged linings with epoxy. Rust formations will also be removed, followed by re-lining of existing cast-iron pipes (CIPs) with epoxy lining that provides the protection against the extreme corrosive marine environment and strength to withstand operating and hydrodynamic loads. In addition, sediments deposited inside and around the diffuser pipes will be removed and disposed of, along with

associated steel supporting brackets. The project will also include installation of a new cathodic protection system for the Outfall System CIPs, ductile iron pipes (DIPs), and Outfall support structures under Piers 33 and 35; repair of damaged coating of Outfall pipes and supports; and installation of air vents and air relief valves on the outfall to release entrapped air.

CWWSIPTPNP02 - North Shore Pump Station Wet Weather Improvements

The project scope consists of:

- Demolition of the Materials Testing Lab within the North Shore Pump Station.
- Replace four Dry Weather (DW) pumps with larger units so that 3 of the 4 pumps are capable of pumping 75 mgd during wet weather.
- Replace/extend discharge piping as needed for new flow path.
- Upgrade dewatering system, personnel elevator, bridge cranes, ventilation system and odor control system.
- Replace dry weather bar screens.
- Upgrade electrical systems.
- Full-range flow meter for each discharge pipe for measurement and regulatory requirements.
- Upgrades to existing standby generator to operate any one (1) of the dry weather pumps.
- Upgrades to the existing ferrous chloride system with double walled tanks, metering pumps and secondary containment system.
- Corrosion control and concrete coating at inlet channels and wet well.
- Re-roof North Shore Pump Station.

CENTRAL BAYSIDE SYSTEM IMPROVEMENT PROJECT (CBSIP)

CWWSIPCT01 - Central Bayside System Improvement Project - Phase 1

The Central Bayside System Improvement Project (CBSIP) will provide collection system enhancements to both the Channel and Islais Creek watersheds including redundancy for the existing 66-inch Channel Force Main, infrastructure improvements to sewers and pump stations, and stormwater management. Major components of the project consist of a tunnel to transport (via gravity) dry and wet weather flows from the Channel and North Shore watersheds to the SEP, a large all-weather pump station to lift the flows into the SEP, improvements to Channel Pump Station (CHS), and infrastructure improvements within the watersheds. This project will provide planning, environmental review, and preliminary design for the improvements. Design and construction of CBSIP will be completed in Phase 2 of SSIP.

The Channel Tunnel will include a gravity tunnel approximately 24-feet in diameter and up to 10,000 feet long, extending from the existing CHS near Mission Creek to the SEP. It will also include a new Channel Tunnel Lift Station (CTLS) with approximately 120 MGD capacity, located in the vicinity of the SEP at the southern end of the Channel Tunnel. The existing CHS will be retrofitted to include additional pumping functions, potential grit removal, and potential odor control.

INTERCEPTORS / TUNNELS AND ODOR CONTROL

CWWSIPCSSR_N02 - SSIP Sewer Improvements Projects

This is a collection of sewer improvement projects that will rehabilitate and/or replace the sewers after the scope of work is better defined through the condition assessment efforts from the Collection System Condition Assessment Project. Due to the uncertainty of the scope of work, a budget limit is established and the project team will rehabilitate or replace the most critical major sewers with the available budget. This project is expected to include planning, environmental approval, design, and construction phases.

CWWSIPCSSR01 - Richmond Transport Modeling (Completed)

Historically, geysering and blown manholes have been observed in the Richmond Transport/Storage Tunnel and upstream sewer system during large storms. These phenomena may be due to surge activity in the system, release of trapped air pockets, or excessive venting relative to the available vents. Various hydraulic models were performed using InfoWorks and some physical improvements to the system have been made over the last 15 years. The hydraulic modeling performed could not account for air

pockets or potential bores in the system; therefore, WWE and SFPW/Hydraulics agreed that consultant support was needed to provide numeric modeling that can stimulate the known situation and provide recommendations for capital improvements to address the system issues.

This project included the review of two separate models: the InfoWorks Integrated Catchment Model (ICM) of the San Francisco collection system, and a Transient Analysis Program (TAP) model of the Richmond Transport/Storage Tunnel and associated sewers and amenities. Recommendations for improving the system and addressing the identified issues were developed in a technical memorandum (TM). Since the completion of the TM, a new project was initiated to evaluate and determine which recommendations from the TM would be implemented through construction. This project ended at the Planning Phase.

CWWSIPCSSR02 - Collection System Condition Assessment

There are over 80-miles of major sewers that have been in service for over 100-years. Using Collection System Asset Management Program (CSAMP) data, major sewers were prioritized by expanding the existing consequence of failure scores. Using this method, approximately 13-miles of the 80-miles of major sewers are considered to be the most critical and have an average age of 127-years. The project will include condition assessment with available funding and up to 13-miles of sewers. The project will include various locations throughout San Francisco, and fulfill the Needs Assessment effort in the Planning Phase. Upon completion of the condition assessment, the needs and methods of rehabilitation or replacement will be used to initiate sewer improvement projects in SSIP Sewer Improvement Projects.

CWWSIPCSSR03 - Kansas and Marin Streets Sewer Improvements

The proposed project consists of:

- Land acquisition for sewer construction and permanent sewer easement.
- Temporary construction easement for construction of the new auxiliary sewer.
- Relocation assistance associated with the sewer easement and displacements of existing lease-holders who occupy SFPUC's property above the C-Box Transport Storage structure (Lot 031).
- Construction of 900 linear feet of 8-foot diameter tunnel installed using conventional road header construction method in an easement through SFPW's Maintenance Yard.
- Construction of two new reinforced concrete junction structures (including angled access manhole structures) to connect with the existing sewers.
- Surface restoration work associated with construction and installation of the above assets.

CWWSIPCSSR09 - Drumm and Jackson Streets Sewer System Improvement

Under this project, 800 linear-feet of the Drumm Street Box Sewer (between Commercial and Jackson Streets) and 200 linear-feet of the Jackson Street Box Sewer (between Drumm Street and the Embarcadero) will be rehabilitated. Increasing the reliability of these major assets help meet the NPDES permit requirement to maximize use of the collection system for storage and to maximize flows to the wastewater treatment plant. Associated work for rehabilitation will include performing necessary cleaning for trenchless rehabilitation, bypassing sewer flow by damming and piping through the existing box sewer and performing surface restoration. Coordination will also be needed with WWE to ensure worker safety and preventing wet-weather impacts. CEQA approval and public outreach for the project will also be required. As needed, a Memorandum of Understanding (MOU) with SF Port for work near the intersection of the Embarcadero and Jackson Street may be executed. The project includes planning, environmental approval, design, and construction phases.

CWWSIPCSSR11 - Cargo Way Sewer Box Odor Reduction

The Needs Assessment Report for Bayside Collection System Odor and Corrosion Control will be completed under this project to identify odor control opportunities in the Bayside

collection system, and improvements will be implemented with available funding based on the recommendations detailed in the report.

Odor control improvements identified by WWE Operations Staff for the sewer box located at Cargo Way includes identification of flow sources and potential infiltration and inflow issues, and installation of a tee at Booster Pump Station Effluent manifold. Additionally, the project includes trenchless installation of 50 linear feet of 12-inch DIP inside 18-inch steel casing beneath SFMTA tracks, installation of 3,950 linear feed of 12-inch DIP, and installation of backflow preventer and control valves. CEQA approval will also be needed along with any other necessary permits (such as Maher and BCDC ordinances) required for project implementation. Construction and long-term MOU with SFMTA and SF Port will be coordinated. Public outreach will also be conducted, including SF Port and its stakeholders.

CWWSIPCSSR12 - Rutland Sewer Improvements

Under this project, the hydraulic capacity of the sewers in the project area will be increased to meet the SSIP Level of Service storm. The project will consist of multiple improvements along Rutland Street (from Visitacion Avenue to Sunnydale Avenue) including replacing the existing sewer with a larger reinforced concrete pipe, constructing a wet weather diversion structure, and conveying water passing over a weir inside this underground structure during a large storm event through new piping and discharging into a deep wet weather tunnel (Sunnydale Sewer Tunnel). To minimize construction impacts to the community, this sewer work will be constructed with the Visitacion Valley Green Nodes Project.

INTERDEPARTMENTAL PROJECTS

CWWSIPCSSR_N03 - Geary BRT Sewer Improvements Phase 2

SFMTA's Geary BRT Project will improve the "38 Geary" bus services, accessibilities, and pedestrian safety. The project includes collaboration from SFPUC, SFPW, and SFCTA. Phase 2 of this project includes the addition of center-running BRT lanes on Geary Boulevard between Palm Avenue and 27th Avenue, followed by dedicated BRT lanes along each sides of the street between 27th and 34th Avenue.

The aforementioned center-running BRT lanes on Geary Boulevard would be located directly above the existing sewer lines. This would severely impact SFPUC's ability to perform future maintenance, repair and/or replacement. The purpose of the Phase 2 sewer work is to coordinate with Geary BRT Project to relocate (or replace as needed) main sewers outside of the transit lanes, platforms and bulb-outs.

SFPW has started the pre-planning phase to identify sewers that may need replacement due to age and/or condition. Approximately 2.2 miles of aging sewers (average 74 years) on this Geary corridor (Stanyan Street to 34th Avenue) and on nearby cross streets have been identified as possibly needing replacement. SFPUC will be determining the condition of sewers along the Geary Corridor. Any sewer work required, whether it is sewer relocation, sewer rehabilitation or sewer replacement, will be undertaken as part of SFMTA's project. Only initial costs for planning and design has been allocated for this project under Phase 1 of SSIP.

CWWSIPCSSR04 - Van Ness BRT Sewer Improvements (Completed)

The Van Ness Bus Rapid Transit (BRT) Project will be implemented by SFMTA in conjunction with the Van Ness BRT Sewer Improvements Project, which will be implemented by SFPUC as part of SSIP. SFPUC will replace and relocate existing sewer utilities located along Van Ness Avenue, between Lombard Street and Mission Street, from the center of the street to outside of the BRT right-of-way to allow for future sewer service maintenance and repair/replacement without impacting SFMTA's BRT operations. The scope of the project includes constructing approximately 20,000 linear feet (LF) of 12-inch to 54-inch diameter VCP, RCP or HDPE (in steel casing) sewer mains and associated manholes, catch basins and culverts; and retrofitting and connecting existing sewer laterals and catch basins to the aforementioned new sewer mains. Closed-circuit television (CCTV) technology will

be used to inspect the newly constructed sewer mains, sewer laterals and culverts. Abandoned sewers (approximately 1,800 LF) will be plugged-and-filled.

CWWSIPCSSR05 - Better Market Street Sewer Improvements - Phase 1

In line with SSIP's strategy to work with other City and County agencies on projects they initiated to protect value and function of wastewater facilities, the BMS State of Good Repair Project will be completed in SSIP. This interdepartmental project will replace aging infrastructure such as the sewers which are made of bricks and are over 100 years old. The SSIP will participate in this project with the replacement of most of the sewers in Market Street.

Phase 1 will consist of a two block pilot project on Market Street between 6th Street and 8th Street.

CWWSIPCSSR06 - Geary BRT Sewer Improvements Phase 1

Generally, the MTA scope of work does not trigger sewer relocation except in some cases the addition of concrete or curb alignment change will prompt relocation of catch basins, side sewers vents, and manholes. SFPUC will be determining the condition of sewers along the Geary Corridor. This project includes replacement or rehabilitation of existing 6-inch to18-inch diameter circular sewers and 3-foot by 5-foot non-circular egg-shaped brick sewers. Any sewer work required, whether it is sewer relocation, sewer rehabilitation or sewer replacement, will be undertaken as part of SFMTA's project. Approximately 1.5 miles of sewers along this corridor, on Geary Boulevard, and on nearby cross streets, have been identified as possibly needing replacement. The weighted average age of these sewers is 78 years. Cost information provided below is based on the net present value of the initial screening and will change once project proceeds to design phase.

CWWSIPCSSR07 - Central Subway Sewer Improvements

This project is related to the SFMTA Central Subway Phase 2 of the Third Street Long Range Transportation Plan Project that will extend rail service from Fourth and King Streets to a northern terminal at Stockton and Jackson Streets.The purpose of this project is to include sewer improvements to avoid conflicts with the proposed light rail scope and to minimize future repair and replacement impacts. The sewer improvement project includes reconstructing existing 78-inch sewer (Fourth Street between Brannan Street and King Street), and relocating/ replacing existing 30-inch force main (Fourth Street between Bryant Street and King Street) and 48-inch gravity sewer (Fourth Street between Bryant Street and Brannan Street).

CWWSIPCSSR08 - Mission Bay Loop Sewer Improvement

SFMTA's Mission Bay Loop Project will install light rail track on Illinois Street between 18th and 19th Streets. The improvements will support the future operations of the Third Street Light Rail in anticipation of the activation of the new Central Subway segment. The existing gravity sewers and force mains on Illinois Street will need to be relocated and/or replaced to avoid future conflicts with light rail operations. This sewer improvement project includes planning, environmental review, design, and construction phases. The Mission Bay Loop contract has been awarded but the contract is on hold pending resolution to a CEQA court challenge.

CWWSIPCSSR10 - Masonic Avenue Sewer Improvements

The Masonic Avenue Complete Streets Project will take place on Masonic Avenue between Geary Boulevard and Fell Street. The project includes sidewalk and streetscape improvements; median and bicycle lane additions on Masonic Avenue; construction of a small park on the southwest corner of Geary Boulevard and Masonic Avenue; and incorporation of public art elements along this corridor. In conjunction with the aforementioned Masonic Avenue Complete Streets Project, the Masonic Avenue Sewer Replacement Project includes rehabilitating/ realigning existing sewers as well as constructing new sewer mains, manholes, side sewers and catch basins. The sewer scope includes approximately 4,700 linear feet of sewers ranging

from 12-inch to 24-inch in diameter.

CWWSIPCSSR13 - Taraval Sewer Improvements

SFMTA has proposed a pedestrian safety and transit improvements project along Muni's "L Taraval" route. The project includes construction/extension of boarding islands; addition of dedicated transit- only lanes; and replacement of aging tracks, overhead wires and trolley poles. The Taraval Sewer Improvements Project will relocate existing sewer facilities from the center of the street to outside of the tracks to allow for ease of maintenance and repair/replacement without impacting future SFMTA's Muni operations. The scope of the sewer work includes replacing approximately 19,000 LF of 12-inch to 36-inch diameter ISP, VCP, RCP, or concrete sewers along Taraval Street between 15th Avenue and 46th Avenue, and Ulloa Street between Forest Side Avenue and 15th Avenue for a twin sewer system.

PUMP STATIONS AND FORCEMAIN IMPROVEMENTS

CWWSIPCSPS01 - Hudson Ave Pump Station and Outfall Improvements

This project involves working with WWE, City's Attorney Office, SFPUC Communications and SFPW to request affected property owners (10 Hunters Point Boulevard and 930 Innes Avenue) to install sewer laterals from their properties to the sewer main on Innes Avenue. The project also involves working with the City Attorney's Office, SFPUC Finance and other City departments as necessary to determine the feasibility and possibility of implementing a loan program or other financial assistance to the property owners for their construction of the lateral connection to the sewer main. CEQA approval will also be needed. After the affected properties have sewer lateral connections to the sewer main in place on Innes Avenue, the Hudson Avenue Pump Station and the 1-block of 8-inch easement sewer will be deactivated by plugging and capping the pipe with light weight concrete. Coordination with SFPW will be required on sidewalk encroachment issues related to one of the affected properties. External outreach will also be needed to implement the solution, in coordination with SFPUC Communications. The project assumes that the property owners will hire and pay for their own contractor to install necessary pumps or laterals to make a connection to the sewer on Innes Avenue.

CWWSIPCSPS02 - Force Main Rehab at Embarcadero and Jackson Streets

In October 2015, SFPUC Contract WW-483RR was completed and a redundant force main (North Shore to Channel Force Main [NSCFM]) to the 2,750 LF of the North Shore Force Main (NSFM) that was most susceptible to failure, is now in commission. The combined sewage flow is now diverted to the NSCFM; thereby, allowing rehabilitation of the remaining 240 LF of the ductile iron pipe section of the NSFM. The purpose of this project is to rehabilitate or replace the remaining 240 LF of the NSFM that is most susceptible to failure. At the completion of this project, the 2,750 LF of the NSFM located outside the Jackson Street Transport/Storage Box (JST) will have complete redundancy.

The proposed project consists of rehabilitating approximately 190 LF of the NFSM that is located outside the Jackson Street Transport/Storage Box (JST) by installing a 28-inch outside diameter, DR26 HDPE pipe. Approximately 190 LF of the NFSM that is located outside the JST and underneath the Jackson combined sewer discharge will be replaced. Valve, valve-vault and associated mechanical/electrical controls will be constructed to allow WWE Operations to direct combined sewage flows to either the NSCFM or to the existing NSFM. A MOU will be established with SF Port (and/or its tenant) for the temporary construction and permanent O&M easement for the NSFM asset. CEQA approval will need to be obtained. Public outreach to the community will also be conducted, including stakeholders along SF Port's waterfront area.

CWWSIPCSPS03 - Mariposa Dry-Weather Pump Station & Force Main Improvements

The proposed project consists of the following:

• Increase the dry weather pump capacity to handle a peak flow rate of 5.0 MGD

• Demolish existing pump station building, underground structure, wet well, electrical system, and associated assets to make room for a new pump station.

• Obtain CEQA approval (MND is assumed) for the project, and apply for necessary permits (BCDC, Maher's Ordinance, etc.) to construct the improvements.

• Construct a new pump station building, underground structures, and wet well within existing SFPUC land and an expansion of the existing SF Port easement, including:

(1) Replacing the deteriorated main discharge valve.

(2) Replacing the crane system with one capable of supporting the larger, new pumps.

(3) Providing security cameras.

(4) Providing emergency access key box at gate and main entry door.

(5) Providing accessible egress gate and improving Vactor truck access by modifying perimeter fence.

(6) Providing code-compliant emergency exit lighting with battery backup along egress path of travel and at exterior door landing.

• Construct new MCCs, DCS, PLC, panels, power service, and level monitoring system, including:

(1) Upgrading and/or replacing power service to the pump station to accommodate power requirement for new dry weather pumps.

(2) Evaluating PLC replacement as part of ongoing effort to replace PLCs system-wide.

(3) Replacing the compressor and receiver to maintain system reliability during the service life of the building, and evaluating Ultrasonic Level Detection as primary control instrument.

(4) Construct new HVAC and Odor Control System, including:

(a) Investigating the adequacy of the current HVAC system to provide necessary ventilation and replacing HVAC equipment as required.

(b) Replacing odor control unit and ducting. New odor control unit type will be decided by WWE O&M for system-wide consistency of odor control equipment and operations.

• Obtain permanent power supply from Power Enterprise.

• Replace the existing dry weather force main with a new larger diameter force main downstream of the new dry weather pump station. Utility coordination and/or relocation may be necessary with the replacement of the force main.

• Establish MOU or apply for encroachment permit for temporary construction easement within SF Port's jurisdiction.

• Conduct public outreach to the community, including SF Port and its stakeholders.

CWWSIPCSPS04 - Cesar Chavez Pump Station (Completed)

Under this project, stormwater and groundwater that collects under the Cesar Chavez freeway underpass within a bounded area will be conveyed to SEP. As this is not an all-weather pump station, WWE determined that this project is a lower priority than other all-weather pump stations. The remaining needs of the project may be added to the WWE R&R program list for consideration. After the NAR and the Draft AAR were completed, it was determined that this project is less critical than other dry-weather or all-weather pump station improvements. Therefore, this project will complete the Draft AAR and any remaining work is to be deferred to the WWE R&R program for consideration. This SSIP project will end at the Draft AAR phase.

CWWSIPCSPS05 - Marin Street Sewer Replacement

The purpose of the project is to upsize the existing 24-inch diameter sewers (located between the intersection of 3rd Street and Marin Street and the Marin Street Outfall Structure, or Project Location) to handle additional dry-weather flows projected from the tributary area. The wet-weather conveyance associated with this sewer system would also be evaluated but no wet-weather conveyance issues were included in this project.

Hydraulic studies of the watershed area was performed to determine the hydraulic adequacy of the pipelines in the area based on expected

flows from approved developments, as well as to confirm the necessary pipe size. Based on the results from the hydraulic studies, the existing 24-inch diameter sewers at the Project Location were replaced with 30-inch diameter sewers. CEQA approval was obtained, along with other necessary permits such as BCDC and Caltrans permits. A MOU was executed with the SFMTA to execute this work as a portion of the Project Location is located within SFMTA jurisdiction.

CWWSIPCSPS06 - Griffith Pump Station Improvements

The proposed project consists of:

- Replacing the dry weather pumps and rebuilding the wet weather pump, including installation of new sump pumps to maintain the existing capacity of 11.5 MGD and 120 MGD.
- Installation of new bar screens (including motors, VFDs, housing, control panel, hardware, etc.).
- Installation of two new bridge cranes in the manifold room and main pump area.
- Replacement of the bar rack room crane with a new monorail system.
- Perform structural modifications, as necessary, in support of mechanical systems installations, including: Replacement of the dry weather manifold piping and associated appurtenances with HDPE pipes (associated appurtenances include check valves and knife gate valves, and pipe supports [flowmeter will be salvaged]).
- Modification of the manifold room stairway and catwalk to accommodate a new crane system, and widening of manifold room access hatch.
- Downsize the OCU exhaust fans to match capacity rating of OCU (to better facilitate removal of hydrogen sulfide).
- Modification of the HVAC system to increase the hourly air changes in the bar rack area, in accordance with WWE standards and NFPA 820.
- Removal of most of the dry weather manifold piping in manifold room. This would include check valves and knife gate valves, while flowmeters would be salvaged.
- Construction of two canopy systems to protect outdoor equipment, including chemical tanks, metering pumps, ultraviolet light, and associated deteriorating elements.
- Installation of a tamper-proof roof access ladder.
- Replace and improve electrical work; including a new station switchgear, MCCs, one ATS, and refurbish existing standby generator.
- Upgrade existing station with new automation and instrumentation equipment, control devices, and programmable controllers.
- Obtain CEQA approval (CatEx is assumed) and other necessary permits for the project.

CWWSIPNC01 - North Shore to Channel F M Drainage Improvement (Completed)

North Shore Force Main (NSFM) provides critical conveyance of combined sewage and stormwater flows from the northeastern quadrant of San Francisco to SEP. Before this project, this force main did not have any redundancy and could only be taken out of service for no more than 22-hours to meet the NPDES permit requirements. Approximately 2,750 LF of the 8,000 LF of this force main were located in The Embarcadero Roadway and either constructed of steel pipe or ductile iron pipe (both are susceptible to corrosion). After emergency repairs in 2008, a project was initiated under the Wastewater Capital Improvement Program to construct a redundant force main (North Shore to Channel Force Main [NSCFM]), so the 2,750 LF of the existing NSFM may be taken out of service for a complete repairs. As the construction work progressed, many unforeseen site conditions, including discovery of seven underground storage tanks, caused significant delays to the project and additional funding was needed to complete the construction contract. Since the project contributes to the SSIP Level of Service of ensuring critical functions are built with redundant infrastructure, the project team obtained approval from SFPUC to reallocate funds from SSIP to provide additional construction and construction management funds.

The NSCFM is now in service and combined sewage flows are diverted to the NSCFM; thereby, allowing the remaining 240 LF of the DIP section of the NSFM to be rehabilitated. The construction contract became a joint-project between SFPUC Wastewater Enterprise and

SFPW Paving Program and was led by SFPUC.

CSD AND TRANSPORT/STORAGE STRUCTURES

CWWSIPCSCD04 - CSD Backflow Prevention and Monitoring

Collection system assets that contribute to saltwater intrusion fall into two categories: conveyance (groundwater infiltration through defects) and CSD structures (tidal backflow, inflow through defects, or groundwater infiltration). A component of this project involves developing and implementing a CSD and conveyance monitoring plan to gather data on the salinity in the whole collection network to be able to locate potential infiltration sources in the collection system and then verify performance once improvements (implemented through SFPUC's R&R Program) have been completed. It is anticipated that the monitoring program will consist of CSD monitoring, as well as monitoring of conveyance systems (pump stations, trunk-line, and mobile sites).

The scope also includes planning, design and installation backflow preventers at selected CSD outfalls, which may include engineering survey of CSD weir elevations and lengths. Backflow preventers will be installed in a phased and monitored approach, with the following priority CSD outfalls considered based on locations with the potential for highest inflow in the system for the same tide:

- CSD 17 – Jackson Street
- CSD 10 – Pierce Street
- CSD 40 – Griffith Street
- CSD 31A – Islais Creek North
- CSD 32 – Marin Street
- CSD 33 – Selby Street
- CSD 41 – Yosemite
- CSD 35 – 3rd Street South

The project scope will be fluid and subject to change based on monitoring results.

CWWSIPCSCD05 - 5th, North 6th and Division Street CSD Rehabilitation

Hydraulic modeling of the three CSDs will be performed as their functions are related. Scope of work for these CSDs are based on historical performance and WWE Operations video inspection records and include:

- Cleaning and specific condition assessment of the asset
- Provide necessary ventilation
- Repair necessary concrete crack and spalling and exposed rebar

In addition to the work common to all three CSDs noted above, the following will also be completed:

- Provide safe access, rehab/replace the flap gate at 5th St. CSD and North 6th St. CSD
- Refurbish gates at Division CSD
- Repair the baffle at Division CSD
- Installation of a backflow prevention system at the 5th Street CSD structure
- Installation of a backflow prevention system at the 6th Street CSD structure

CWWSIPCSCD01 - Richmond Transport/Storage Tunnel Rehabilitation

Under the Richmond Transport Modeling Project, recommendations for handling the reported issues within this system were developed. The purpose of this project is to execute the recommendations of the Modeling Project. The scope of this project includes the evaluation of rehabilitation methods for the Richmond/Transport Storage Tunnel to confirm the previous findings and recommendations included in the physical modeling performed by PMC and presented in October 2013 to resolve historical surge issues identified. The model identified the causes of geysering through vent holes and dislodged manhole covers in various areas, and included modification recommendations including odor solutions that will be verified during the Planning Phase of this project.

CWWSIPCSCD03 - Beach and Sansome Street CSD Rehabilitation

Scope of work for these CSDs are based on historical performance and WWE Operations video inspection records include:

Beach Street CSD:

- Cleaning and specific condition assessment of the asset
- Provide necessary ventilation
- Inspection of baffles and restore baffle, if needed

- Inspect weirs and repair crack at the weir
- Repair corroded metal ceiling
- Install a backflow prevention system

Sansome Street CSD:

- Cleaning and specific condition assessment of the asset
- Provide necessary ventilation
- Repair necessary concrete crack and spalling, exposed rebar, and an I-beam
- Replace butterfly valve seals
- Install a backflow prevention system

STORMWATER MANAGEMENT

EARLY IMPLEMENTATION PROJECTS

CWWLID01 - Cesar Chavez Green Infrastructure (Completed)

The purpose of this streetscape and sewer improvement project, which focused on the segment between Guerrero Street and Hampshire Street, was to improve the safety, aesthetics, and infrastructure and transit efficiency of the corridor. This project also turned Cesar Chavez into a sustainable "green street" by increasing the number of street trees, implementing Low Impact Development (LID) practices, and installing stormwater planters to add green landscaping pockets and provide for stormwater management. The project widened the existing median to allow for many more street trees and landscaping; provided left turn pockets for turning vehicles; widened the sidewalk at the corners; and upgraded the street lighting along the corridor to LED to provide brighter, whiter light and reduce energy consumption. Permeable paving and bioretention were also integrated into the street design. This strategy fuses infrastructure with urban design, allowing the streetscape to become part of the solution to drainage problems. This project has been completed.

CWWLID02/FCDB09 - Islais Creek Green Infrastructure

This project incorporates green stormwater management into an urban design to meet the neighborhood's needs and the stormwater performance goals for the Islais Creek watershed (i.e. manage the first 0.75 inch of rainfall for a 5-year, 3-hour storm event within the 2.2 acre drainage management area). The project will also provide secondary benefits by creating new plazas that can serve as neighborhood gathering spaces, greening of the neighborhood by adding more vegetated areas within the right-of-way (ROW), and adding curb bulb-outs to enhance pedestrian and bicyclist safety. Additional work includes construction of bioretention and a subsurface infiltration gallery, and developing parking spaces and traffic lane configurations based on recommendations from SFMTA & SF Planning.

CWWSIPFCDB01 - Sunset Green Infrastructure

Sunset Boulevard is a large arterial roadway with three lanes of traffic in each direction, a central vegetated median, and large City-owned landscaped parcels with walking paths fronting either side. The Sunset Boulevard Greenway project will construct a series of tiered bioretention rain gardens in the western stretch of landscaped parcels along 12 blocks stretching from Golden Gate Park to Lake Merced. The rain gardens will manage stormwater runoff on the west side of Sunset Boulevard from the street, paths, and a portion of the landscaped parcel area. The project will also incorporate a "Learning Lab" to supplement elementary school curriculum.

CWWSIPFCDB02 - North Shore Green Infrastructure

Stormwater will route to flow-through bioretention planters with surfaces set lower than the surrounding grade. During large storm events, ponded water at the surface of the planters will reach a maximum depth of 6 inches before it crests an overflow weir, either to a lower planter tier or to a concrete valley gutter running the length of the alley. To protect the adjacent building foundations, an impermeable waterproof liner will be placed along the bottom and sides of the planters. New street surfacing and furnishings will provide improved community space for local residents and visitors. The project is designed to manage runoff from 0.1 acres, removing around 300,000 gallons of stormwater in a typical year.

CWWSIPFCDB03 - Lake Merced Green

Infrastructure
Holloway Avenue was chosen as the Lake Merced watershed EIP based on its cost effectiveness and potential to provide socio-economic benefits. The project starts at the Ashton Avenue intersection and extends along eight blocks to the Lee Avenue intersection. Corner bulb-outs containing bioretention planters will be installed on the downstream end of six of the blocks. On the remaining two blocks, roadside bioretention planters adjacent to the curb will manage stormwater in lieu of corner bulb-out planters, which are infeasible due to driveway conflicts. The bioretention planters are sized to manage stormwater runoff from the sidewalk and only a portion of intersection areas in order to minimize their size and the associated parking loss from the new bulb-outs. Permeable concrete installed within the existing parking lanes on both sides of Holloway Avenue will manage runoff from the roadway. The project is designed to manage runoff from 2.1 acres, removing 1.0 million gallons of stormwater in a typical year.

CWWSIPFCDB04 - Sunnydale Green Infrastructure
The Visitacion Valley Green Nodes project is comprised of two subprojects ("nodes") at different locations within the neighborhood. The first node, identified as the Leland Avenue Rain Garden, is on an open-space parcel owned by the San Francisco Recreation and Park Department at the end of Leland Avenue. The project creates a large terraced bioretention facility that will capture, store, and infiltrate runoff from the impervious roadway and an adjacent vegetated sloped area. This location will also provide community benefits by enhancing an adjacent existing community vegetable garden and creating a pedestrian connection to McLaren Park. The second node, identified as the Sunnydale Avenue Mini-Plaza, consists of large midblock and corner bulb-outs containing bioretention planters at a busy T-intersection at Rutland Street in front of a church/school. The planters remove stormwater while also providing traffic calming and pedestrian safety. The small urban plaza and landscaping will provide a pleasant community space for the neighborhood. The project is designed to manage runoff from 1.8 acres, removing 0.8 million gallons of stormwater in a typical year. Approximately one block of local sewer work on Rutland Street will be included into the construction contract to minimize construction impact. The project cost of that sewer improvement is accounted for separately.

CWWSIPFCDB05 - Richmond Green Infrastructure
At El Camino Del Mar, the following will be completed under this project:
• New pedestrian crosswalk.
• Sixteen terraced rain gardens adjacent to crosswalks from the Legion of Honor parking lot down to the Lands End Trailhead, including debris traps at the inlets to capture the abundant vegetative litter.
• Subsurface infiltration galleries connected to the northern and southern planters on either side of the road.
• Soil stabilization techniques in selected locations on the southern slope of El Camino Del Mar.
• Sewer main upsizing between Lands End Trailhead and manhole east of 32nd Avenue.
• Upgrade existing crosswalks to comply with the Americans with Disabilities Act. At Beach Terrace, the following will be completed under this project:
• Sea Cliff Avenue:
o Permeable pavement in the parking strips between 25th & 26th Avenues.
o Three rain garden bulb outs at the eastern & western ends of the permeable pavement
o One flow-through (under-drained) rain garden at the southeast corner of the intersection with 26th Ave., where soils were found to have low infiltration rates
o Two traditional (infiltrative) rain garden bulb-outs at the southwest corner and eastern edge of the intersection with 25th Ave., where infiltration rates are much higher
o Improved catch basins on Sea Cliff Avenue west of the 26th Ave. intersection
• GGNRA land:
o One large, traditional rain garden at the top of the stairway to Baker Beach from the 25th Ave. North cul-de-sac

CWWSIPFCDB06 - Yosemite Green Infrastructure

Reach 1 - Yosemite Marsh:

• Overflow structure to direct Yosemite Marsh overflow into creek channel (with CSS backup).

• Earthen channel constructed within McLaren Park flow from the Yosemite Marsh to the streetscape right-of-way (ROW) approximately mid-block on Oxford Street between Bacon & Wayland St. & then south along Oxford St. & east along Wayland St.

• Small tributary channel extending southwest from intersection of Oxford & Wayland St.

• Periodic drop structures downstream of the confluence along Wayland St.

• Proposed path running east along Wayland between creek channel and street.

• Conversion of 500 block of Oxford St. & 1400 block of Wayland St. to one-way streets.

• Relocation of a low-pressure fire hydrant from McLaren Park at the corner of Oxford & Wayland St. to the ROW directly across the street.

• Underground creek channel from southwest corner of Wayland and Cambridge St. to McLaren Park east of Yale St.

Reach 2 - Louis Sutter Softball Fields:

• Bioretention facility located near the west side of the soccer field.

• Earthen channel that meanders across the southern edge of the soccer field.

• Subsurface storage tanks located west of soccer field and northwest of ball field.

• Regraded slopes north and east of the ball field.

• Soccer field will be reset with drainage improvements and replaced irrigation system.

• New overflow structure (to creek channel with CSS backup) constructed on the northern side of McNab Lake.

• Earthen creek channel conveying flows eastward in the ROW north of the ball field to University St., then south down toward Woolsey St.

• Series of channel drop structures on University St.

• Culvert under University St.

• Removal of trees in poor health.

• Wooden deck northwest of the ball field on Wayland.

• Bioretention/ponding area northwest of the intersection of University and Woolsey.

• Provide plant establishment and/or monitoring for the following GI Projects: Islais Creek, Sunset, North Shore, Lake Merced, Sunnydale, Richmond, Channel, and Yosemite.

CWWSIPFCDB08 - Channel Green Infrastructure

The Wiggle neighborhood is a collection point for stormwater flow, both from surface runoff and from the collection system. It is also the focus of a project by the SFMTA to repair roadways and aid the flow of motor vehicles, bicycles, and pedestrians. Many of these traffic calming features provide opportunities for the inclusion of green infrastructure. The purpose of the Wiggle Neighborhood Green Corridor project is to implement low impact stormwater management along the Wiggle bike route between Oak and Baker Streets, along Scott and Page Streets, ending at Waller and Steiner Streets. The project is designed to manage runoff from 4 acres, removing 1.1 million gallons of stormwater in a typical year. Key features of this project will include installation of bulb-outs on selected street corners, bioretention planters, and permeable pavement.

WATERSHED STORMWATER MANAGEMENT

CWWSIPFCGI01 - Watershed Stormwater Management (Planning Only)

This project includes planning and preliminary design support for the watershed stormwater management and implementation of green infrastructure projects in Phase 2 of SSIP.

CWWSIPFCDB12 - Wawona St and 15th Ave Stormwater Detention Project

The neighborhood surrounding the intersection of 15th Avenue and Wawona Street is topographically lower in elevation compared to its adjacent neighborhoods, and has been subjected to flooding during large storms. When the capacity of the sewers are exceeded during large storms, significant volumes of overland flow upstream of the intersection cannot enter the catch basins and sewer system, causing flooding

and property damage. The purpose of this project is to convert the Arden Wood Natural Area to a flood water detention basin by collecting the upstream surface water and diverting it into the area, using a series of pipe and inlet systems on the upstream, and a large pipe/micro-tunnel at the intersection of Wawona Street and 15th Avenue.

URBAN WATERSHED ASSESSMENT

CWWSIPUW00 - Urban Watershed Assessment and Planning Initiation (Completed)

Many of the SSIP's proposed projects are focused on improvements to surface drainage and collection system management in San Francisco. The SSIP Urban Watershed Assessment Task will evaluate and recommend alternatives that balance the use of grey (for example, pipelines) versus green infrastructure (for example, low impact design) for improvements to watershed surface drainage and collection system management. The SSIP will utilize an integrated watershed management approach to investigate the health of the City's watershed and identify potential opportunities for stormwater capture, conveyance, detention and possible reuse to address issues of flooding as wells as combined sewage conveyance and storage. Project implementation will require the hydrologic and hydraulic analysis of each of the eight drainage basins and will include: identification of various solutions to each basin's unique set of flooding challenges; evaluation of the social, economic and environmental values of alternatives that meet the level of service with a triple bottom line tool and the optimization and prioritization of projects for each basin. The work will address life cycle costs and detailed operation and maintenance requirements.

CWWSIPUW01 - Urban Watershed Assessment and Planning (Completed)

The UWA is the comprehensive watershed-based planning process developed to diagnose challenges and design solutions for the surface drainage and collection/conveyance portion of the City's sewer system. The UWA emphasizes holistic urban watershed-scale planning and the development of multiple-function solutions to sewer system challenges. These solutions are evaluated using a comprehensive Triple Bottom Line (TBL) tool that employs societal and environmental benefits and costs with the goal of delivering more holistic investment decisions. Project implementation will require the hydrologic and hydraulic analysis of each of the eight drainage basins and will include identification of various solutions to each basin's unique set of flooding and other challenges; evaluation of the social, economic and environmental values of alternatives using the TBL tool; optimization and prioritization of projects for each basin; and life cycle costs with detailed operation and maintenance requirements

ADVANCED RAINFALL AND OPERATION DECISION SYSTEM

CWWSIPFCRP01 - Advanced Rainfall Prediction - Part 1

The purpose of this project was to provide rainfall forecast information to SFPUC WWE staff automatically in real-time. This project included planning, design, and environmental review for three new radar equipment stations to collect additional data that would feed into the rainfall prediction modeling for short-term and long-term precipitation forecasts. In September 2017, this project was cancelled and recommended to be placed on hold as the potential benefit of the project to Wastewater Operations did not merit the significant project costs.

CWWSIPFCRP02 - Operational Decision System Phase 1 (Completed)

SFPUC desires a more consistent and transparent basis for making decisions that make best use of available data in an automated way. This project would integrate available data in the collection system (levels, flows, pump status, etc.) with rainfall prediction data (from National Oceanic and Atmospheric Administration, or in the future improved through the Advanced Rainfall Prediction project). The real-time data will be coupled with WWE's collection system hydraulic model to project the likely impact of approaching storms and generate specific operational recommendations for managing flows.

CWWSIPFCRP03 - Operational Decision System Phase 2

This project would integrate available data in the collection system (levels, flows, pump status, etc.) with rainfall prediction data (from National Oceanic and Atmospheric Administration). The rainfall prediction data will be coupled with WWE's collection system hydraulic model to project the likely impact of approaching storms and generate specific operational recommendations for managing flows. Phase 2 builds upon Phase 1 (CWWSIPFCRP02) for a citywide installation.

FLOOD RESILIENCE PROJECTS

CWWSIPFCDB07 - 17th and Folsom Wet Weather Storage (Completed)

The neighborhood surrounding 17th Street, 18th Street and Folsom Street has been experiencing over a foot of water on the streets, sidewalks and into their houses during rain events, resulting in property damages to the residents. The 17th and Folsom Wet Weather Storage project was originally intended to provide interim flood mitigation to the neighborhood while SSIP is working on identifying long-term solutions through capital improvement projects. The proposed interim flood mitigation alternatives consisted of a storage basin, pump station, and collection facilities to be built underneath the proposed future 17th & Folsom Park. However, the project was cancelled and defunded except for residual funds for ongoing response activities as directed by management, including certain outreach activities related to flooding.

CWWSIPFCDB10 - Flood Resilience Analysis (Planning Phase Only)

The Flood Resilience Analysis Project will focus on developing a framework for identifying multiple storm scenarios; quantifying risks and cost implications associated with mitigating flooding across the aforementioned storm scenarios; and defining the extent and scope of the City's responsibility, based on consequences of extreme storms. To minimize flood risks citywide and meet SFPUC objectives, this project will also develop programs and policies beyond what the collection system can manage, and make recommendations on prioritization of structural, non-structural, and operational measures.

CWWSIPFCDB11 - Flood Resilience - Early Projects (Planning Phase Only; Completed)

The City of San Francisco has experienced multiple significant storms in the last decade, which have led to flooding in various parts of the City. While Flood Resilience Analysis is being conducted by SFPUC, early infrastructure projects are being planned at three critical areas (Cayuga, Wawona, and Folsom neighborhoods) subjected to high flood risk. This project focuses on planning and developing stormwater detention and conveyance concepts specific to each of the aforementioned critical neighborhoods.

CWWSIPFCDB13 - Cayuga Ave Stormwater Detention Project

The neighborhood surrounding the northeastern end of Cayuga Avenue has been susceptible to recurring flooding associated with moderate to heavy storms. Due to its low land topography, the area can experience up to a few feet of water on the streets and sidewalks during rain events. This project will improve the stormwater detention by re-grading the I-280 embankment at the foot of Cayuga to create a low lying detention field. This project will provide surface detention of flows during flooding and includes an overflow relief connection into the College Hill Tunnel as well and a retaining wall to support the roadway.

CWWSIPFCDB14 - Folsom Area Stormwater Improvement Project

The neighborhood surrounding Folsom Street from 14th to 18th has been susceptible to recurring flooding associated with moderate to heavy storms. This project will include planning and design to improve stormwater conveyance away from the 17th and Folsom neighborhood to minimize flooding in the Level of Service storm. This project is to be developed based on the preferred alternative identified in Flood Resilience - Early Projects.

CWWSIPFCDB15 - 17th and Folsom Permanent Barriers

SFPUC has purchased off-the-shelf plastic

temporary flood barriers for 2015 and 2016 wet seasons. At locations where temporary plastic flood barriers were installed and proven effective in mitigating floods, SFPUC plans to install more durable custom aluminum or steel barriers before a permanent solution (Folsom Area Stormwater Improvement Project) can be implemented. The aluminum or steel barriers would be installed during wet seasons and removed during dry seasons. The sidewalk would be graded and outfitted with recessed and covered receptacles for mounting flood barrier poles. Interlocking aluminum logs would be installed between the poles. The flood barrier system would be custom built based on site-specific pole intervals, barrier height, and other characteristics.

CWWSIPFCDB16 - Hydraulic and Drainage Sewer Improvements

This project includes implementing small stormwater capture and conveyance improvements at critical flood-prone neighborhoods. The scope of construction includes improvement of drainage features, upsizing/expansion of sewer pipes, and surface grading modifications in Joost/Foerster/Mangels and Urbano/Victoria neighborhoods.

LAND REUSE

CWWSIPPRPL91 - Land Reuse of 1800 Jerrold Avenue

This project includes jurisdictional transfer of 1800 Jerrold Avenue property ("Central Shops") from the Office of Contract Administration (OCA) to SFPUC. This 6.04-acre site is located adjacent to the SEP at the northwest corner of Quint Street/Jerrold Avenue intersection, and is currently used by OCA as central shops for city vehicle maintenance and repair.

A new location to move the existing Central Shops to was identified, and planning is underway to complete design and construction. Upon approval of the Jurisdictional Transfer, the relocation will involve the purchase of two properties, lease of a third property, and construction agreements to complete improvements. This requires extensive coordination and cooperation between multiple City departments.

Subsequent to the relocation of the Central Shops by the OCA, the 1800 Jerrold Avenue property would be acquired by SFPUC. Upon completion of geotechnical and environmental hazardous material investigations, a demolition and remediation plan will be developed. The site is currently being considered for construction of the new SEP biosolids facilities.

CWWSIPPRPL92 - Land Reuse of 1801 Jerrold Avenue

Reuse of the site requires a negotiated transfer of the site and subsequent demolition of the abandoned asphalt plant facilities and site remediation. Following the completion of geotechnical and environmental hazardous materials investigations, a demolition and remediation plan will be developed. Demolition will include the removal of all of the structures currently occupying the space including the existing asphalt plant equipment, storage silos and outbuildings. The remediation plan will be dependent on findings from the site investigation. Presently, the relocation of SFPW's Street Repair from the Asphalt Plant site to a property adjacent to the SFPW Yard is pending the relocation of SFPUC Sewer Operations (Sewer Ops) from 160 Napoleon (on a portion of Lot 31). Planning is currently underway to relocate Sewer Ops to a new location at Griffith Yard, and then to move the Asphalt Plant occupants to 160 Napoleon.

Project costs are estimated at $8.2M, consisting of $3.7M for demolition, $2.5M for Quint Street, and a contingency of $2M. Planning and CEQA will be completed in 2016. This project will be completed by June 30, 2017.

APPENDIX 1.2. WWE CAPITAL IMPROVEMENT PROGRAM

ODOR CONTROL

CENMSCIC05 - Oceanside WPCP HVAC Improvements (Completed)

The objective of this project is to correct HVAC design and operation deficiencies at the Oceanside Water Pollution Control Plant (OSWPCP). The scope of work includes HVAC system improvements of eight process buildings, one administration building, and one parking structure. Some specific areas of improvements will be made that includes the indoor air quality of Administration Building 930 and corrosion problems associated with the ventilation and odor equipment throughout the facility. The marine environment has been very harsh on the mechanical and electrical equipments.

CENMSCIC07 - Chemical Feed Systems Imp - Phase 1 (Completed)

The objective of this project is to effectively mitigate odors from the local gravity sewers around the Southeast Plant. The scope of work includes new chemical feed system at Griffith Pump Station (GPS) and associated electrical and instrument control systems. The implementation of this project will also reduce odors at Southeast Plant's influent control structure and throughout the treatment processes.

CENMSCIC16 - WS PS VFDs and Pumps (Completed)

The objective of this project is to improve reliability of critical and aging mechanical and electrical equipments at the West Side Pump Station (WSPS). The equipment improvement includes replacement of variable frequency drives and sewage lift pumps at the WSPS. The implementation of this project will require a combination of pre-purchases and a construction contract. This project has been combined with CENMSCIC17 OSP / WS Bar Screens project for construction contract.

CENMSCIC20 - Chemical Feed Systems Improvements - Phase 2 (Completed)

The objective of this project is to effectively mitigate odors from transport/storage facilities around the City. The scope of work includes: (1) installing chemical feed system and related sewer work at the abandoned Drumm Street Pump Station, (2) replacing the existing chemical feed system at Brannan Pump Station, (3) installing a chemical feed system upstream of the Marina transport sewer, (4) improve the instrumentation and monitoring system for existing chemical feed systems at North Shore Pump Station, and (5) installing chemical feed system at Lake Merced Pump Station.

CENMSCIC22 - Embarcadero Vent Elements Phase 1 (Completed)

The objective of the project is to effectively mitigate odors emanating from the transport/storage facility under the Embarcadero Roadway. The Phase 1 scope includes installation of 12 dispersion elements along the Embarcadero. These dispersion elements will ventilate odors at a higher elevation away from human receptors, allowing better wind dispersion, and minimizing impacts to the community. The future phases of this project will concentrate in the areas around the City based on historical odor occurrences.

CENMSCIC28 - SEWPCP Bldg 010 Odor Control Improvements (Completed)

The objective of the project is to reduce the odor impacts to surrounding community at the Southeast Treatment Plant. The project consists of enclosing sewage influent control structure, channels connecting to old headworks, and other process areas of Bldg 011. Foul odors contained in these structures will be ventilated and treated with odor control units. Aging electrical, mechanical equipment upgrades, and structure coatings will be included under this project.

CENMSCIC31 - SEWPCP 620 & 680 Digester Compressor (Completed)

The objective of this project is to remove eight existing digester gas recirculation compressors units and furnishing and installing eight new digester gas recirculation rotary lobe blowers. The proposed project will improve the efficiency and

performance of the digester sludge mixing and improvement in gas handling operation.

TREATMENT FACILITIES

CENMSCIC06 - SEP Gas Handling Improvements (Completed)
The goal of this project is to cost effectively integrate the digester gas handling system at the Southeast Water Pollution Control Plant, improve the reliability of the cogeneration facility, and provide a backup fuel source for the boilers. The best viable alternative is to refurbish the currently defunct Digester 5 by providing a gas storage facility. This project will improve the reliability of the cogeneration facility by installing a gas filtration and treatment system. The backup fuel source for the boiler will be achieved by replacing existing burners with dual-fuel burners, which will burn natural gas in the absence of sufficient digester gas. The new control system will provide a positive control over the interaction between the flares and the digester gas fuel supply and reduce the odor complaints.

CENMSCIC08 - SEP Secondary Clarifiers Concrete Repairs (Completed)
The objective of this project is to repair concrete corrosion in the secondary clarifiers at the Southeast Water Pollution Control Plant (SEWPCP). The scope of work includes cleaning and applying a protective coating to the concrete surfaces of the secondary clarifier overflow weirs/channels. Concrete spall and crack repair will be performed as needed to restore a proper bonding surface. A protective coating such as Enduraflex, Epoxy coating will be used to coat the concrete surfaces. There are a total of sixteen 120-foot diameter secondary clarifiers at the SEWPCP. The total of 80,000 square feet of concrete surface will be addressed as a part of this project.

CENMSCIC09 - SEP Mixed Liquor and RAS Odor Control Improvements (Completed)
The project objective is to cover, vent, and treat odors from the secondary treatment process at the Southeast Water Pollution Control Plant (SEWPCP). The scope of work includes: (1) replacing temporary enclosure at mixed liquor channels, ventilating contained odors in these structures, and treating foul odors with carbon or bioscrubber odor control units, (2) replacing temporary enclosure at RAS sumps, ventilating and treating foul odors, and (3) an Emergency Generator for Operations Control Center and Administrative Building. This work is carried out with construction contract under IC28.

CENMSCIC17 - OSP / WS Bar Screens (combined with Int03) (Completed)
The objective of this project is to replace three bar screens at Oceanside Plant and two bar screens at the West Side Pump Station. These upgrades will enhance the efficiency of the grit collection and handling at these facilities. In addition the instrumentation, control and HVAC systems will be upgraded. The implementation of these projects will require a combination of pre-purchase and construction contracts. This project has been combined with CENMSCIC16 WS PS VFDs and Pumps project for construction contract.

CENMSCIC29 - SEWPCP Gas Handling Improvements Phase 2 (Completed)
Install new digester gas piping between the two digester groups and the gas booster facility. The existing piping is severely corroded and needs to be replaced. By adding the bypass piping, redundancy is gained for the system that will facilitate future maintenance of the existing pipe. A failure in the existing piping would lead to the digesters continuously venting digester gas to the neighborhood until a replacement was installed. Work includes new piping, valving, and concrete vaults.

CENMSCIC36 - Facility Security / Emergency Response (Completed)
This project will identify the enterprise wide need of the security and emergency response measures. Based on vulnerability analysis, the projects in this category will include installing electric/electronic security devices, physical barrier (fencing), and similar facility access control features. The plan will also include the means and methods for responding to incidents

in order to minimize disruption of service, protect employees and the public, and mitigate adverse environmental impacts.

CENMSCIC37 - WWE Facility Reliability Improvements (SEP Northside)
The southeast plant northside reliability project will be done in multiple phases. Phase 1 will address the Bldg 040/041 corrosion and ventilation issues. Phase 2 will include, Bldg 260 WAS/RAS pumps and associated VFDs, and secondary treatment aging electrical and mechanical major equipments. The future work will address the Southeast Plant's hypochlorite, bisulfite disinfection system, and oxygen regeneration facility.

CENMSCIC38 - SEP Solid Handling
This project will address the immediate need to address the digester roof corrosion and severe corrosion at Bldg 840/860 sludge dewatering facility. The major mechanical and electrical infrastructure has reached its expected life. The solids handling process is very critical component of the wastewater treatment and without upgrades the risk to the enterprise will be too high. These limited upgrades will make this facility run till new solids handling facility will be built.

CENMSCIC39 - OSP Solids Handling and Coating
The scope of work consists of repairing external surface of 4 (four) egg shape digesters at Oceanside Treatment Plant and converting biosolids to the Class A grade. This Class-A press change will require installation of heat exchangers and other mechanical and electrical infrastructure. In addition, two new screw presses will be installed for improved biosolids dewatering.

CENMSCIC41 - MV-SWGR SEP Electrical Reliability
The Southeast Plant (SEP) main electrical power service consists of a single 12kV circuit provided by Pacific Gas and Electric Company (PG&E). This service is fed to the plant's main distribution switchgear via an underground duct bank. The project will install secondary feeder and replace the aging medium voltage switchgear system.

CENMSCIC42 - GHW Stabilization Emergency (Completed)
Storm damage response at the Great Highway between Sloat and Skyline Boulevards. This project consists of three phases: 1) bluff toe stabilization; 2) roadway opening, bluff top stabilization and bluff face stabilization; and 3) emergency bluff stabilization work at Ocean Beach to protect the Great Highway and Lake Merced Tunnel area south of Sloat Blvd.

CENMSCIC45 - OPS: FOG to Biodiesel
This project consists of two phases. Phase A is for the procurement and construction of the FOG which was completed and tested in 2013. The second phase will refurbish the Trap Waste (aka FOG) receiving station that was originally installed to provide feedstock to the FOG to Biodiesel skid. While the second step of the process was not successful, the Wastewater Enterprise has documented that Trap Waste receiving and subsequent digestion has substantial benefits to the enterprise in terms of energy production and to continue this practice, the receiving station needs to be updated to operate safely & to continue its useful life. Phase B funding is for the planning and design phase of these upgrades.

CENMSCIC47 - Major Electrical / Mechanical Reliability
The objective of this project is to replace major electrical and mechanical equipments that have reached beyond the expected life. The mechanical equipments consists of pumps, bar screens, mixers, HVAC components, conveyers, valves, gates etc. The electrical equipments consist of motor control center, switchgears, variable frequency drives, and basic electrical infrastructure. Work under WW-580 is for the selective material abatement and demolition work at OSP, replacement of existing W3 Water Strainer assemblies, furnishing and installing new W2 Water Filter assembly, W2 Water magnetic flowmeter assemblies, and new crossover connection piping, butterfly valves, and check valves.

CENMSCIC70 - Oceanside Plant Aeration System Upgrade (Completed)
The objective of this project is to provide 4 (four) blower/motor sets at Oceanside Treatment Plant. This project is for the planning and design efforts and is part of the Oceanside Plant Solids Handling and Coating Improvements (CENMSCIC39).

CENMSCIC72 - Facility Security Upgrades Contract 2
The objective of this project is to provide security improvements to protect the facilities, personnel and processes at these possible locations: (1) North Point Wet Weather Facility (NPF); (2) Griffith Pump Station (GFS); (3) Bruce Flynn Pump Station (BFS); (4) Mariposa Pump Station (MPS); and 5) Mission Bay Storm Water Pump Station No. 1 (M1S), No. 4 (M4S) and No. 6 (M6S). This project is a continuation of the WWE Facility Security/Emergency Response (CENMSCIC36) project.

Int03 - Contract 4 – OSP Gas Compressors (Combined with CENMSCIC17) (Completed)
The project objective is to replace the aged compressors with new efficient compressors that will enhance mixing in the digesters and improve the digester gas production.

PUMP STATIONS

CENMSCIC19 - Tennessee Pump Station Reliability - Phase 1 (Completed)
The objective of this project is to improve the reliability of the pump station. The scope of work includes modifying the existing pump station to provide redundancy for failsafe operation during both dry and wet weather flow. It is anticipated that new sump and electrical upgrades will be required to achieve redundant pump capacity.

CENMSCIC21 - Channel Pump Station Odor Control (Completed)
The project objective is to minimize the odor release and maximize the reliability of one of the most critical pump stations of the Wastewater Enterprise. The scope of work includes refurbishing bar screens, enclosing the screening storage area, and enclosing the influent channel to the pump station. Foul odors contained in these areas will be ventilated and treated with the best available odor control technology. Electrical and maintenance equipment upgrades and structure coating will be included in the contract to maximize the reliability of the pump station operation and minimize the concrete corrosion.

CENMSCIC30 - Channel Pump Station Odor Control - Phase 2 (Completed)
The phase 2 improvements will include maximizing odor control at the Channel Pump Station and upstream of Pump Station in the collection system. The scope of work also includes improving reliability of major mechanical and electrical equipments. The project will address some of the immediate security concerns. The project will install the carbon odor control unit to handle the contained odors and new chemical feed systems for the upstream collection system odor control. All the scope identified in IC21 will be constructed under this project.

CENMSCIC33 - North Shore to Channel Force Main Improvement (Completed)
The objective of this project was to install a redundant force main to the most vulnerable portion of the existing North Shore Force Main, which had failed twice in 2008. Work included constructing two valve-vaults in The Embarcadero near Washington Street, and installing new HDPE force mains on Drumm Street, between Jackson and California Street, across the Market Street pedestrian plaza between California and Spear Street, on Spear Street, between Market and Howard Streets, and on Howard Street, between Spear and Steuart Streets. Unfortunately, during construction of the project, numerous utilities were found in Drumm and Spear Streets, and they occupied the area where the new force main was to be installed. Utility companies expressed that they would need additional time to relocate their facilities, which would have created a substantial delay to the contract. Therefore, under the advice from the City Attorney's Office, SFPUC terminated the construction contract for convenience to minimize

any additional costs incurred due to the utilities' failure to notify the City of their facilities during the project's planning and design phases. A new project, CENMSCIC52, is initiated for the coordination effort with utilities and re-design and execution of the work.

CENMSCIC40 - North Shore and Mariposa Pump Station Improvements

This project will replace the majority of suction, discharge, and force main lines with HDPE (high density polyethelyne), with several sections of steel pipe rehabilitated in place at North Shore Pump Station. The work scope also includes the new pump isolation, check valves and refurbish plug valves. The scope of work at the Mariposa Pump station includes installing new dry weather pumps. The flow meter will also be replaced to account for higher flow readings. The scope also includes installing a new gate valve, a new 12-inch knife gate valve, stem extension, and manual handwheel. It will also replace the existing Bubbler System as Operations reported that the existing bubbler system has issues with debris and sand. And finally, this project includes upgrading the electrical and controls System, the switchgear to 480V and installing variable frequency drives for the new dry weather pumps.

CENMSCIC48 - Channel Pump Station Improvements - Phase 3 (Completed)

The project will replace aged emergency generator to meet new Bay Area Air Quality Management standards on diesel generator. The scope will include security improvements, replacement of corroded main lift pumps piping system, the enhancement of odor control features, and instrumentation and control work.

CENMSCIC52 - North Shore Force Main, Phase 2

This project will provide a redundant force main to the portion of the existing North Shore Force Main (NSFM), which has no redundancy and is most vulnerable for failure. The vulnerable portion of the existing NSFM failed in 2006, 2008, and most recently, in March 2012 and June 2012. Separate emergency contracts were issued in 2012 and emergency repairs on the existing force main have been completed; however, a portion of the existing force main cannot be fully-rehabilitated until the redundant main is available. The scope of work for this project includes installation of approximately 3,000 linear-feet of force mains on Drumm Street and Spear Street and construction of valve-vault(s) in the sidewalk area on The Embarcadero, between Washington and Broadway Streets. Only the CIP funds are reported in this project.

CENMSCIC61 - North Shore Force Main Emergency Repair (Completed)

On March 20, 2012, Wastewater Enterprise declared an emergency due to sewer leaks of the North Shore Force Main, identified at the intersection of The Embarcadero and Mission Street. An existing contractor from the SFPUC Job-Order-Contract, Cal State Contractors, was selected to assist in identifying and repairing the leak. The regulatory agencies were notified of the force main failure, and the fact that the force main must be operated at a reduced capacity in order for SFPUC to maintain sewer services and not cause a more substantial sanitary overflow. Funds for this emergency project were reallocated from CENMSCIC52.

CENMSCIC62 - Emergency North Shore Force Main Rehabilitation (Completed)

Subsequent to the emergency repair work (project CENMSCIC61) declared from the March 20, 2012 emergency declaration. Wastewater Enterprise declared another emergency on June 20, 2012 after confirming that the existing force main was still leaking but the source of the leak could not be easily identified. Given the life of the existing force main, Wastewater Enterprise determined that the entire directly buried portion of the force main needs to be rehabilitated by lining. In order to expedite the work, an emergency design/build contract was issued to rehabilitate approximately 3,000 feet of the existing North Shore Force Main. The section of NSFM to be rehabilitated is located on The Embarcadero, between Jackson and Howard Streets, and on Howard Street, between The Embarcadero and Steuart Street. Funds for this emergency project were reallocated from CENMSCIC52 and CENMSCIC61.

SEWER / COLLECTION SYSTEM

CENMSCIC01 - Vicente St. Sewer System Improvement Phase 2 (Completed)
The project involves increasing the capacity of the sewer system along Vicente Street from 26th Avenue to 32nd Avenue, Ulloa Street from 45th Avenue to the Great Highway, and at the intersection of 44th Avenue and Wawona Street.

CENMSCIC02 - Teresita Blvd "South" Sewer Replacement (Completed)
The project involves increasing the capacity of the sewer system along Teresita Blvd, Foerester Street, Molimo Drive, El Sereno Ct, Bella Vista Way, Gaviota Way, Arroyo Way, and Vernas Street.

CENMSCIC03 - Shotwell & 18th St. Sewer Drainage Improvement (Completed)
This project would increase the capacity of the sewer system on Shotwell Street between 17th and 18th Streets, and on 18th Street between Shotwell Street and Treat Ave. The scope of work includes three key elements: (1) a large storage structure to hold combined sewage (rainwater and sewage) during a high intensity storm, (2) a pump station to pump the combined sewage from the storage back into the sewer system after the rains subside, and (3) an isolated sewer system to maximize use of the storage and prevent backflows from the downstream sewer. Previously there were two projects: 18th Street Sewer Replacement, and Shotwell Drainage Improvement, but due to the proximity of the projects, they were combined to reduce disruption to the public.

CENMSCIC04 - Cayuga North Sewer Improvements, Phase 1 (Completed)
Cayuga Street Sewer Improvement Phase I work was added to the construction contract, CW-387 (under CENMSCIC12, Vicente St Sewer System Improvement Phase 1). The change order work involved connecting the existing system to College Hill Tunnel to maximize storm water storage in the vicinity of Cayuga and Milton Streets.

CENMSCIC10 - Brotherhood Way/St Charles Ave Sewer Improvement (Completed)
The purpose of the project was to improve the sewer system along Brotherhood Way, from Head Street to Highway 280, including St. Charles Avenue (between Belle Street and Brotherhood Way), and Alemany Blvd (between Orizaba Street and St. Charles Avenue). Actual contract work consisted of replacing existing sewer pipelines on Brotherhood Way from Ralston St. to St. Charles Ave., and from Ramsell St. to Head St., and on St. Charles Ave. from Belle Ave. to Payson St., and on Ramsell St. from Brotherhood Way to Alemany Blvd, and on Head St. from Brotherhood Way to Alemany Blvd.

CENMSCIC11 - Cesar Chavez Sewer System Improvement Phase 1
The project will provide area-wide improvements for the sewer system in the Cesar Chavez area. The improvements include sewer work on Cesar Chavez Street, from Hampshire to Guerrero Street; on Valencia Street, from Cesar Chavez to Mission Street; on Fair Street; and on Coleridge Street. As a part of coordination with other improvements in San Francisco, SFPUC entered into an agreement to provide funds for improvements to be made in SFPW's streetscape project. This additional cost is reflected in this project.
Other funding sources for this project are not reflected in this report. This project received grant from Federal Earmark Funds (administered by U.S. EPA) and the State Department Funds (administered by Department of Water Resources). SFPUC also entered into an agreement to allow California Pacific Medical Company (CPMC) to fund the design and construction of sewer improvements, as part of this project and in anticipation of the potential construction of St Luke's Hospital.

CENMSCIC12 - Vicente St. Sewer Improvement Phase 1 (Completed)
The project involved increasing the capacity of the sewer system along Vicente Street from 34th Ave to Sunset Blvd, 42nd Ave to 44th Ave, and 44th Ave to 45th Avenues.

Cayuga Street Sewer Improvement Phase I work was added to the construction contract for CENMSCIC12. The additional work involved connecting the existing system to College Hill Tunnel to maximize storm water storage in the vicinity of Cayuga and Milton Streets.

CENMSCIC13 - Monterey, Baden, & Circular Sewer Improvement (Completed)

This project involved increasing the capacity of the sewer system on Monterey Blvd, between Congo St and Baden St; on Baden St, between Monterey Blvd and Circular Ave, and Circular Ave, between Baden St and Santa Rosa Ave (near Congo St.).

CENMSCIC14 - Mission & Foote Sewer Improvement (Completed)

The project involved increasing the capacity of sewer collection system along Mission Street from Russia Avenue to Onondaga and at the intersections of Mission and Foote Avenue and Mission and Ellington.

CENMSCIC15 - Mission & Mt. Vernon Sewer Improvements Ph 1 (Completed)

The project involved improving sewer drainage system for wastewater collected and transmitted on Mission Street, Mount Vernon Avenue, Ellington Avenue, and Foote Avenue in San Francisco. This project is expected to provide area-wide drainage improvement.

CENMSCIC18 - Justin Dr./Marietta Ave/Del Vale Ave Sewer Improvement (Completed)

The project involved increasing the capacity and improving the sewer system along Justin Drive from College Ave to Murray Street and on Bentton Avenue from College Avenue to East end. The sewers were also replaced on Marietta Drive from Teresita Blvd to Encline Ct. and on Del Vale Avenue to O'Shaughnessy Blvd.

CENMSCIC23 - Sunnydale Auxiliary Sewer Phase 1

This project consists of the construction of a new auxiliary sewer tunnel between the Sunnydale drainage basin (Visitacion Valley District) and the Sunnydale Transport/Storage Facility located just southwest of Candlestick Park. The new sewer tunnel will increase the capacity of the sewer collection system for the Visitacion Valley District during heavy rain periods. The proposed scope of work includes installation of approximately 5,000 lf of 11.5 feet diameter sewer tunnel and 8 feet diameter microtunnel from Harney Way to Schwerin Street.

CENMSCIC24 - Phelps St/ Topeka Ave/ Pomona St Sewer System Improvement (Completed)

The original project included evaluating and improving the sewer system on Toland Street from Evans Ave/Napoleon St to Jerrold Ave, on Hudson Avenue from Toland Street to Selby Street, and on Phelps Street from Donner Avenue to Williams Avenue. However, engineering evaluation concluded that the Toland and Hudson Streets drainage system could not be improved by a gravity solution. Therefore, additional hydraulic evaluation will be necessary, and a separate project may be initiated to address the hydraulic capacity of this portion of the sewer system.

However, the sewer system along Phelps Street can be improved with a gravity solution; therefore, this portion of the project will proceed. This project would include evaluation of Phelps Street from Donner to Williams Avenue, on Topeka Ave from Maddox Ave to Apollo St and on Pomona Street from Bayview St to Thorton Ave.

The construction contract for this project includes work and funding from SFPW Paving Program and SFPUC R&R Sewer Programs, and the lead agency is the SFPUC Interim CIP. This report only covers the financial information related to the Interim CIP portion of work.

CENMSCIC25 - Colon / Greenwood / Plymouth / Southwood / Miramar Sewer Improvement and Pavement Renovation (Completed)

This project is hydraulically tied to the original scope of work for CENMSCIC27. Upon completion of hydraulic studies for both projects, a combined solution for both projects was presented, which would allow improvements to be made within the public right-of-way and would minimize flooding in the subject area. The

combined scope of work includes improvements on Colon Avenue, Greenwood Avenue, Plymouth Drive, and Southwood Avenue to minimize flooding in the vicinity. In addition, Miramar Street was found to have structural damage which warrants replacement and SFPW Paving Program is joining to repave all affected streets curb-to-curb.

CENMSCIC26 - Alemany & Sickles Sewer Improvements (Completed)
The intent of this project is to review and improve the sewer system in the vicinity of Alemany Blvd near the Daly City limits. This project will be placed in the completed category starting from the March 2008 Quarterly Report. During the planning phase of the project, we found that immediate improvements have been made in the project vicinity; therefore, the criticality of the project has been reduced. In addition, alternatives in the Sewer System Master Plan (SSMP) may provide further improvements in the area. Therefore, this project is considered completed for the Interim CIP and any further work would be deferred to the SSMP and SSIP, as appropriate.

CENMSCIC27 - Ocean Ave Sewer Improvement (Completed)
The intent of this project is to review and improve the sewer system in the vicinity of Ocean Avenue and Faxon Streets. This project is hydraulically tied to CENMSCIC25 (IC25) because the sewers on Ocean Avenue are downstream of the sewer system for IC25.
Therefore, the hydraulic study performed included both projects and a combined solution was proposed. This project will be considered completed starting from the March 2008 Quarterly Report. The scope of work for this project is combined with IC25 and all future reporting would be included in IC25.

CENMSCIC32 - Spot Sewer Repair Contract #23 (Completed)
The objective of the project is to repair existing sewer piping, on an as-needed basis, at various locations throughout San Francisco.

CENMSCIC34 - Folsom St Sewer Replacement (Completed)
The objective of the project is to replace/rehabilitate the existing sewers on Folsom Street from 12th Street to 13th Street and from 14th Street to 19th Street.

CENMSCIC35 - Minna/Natoma/Russ Sewer Replacement (Completed)
The objective of the project is to replace the existing sewers on Minna Street from 7th Street to Russ Street, on Natoma Street from 6th Street to Russ Street, on Russ Street from Minna Street to Folsom Street and on Harriet Street from Howard Street to Folsom Street.

CENMSCIC43 - Richmond Drainage Improvement, Phase 2 (Completed)
This project will evaluate and provide improvements to rehabilitate the Old-Richmond Tunnel, which was re-activated in 2008, to provide additional sewer capacity to the Richmond Drainage Basin. As a result of validation effort in the Sewer System Improvement Program (SSIP), the rehabilitation of the Old-Richmond Tunnel will be deferred until Urban Watershed Analysis is conducted for the Richmond Drainage Basin. Therefore, only the tunnel cleaning and obvious repair work would be completed in this project.

CENMSCIC44 - Cesar Chavez Sewer Improvements, Phase 2 (Completed)
This project will be renamed to "Marin and Kansas Streets Sewer Improvements" to reflect the approximate location of the project in the next quarterly report. The objective of the project is to provide improvements to the sewer system conveyance from Islais Creek Watershed east of Highway 101 to the Selby Sewer Box. Following improvements from CENMSCIC11, Cesar Chavez Sewer Improvements Phase 1, additional conveyance needs were identified at this project location. Preliminary planning will be completed in this project and the final planning, design, environmental review and construction of the sewer improvements will be completed in the Sewer System Improvement Program (SSIP).

CENMSCIC46 - Fell St Sewer Replacement

(Completed)
The objective of the project is to replace the existing sewer on Fell Street from Webster Street to Fillmore Street.

CENMSCIC49 - Vallejo St Emergency St Replacement (Completed)
PUC General Manager declared emergency on May 24, 2010 to replace existing main sewer on Vallejo Street from Steiner Street to Pierce Street.

CENMSCIC50 - As Needed Sewer Replacement Contract 1 (Completed)
The objective of the project is to repair existing sewer piping from manhole to manhole segments, on an as-needed basis, at various locations throughout San Francisco.

CENMSCIC51 - Spot Sewer Repair Contract #25 (Completed)
The objective of the project is to repair existing sewer piping, on an as-needed basis, at various locations throughout San Francisco.

CENMSCIC53 - Downtown District Aging Sewer Replacement (Completed)
The objective of the project is to rehabilitate existing brick sewers at the following locations: John Street from Powell Street to Mason Street, Spofford Street from Washington Street to Clay Street, Sutter Street from Larkin Street to Hyde Street, Post Street from Hyde Street to Jones Street, Post Street from Grant Avenue to Mason Street, Geary Street from Hyde Street to Jones Street and O'Farrell Street from Powell Street to Mason Street.

CENMSCIC54 - Sunnydale Auxiliary Sewer Phase 2
This project consists of the construction of new sewers within the Sunnydale drainage basin (Visitacion Valley District). The proposed scope of work is as follows: installation of a new auxiliary wet weather sewer by means of microtunneling; and replacement of existing local sewers. Contract work location is on Schwerin Street, between Sunnydale Avenue and Kelloch Avenue.

CENMSCIC55 - Church St/Duboce Sewer Replacement (Completed)
The objective of the project is to replace/rehabilitate the existing sewers on Church Street from Duboce Avenue to Hermann Street and from Reservoir Street to Duboce Avenue and on Duboce Avenue from Church Street to Fillmore Street. This is a joint venture with Municipal Transportation Agency (MTA) Contract No. 1239. MTA is the lead agency and will manage this contract. This project is for the construction phase. The project cost is for the sewer work only.

CENMSCIC56 - Powell and Mason Sewer Replacement (part of Sewer Hydraulic Improvement) (Completed)
This project will replace structurally and hydraulically inadequate sewers on Mason Street, between Columbus Avenue and Jefferson Street, on Powell Street, between Francisco and North Point Streets, and on Bay Street, between Powell and Mason Streets. The construction contract will be a joint-effort between SFPUC Wastewater Capital Improvement Program, SFPUC, Wastewater R&R program, and SFPW, Paving Program. Only the Wastewater CIP funding information is provided in this report.

CENMSCIC57 - Sewer Staff Facility Improvements (Completed)
The objective of the project is to consolidate WWE Collection System Division Administrative and Sewer Operations staff to a centralized location, and to maximize operational efficiency and functionality. The project will serve multiple functions: office spaces; a secure warehouse facility for equipment and material storage; an area for staging and operation of sewer cleaning vehicles; a vehicle maintenance bay; a fueling station; vehicle and equipment parking areas; and a hydraulic modeling facility to develop the physical modeling components related to current and future Sewer System Improvement Program (SSIP) projects.

CENMSCIC58 - Vactor Waste Staging Area
The objective of the project is to consolidate WWE Collection System Division Administrative and Sewer Operations staff to a centralized location,

and to maximize operational efficiency and functionality. The project will serve multiple functions: office spaces; a secure warehouse facility for equipment and material storage; an area for staging and operation of sewer cleaning vehicles; a vehicle maintenance bay; a fueling station; vehicle and equipment parking areas; and a hydraulic modeling facility to develop the physical modeling components related to current and future Sewer System Improvement Program (SSIP) projects.

CENMSCIC59 - Spot Sewer Repair Contract #26 (Completed)
The objective of the project is to repair existing sewer piping, on an as-needed basis, at various locations throughout San Francisco. This project is the second of the two spot repair contracts that are issued each calendar year.

CENMSCIC60 - Spot Sewer Repair Contract #27 (Completed)
The objective of the project is to repair existing sewer piping, on an as-needed basis, at various locations throughout San Francisco. This project is the first of the two spot repair contracts that are issued each calendar year. This contract/project will be the first contract advertised in the 2012 calendar year.

CENMSCIC63 - Plymouth Avenue Sewer Replacement (Completed)
The objective of this project is to replace the existing sewers at the following locations: Plymouth Avenue from Lobos Street to Minerva Street and from Graton Street to Ocean Avenue. This is a joint venture with San Francisco Public Works (SFPW) Contract No. 1643. SFPW is the lead agency and will manage this contract. This project is for the construction contract cost only. Construction management cost will be funding under R&R Collection System program project. The construction cost is for the sewer work only.

CENMSCIC64 - As-Needed Main Sewer Replacement (Completed)
The objective of the project is to replace existing sewer piping, from manhole to manhole segments, on an as-needed basis, at locations to be determined throughout San Francisco.

CENMSCIC65 - Western Addition/Beach/ Marina District Sewer Replacement (Completed)
The objective of this project is to replace the existing sewers and existing street pavement from curb to curb at the following locations: (1) Lombard Street from Lyon Street to Richardson Avenue; (2) Lombard Street from Divisadero Street to Webster Street; (3) Lombard Street from Octavia Street to Franklin Street; (4) Chestnut Street from Stockton Street to Grant Avenue; (5) Green Street from Columbus Avenue/Stockton Street to Grant Avenue; (6) Broadway from Battery Street to Front Street; (7) Broadway from Mason Street to Himmelmann Place; and (8) Scott Street from Clay Street to Sacramento Street. This project is for the construction contract cost only. Construction management cost will be funded under R&R Collection System project CWWRNRCS08.

CENMSCIC66 - Greenwich/ Leavenworth/ Lombard Sewer Replacement (Completed)
The objective of this project is to replace the existing sewers at the following locations: Greenwich Street from Baker Street to Lyon Street; Leavenworth Street from Clay Street to Washington Street; Lombard Street from Stockton Street to Powell Street. This is a joint venture with Department of San Francisco Public Works (SFPW) Contract No. 1975J. SFPW is the lead agency and will manage this contract. This project is for the construction contract cost only. Construction management cost will be funded under R&R Collection System program project. The construction cost is for the sewer work only.

CENMSCIC67 - Block 2169 Emergency Easement Sewer Replacement (Completed)
The objective of this project is the emergency replacement of the existing sewer located within the existing sewer easement on Block 2169 (between Levant Street and Ord Court) in San Francisco. This project is for the construction contract cost only. Construction management cost will be funded under a R&R Collection System program project.

CENMSCIC68 - 24th Street Sewer Replacement (Completed)
The objective of this project is to replace the existing sewers at the following locations: 24th Street from Valencia Street to Guerrero Street, from Florida Street to Bryant Street and from Capp Street to Bartlett Street. This is a joint venture with San Francisco Public Works (SFPW) Contract No. 1933J. SFPW is the lead agency and will manage this contract. This project is for the construction contract cost only. Construction management cost will be funded under R&R Collection System program project. The construction cost is for the sewer work only.

CENMSCIC69 - Various Location Sewer Replacements No. 4 (Completed)
The objective of this project is to replace the existing sewer at the following locations: Union Street from Columbus Avenue to Stockton Street; Webster Street from Clay Street to Washington Street; Church Street from 18th Street to Liberty Street; 19th Street from Hartford Street to Sanchez Street; Douglass Street from 23rd Street to Alvarado Street; 23rd Street from Eureka Street to Douglass Street; Mission Street from College Avenue to Richland Avenue; Rousseau Street from Cayuga Avenue to Still Street; and 35th Avenue from Pacheco Street to Quintara Street. This project is for the construction contract cost only. Construction management cost will be funded under R&R Collection System program project.

CENMSCIC71 - Folsom Street Sewer Replacement (Completed)
The objective of this project is to replace the existing sewers at the following locations: Folsom Street from Precita Avenue to Bernal Height Blvd and from Powhattan Avenue to Alemany Blvd. This is a joint venture with San Francisco Public Works (SFPW) Contract No. 1911J. SFPW is the lead agency and will manage this contract. This project is for the construction contract cost only. Construction management cost will be funded under R&R Collection System program project. The construction cost is for the sewer work only.

Int42 - Aging Sewer Improvements (Not Initiated)
The objective of the project is to replace/rehabilitate aging and hydraulically deficient sewers at various locations throughout San Francisco.

APPENDIX 1.3. FACILITIES AND INFRASTRUCTURE

CWP11001 - Treasure Island - Existing Wastewater Facilities

The objective of the project is to improve the reliability of the collection system and treatment facility at Treasure Island. The major mechanical and electrical infrastructure at the Treasure Island treatment plant have reached the end of their useful life and are no longer reliable. A Replacement wastewater treatment plant with recycled water treatment capability has been prescribed to address flows from new developments targeted to begin occupancy within the next 5 years.

CWWFAC01 - Ocean Beach Project

The objective of the project is to protect existing SFPUC facilities, utilities, and infrastructure (including the Lake Merced Tunnel (LMT)) along Ocean Beach against bluff erosion and sea level rise consistent with the recommendations in the Ocean Beach Master Plan (OBMP). The project will provide interim erosion control and mitigate bluff erosion via sand nourishment and sand backpass/stabilization of existing bluff. Additionally, an emergency bluff erosion mitigation plan of up to 750 sand bags can be deployed if extreme coastal erosion is experienced.

CWWFAC02 - Collection Division Consolidation (Griffith Yard Improvements)

The initial WWE Collection System Division Facilities Consolidation Project intended to consolidate the Collection System Division Administrative and Sewer Operations staff to a centralized location at 1550 Evans. The current plan is to relocate Sewer Operations to the WWE Griffith Yard Facility, adjacent to the Griffith Yard Pump Station. The project is now the Griffith Yard Improvement Project. Relocating the 107 employees currently dispatched from Napoleon Yard to Griffith Yard is required in order to exchange the Napoleon Yard for SFPW's Asphalt Plant property at the Southeast Plant (SEP) through an inter-department jurisdictional transfer. The project will also include relocation of the Vactor Waste Station (VWS), currently located at SEP, to co-locate the VWS with Sewer Operations and reduce overcrowding at SEP; a Confined Space Training Facility; and a bio-retention system for stormwater control. This project is critical path for making space available for SSIP Projects at the Southeast Plant. Improvements to the 4.4 acre yard will transform the underutilization of this property from storage and stockpiling to productive operations.

CWWFAC03 - Southeast Community Center and Greenhouses (SECF)

The Southeast Community Center project will serve to address the SFPUC's commitment to the mitigation measure for the expansion of the Southeast Plant (SEP). An assessment of existing conditions of the community center and greenhouses will be conducted. Based on the assessments and community outreach, a determination will be made to renovate or rebuild the community center and greenhouse facilities.

CWWFAC04 - SEP Southeast Outfall

This Wastewater Enterprise Capital Improvement Program project will include major improvements to the Southeast Water Pollution Control Plant (SEP) effluent force main crossings at Islais Creek and modifications to the Booster Pump Station. SEP is the SFPUC's largest wastewater facility treating almost 80% of the City's dry and wet weather flows.

Major improvements are planned to ensure that the SEP facilities maintain permit compliance and operate reliably. This project primarily addresses the effluent discharge outfall into the San Francisco Bay through the series of pipes at Pier 80. Following improvements are needed to address aging infrastructure:

- Pipeline replacement within the Islais Creek
- Rehabilitation of existing pipelines and mechanical devices
- Restoration of access manholes
- Improving flow velocity with new pipeline material
- Providing redundancy with new operational capabilities
- Piping isolation improvements to the Booster Pump Station

APPENDIX 1.4. RENEWALS AND REPLACEMENTS

CWWRNRCS - R&R Collection Systems

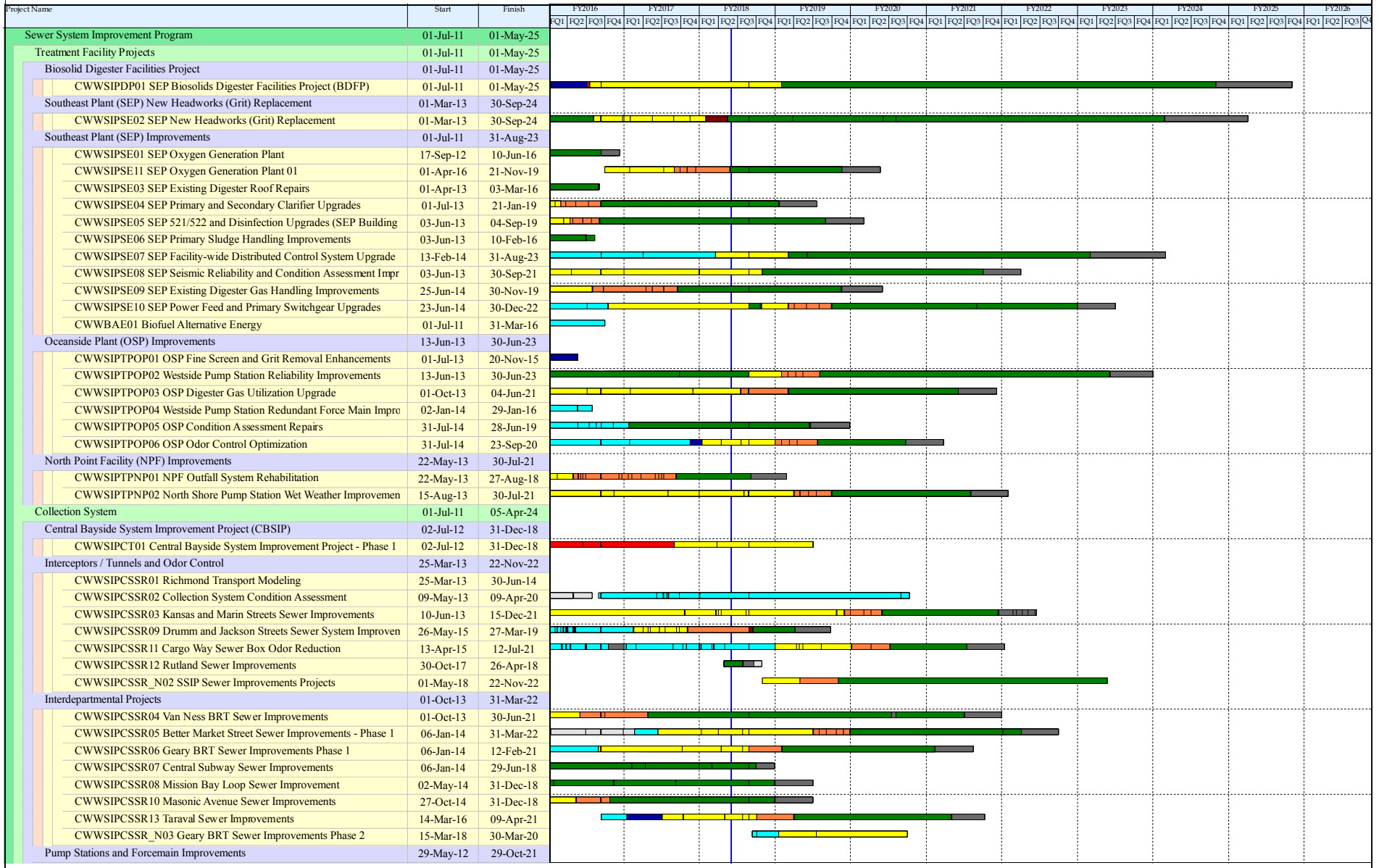
The purpose of the Wastewater Enterprise (WWE) Renewal and Replacement Program (R&R) Collection System Sewer Improvements Program is to maintain the existing functionality of the sewage collection system and address planned and emergency projects for repair and replacement of structurally inadequate sewers. These projects in combination with the WWE Renewal and Replacement Program (R&R) Spot Sewer Repair replace aging failed portions of the collection system. The portions of the collection system are identified utilizing an asset management approach, which factors in: physical condition, age, location, risk, public safety, paving schedule and other factors.

CWWRNRTF - R&R Treatment Facilities

The purpose of the Wastewater Enterprise (WWE) Renewal and Replacement (R&R) Program Treatment Plant Improvement projects is to maintain the capacity and reliable performance of the wastewater treatment facilities owned/operated by the Wastewater Enterprise. This is a continuing annual program to extend the useful life of the WWE treatment assets. Treatment Facility Wastewater Enterprise Assets include: Transport Boxes, Discharge Structures, Pump Stations, Force Mains, Tunnels and Treatment Plants. The R&R Treatment Facilities projects are prioritized based upon regulatory compliance, condition assessments, Operation staff recommendations and Level Of Service goals. Planned WWE R&R Program Treatment Plant Improvement projects will address aging infrastructure at the wastewater enterprise treatment facility assets.

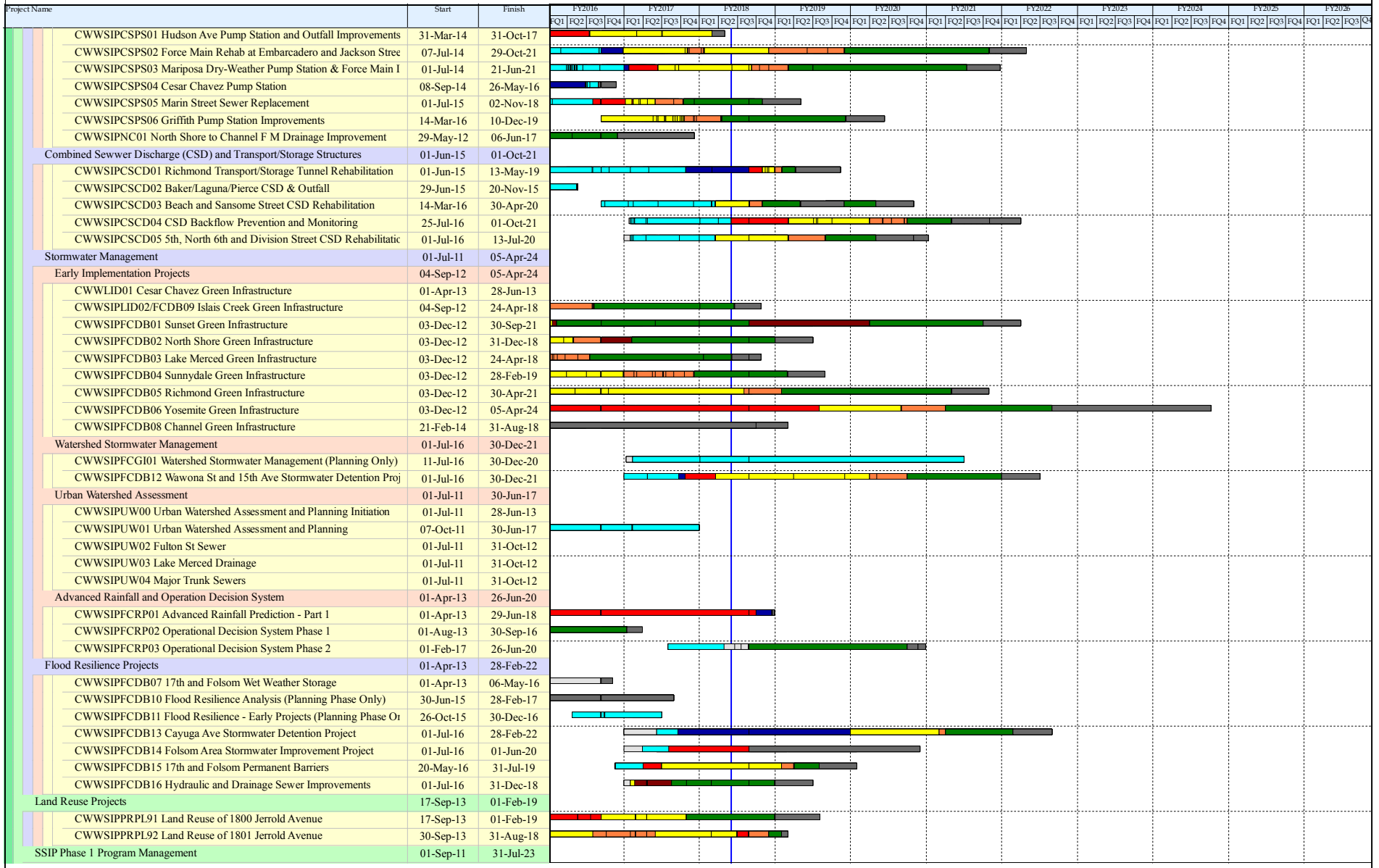
Planned WWE R&R Program Treatment Plant Improvement projects are prioritized based on risk to permit compliance, safety and urgency. The current list of projects includes: WWE Treatment Facility Repairs: Richmond hypochlorite pipe repair; Southeast Community Facility Hot Water Pipe Repairs; Southeast Building Roof repairs; Oceanside Bar Screen Repairs; Southeast Plant Fixed Gas Monitor Upgrades; Sunnydale Pump Station Adjustable Frequency Drive Upgrades; WWE Recycled Water Station Upgrades; Oceanside Plant Air Compressor Replacements; Griffith Pump Station Adjustable Frequency Drive Upgrades; Southeast Plant Building 062 Motor Starter Upgrades; and Oceanside Dry Polymer System Upgrades. Project priorities are revisited on a monthly basis.

Appendix 2.1 SSIP Phase 1 - Approved Project-Level Schedules

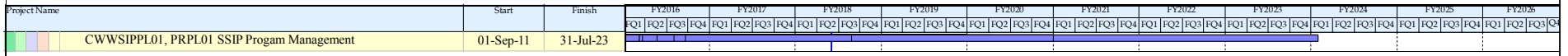


Project Name	Start	Finish
Sewer System Improvement Program	01-Jul-11	01-May-25
Treatment Facility Projects	01-Jul-11	01-May-25
Biosolid Digester Facilities Project	01-Jul-11	01-May-25
CWWSIPDP01 SEP Biosolids Digester Facilities Project (BDFP)	01-Jul-11	01-May-25
Southeast Plant (SEP) New Headworks (Grit) Replacement	01-Mar-13	30-Sep-24
CWWSIPSE02 SEP New Headworks (Grit) Replacement	01-Mar-13	30-Sep-24
Southeast Plant (SEP) Improvements	01-Jul-11	31-Aug-23
CWWSIPSE01 SEP Oxygen Generation Plant	17-Sep-12	10-Jun-16
CWWSIPSE11 SEP Oxygen Generation Plant 01	01-Apr-16	21-Nov-19
CWWSIPSE03 SEP Existing Digester Roof Repairs	01-Apr-13	03-Mar-16
CWWSIPSE04 SEP Primary and Secondary Clarifier Upgrades	01-Jul-13	21-Jan-19
CWWSIPSE05 SEP 521/522 and Disinfection Upgrades (SEP Building	03-Jun-13	04-Sep-19
CWWSIPSE06 SEP Primary Sludge Handling Improvements	03-Jun-13	10-Feb-16
CWWSIPSE07 SEP Facility-wide Distributed Control System Upgrade	13-Feb-14	31-Aug-23
CWWSIPSE08 SEP Seismic Reliability and Condition Assessment Impr	03-Jun-13	30-Sep-21
CWWSIPSE09 SEP Existing Digester Gas Handling Improvements	25-Jun-14	30-Nov-19
CWWSIPSE10 SEP Power Feed and Primary Switchgear Upgrades	23-Jun-14	30-Dec-22
CWWBAE01 Biofuel Alternative Energy	01-Jul-11	31-Mar-16
Oceanside Plant (OSP) Improvements	13-Jun-13	30-Jun-23
CWWSIPTPOP01 OSP Fine Screen and Grit Removal Enhancements	01-Jul-13	20-Nov-15
CWWSIPTPOP02 Westside Pump Station Reliability Improvements	13-Jun-13	30-Jun-23
CWWSIPTPOP03 OSP Digester Gas Utilization Upgrade	01-Oct-13	04-Jun-21
CWWSIPTPOP04 Westside Pump Station Redundant Force Main Impro	02-Jan-14	29-Jan-16
CWWSIPTPOP05 OSP Condition Assessment Repairs	31-Jul-14	28-Jun-19
CWWSIPTPOP06 OSP Odor Control Optimization	31-Jul-14	23-Sep-20
North Point Facility (NPF) Improvements	22-May-13	30-Jul-21
CWWSIPTPNP01 NPF Outfall System Rehabilitation	22-May-13	27-Aug-18
CWWSIPTPNP02 North Shore Pump Station Wet Weather Improvemen	15-Aug-13	30-Jul-21
Collection System	01-Jul-11	05-Apr-24
Central Bayside System Improvement Project (CBSIP)	02-Jul-12	31-Dec-18
CWWSIPCT01 Central Bayside System Improvement Project - Phase 1	02-Jul-12	31-Dec-18
Interceptors / Tunnels and Odor Control	25-Mar-13	22-Nov-22
CWWSIPCSSR01 Richmond Transport Modeling	25-Mar-13	30-Jun-14
CWWSIPCSSR02 Collection System Condition Assessment	09-May-13	09-Apr-20
CWWSIPCSSR03 Kansas and Marin Streets Sewer Improvements	10-Jun-13	15-Dec-21
CWWSIPCSSR09 Drumm and Jackson Streets Sewer System Improven	26-May-15	27-Mar-19
CWWSIPCSSR11 Cargo Way Sewer Box Odor Reduction	13-Apr-15	12-Jul-21
CWWSIPCSSR12 Rutland Sewer Improvements	30-Oct-17	26-Apr-18
CWWSIPCSSR_N02 SSIP Sewer Improvements Projects	01-May-18	22-Nov-22
Interdepartmental Projects	01-Oct-13	31-Mar-22
CWWSIPCSSR04 Van Ness BRT Sewer Improvements	01-Oct-13	30-Jun-21
CWWSIPCSSR05 Better Market Street Sewer Improvements - Phase 1	06-Jan-14	31-Mar-22
CWWSIPCSSR06 Geary BRT Sewer Improvements Phase 1	06-Jan-14	12-Feb-21
CWWSIPCSSR07 Central Subway Sewer Improvements	06-Jan-14	29-Jun-18
CWWSIPCSSR08 Mission Bay Loop Sewer Improvement	02-May-14	31-Dec-18
CWWSIPCSSR10 Masonic Avenue Sewer Improvements	27-Oct-14	31-Dec-18
CWWSIPCSSR13 Taraval Sewer Improvements	14-Mar-16	09-Apr-21
CWWSIPCSSR_N03 Geary BRT Sewer Improvements Phase 2	15-Mar-18	30-Mar-20
Pump Stations and Forcemain Improvements	29-May-12	29-Oct-21

Appendix 2.1 SSIP Phase 1 - Approved Project-Level Schedules



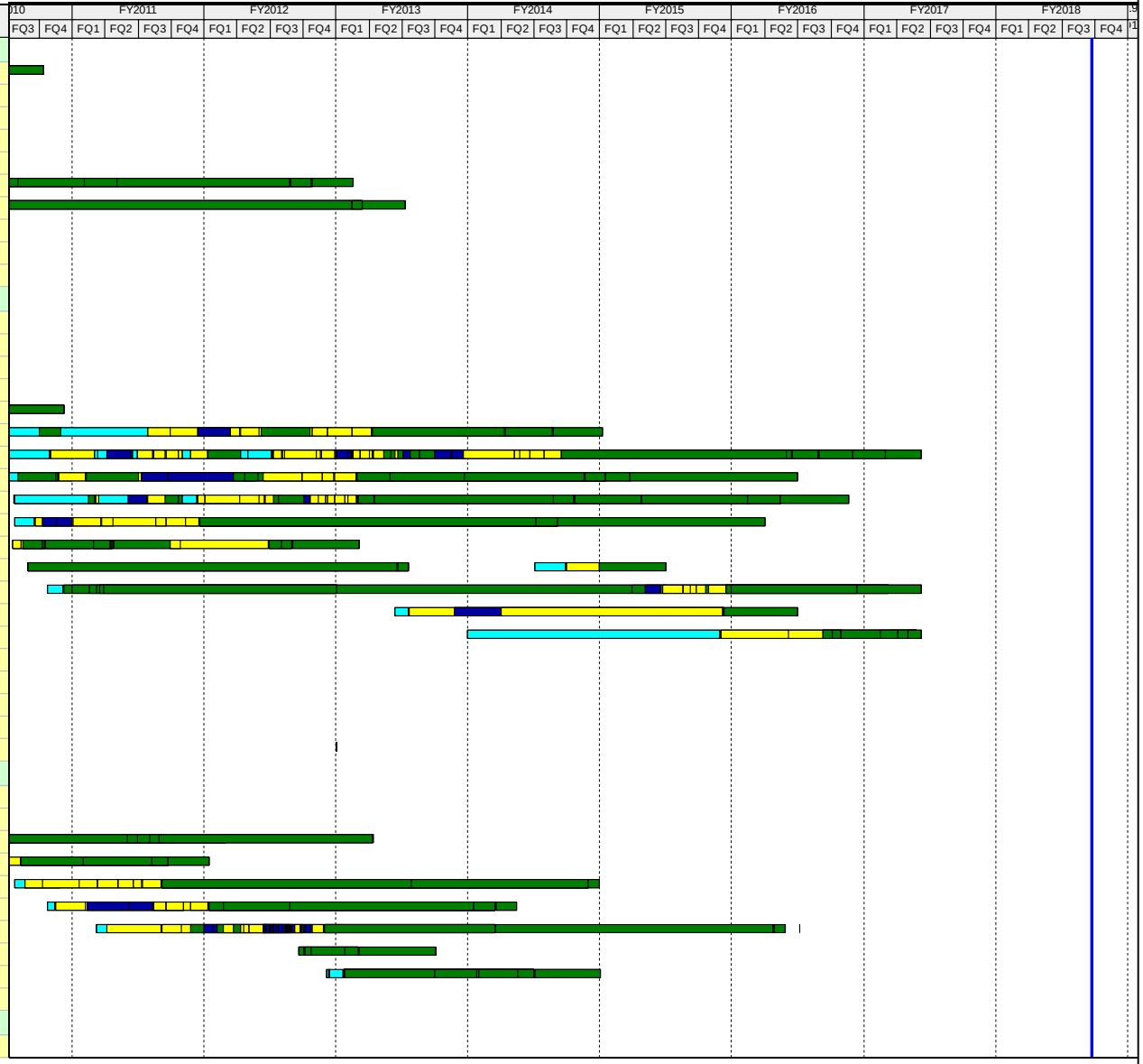
Appendix 2.1 SSIP Phase 1 - Approved Project-Level Schedules



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

APPENDIX 2.2: WWE CIP Project-Level Approved Schedule

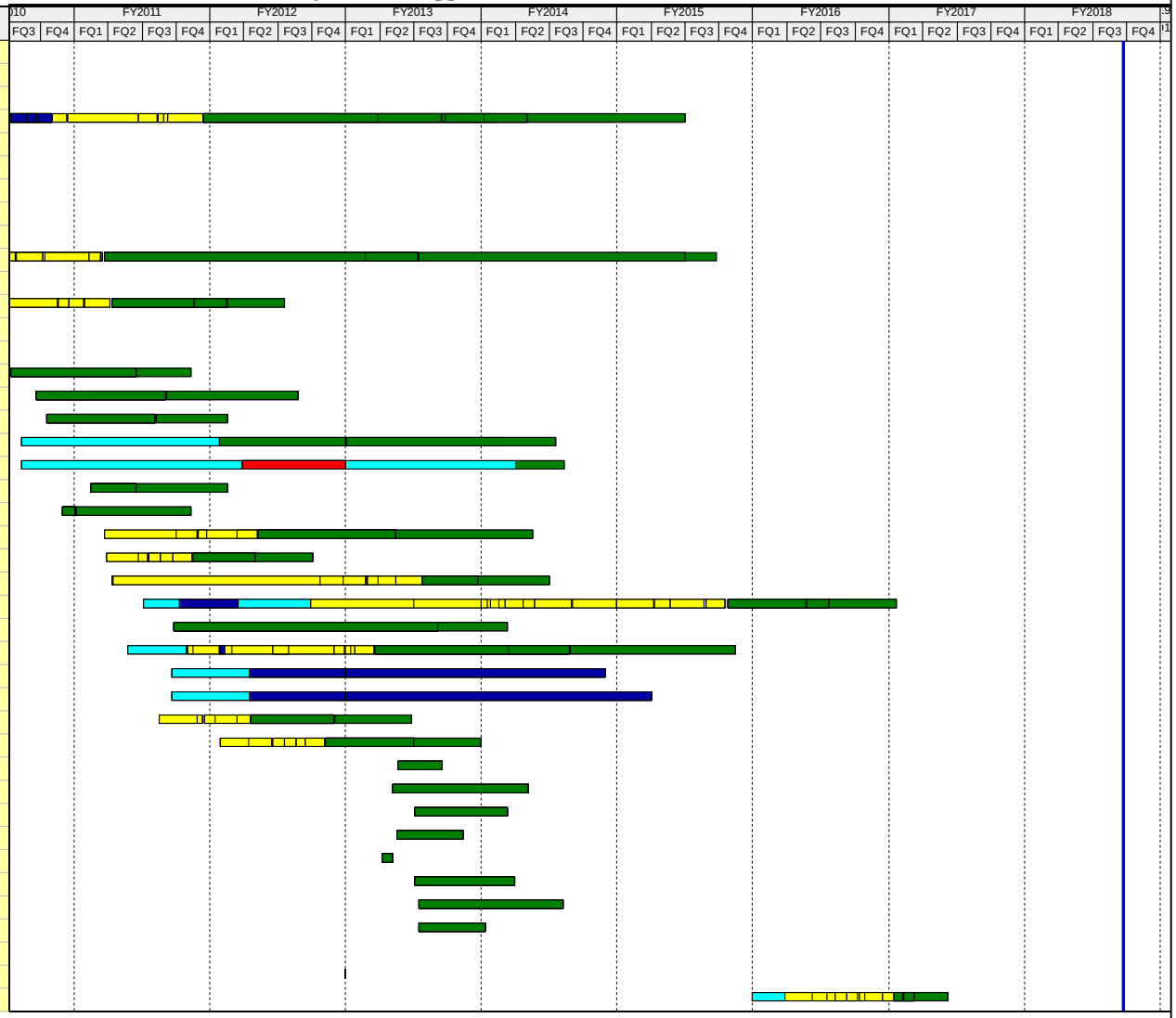
Project Name	Start	Finish
Odor Control	25-Feb-05	08-Jan-13
CENMSCIC05 Oceanside WPCP HVAC Imprv	25-Feb-05	13-Apr-10
CENMSCIC07 Chemical Feed Sys Imprv - Ph 1	16-May-05	10-Apr-07
CENMSCIC16 WS PS VFDs and Pumps	26-Sep-05	14-Jul-09
CENMSCIC20 Chemical Feed Sys Imprv - Ph 2	16-Mar-06	30-Aug-07
CENMSCIC22 Embarcadero Vent Elements Ph 1	17-Sep-05	28-Sep-07
CENMSCIC28 SEWPCP Bldg 010 Odor Control Improvemer	20-Apr-07	16-Aug-12
CENMSCIC31 SEWPCP 620 & 680 Digester Compressor	06-Mar-08	08-Jan-13
Int12 Embarcadero Vent Elements Phase 2	05-Apr-08	05-Apr-08
Int14 Embarcadero Box Hydraulic Modifications	05-Apr-08	05-Apr-08
Int15 OSP Mixing, Withdrawal and Dewatering Improvement	02-Jul-07	01-Jul-09
Treatment Facilities	20-Jan-05	08-Dec-16
CENMSCIC06 SEP Gas Handling Imprv	20-Jun-05	22-Sep-09
CENMSCIC08 SEP Secondary Clarifiers Concrete Repairs	20-Jan-05	28-Sep-07
CENMSCIC09 SEP Mixed Liquor and Odor Control Imprv	30-Jun-05	31-Jul-07
CENMSCIC17 OSP / WS Bar Screens	03-Oct-05	14-Jul-09
CENMSCIC29 SEWPCP Gas Handling Improvements - Ph 2	08-Jan-07	08-Jun-10
CENMSCIC36 WWE Facility Security/Emergency Response	07-Jan-10	09-Jul-14
CENMSCIC37 WWE Facility Reliability Impr - SEP Northsi	07-Jan-10	08-Dec-16
CENMSCIC38 SEP Solid Handling (Digester Roof, Gas Mixi	07-Jan-10	31-Dec-15
CENMSCIC39 OSP Solids Handling and Coating	22-Jan-10	20-May-16
CENMSCIC41 MV-SWGR SEP Electrical Reliability	22-Jan-10	30-Sep-15
CENMSCIC42 GHW Stabilization Emergency	19-Jan-10	02-Sep-12
CENMSCIC45 OPS: FOG to Biodiesel	01-Mar-10	31-Dec-14
CENMSCIC47 WWE Mechanical / Electrical Upgrade	23-Apr-10	08-Dec-16
CENMSCIC70 OS Plant Improvements - Aeration Syst Upgra	12-Dec-12	31-Dec-15
CENMSCIC72 Facility Security Upgrades Contract 2	01-Jul-13	08-Dec-16
CENMSCIC74 SETP Effluent Force Main	01-Mar-16	30-Nov-16
Int02 Future Major Electrical and Mech Equip Replacement	30-Dec-08	30-Dec-08
Int03 Contract 4 OSP Gas Compressors ($ included in IC17)	15-Sep-06	30-Sep-08
Int35 SWOO Cleaning & Backflow Prevention	05-Apr-08	05-Apr-08
Int41 SEP Centrifuge Replacements	02-Jul-12	02-Jul-12
Pump Stations	03-Oct-05	27-May-16
CENMSCIC19 Tennessee Pump Station Reliability - Ph 1	03-Oct-05	30-Aug-07
CENMSCIC21 Channel Pump Station Odor Control	03-Jan-06	31-Oct-07
CENMSCIC30 Channel Pump Station Odor Control - Phase 2	02-Jul-07	11-Oct-12
CENMSCIC33 North Shore to Channel Force Main Improver	01-Oct-09	14-Jul-11
CENMSCIC40 North Shore and Mariposa Pump Station Impr	22-Jan-10	30-Jun-14
CENMSCIC48 Channel Pump Sta Improvements Phase 3	23-Apr-10	12-Nov-13
CENMSCIC52 North Shore Force Main, Phase 2	07-Sep-10	27-May-16
CENMSCIC61 North Shore Force Main Emergency	20-Mar-12	04-Apr-13
CENMSCIC62 Emergency NSFM Rehabilitation	04-Jun-12	01-Jul-14
Int17 Tennessee PS Areawide Sewer Improvement - Phase 2	05-Apr-08	05-Apr-08
Sewer/Collection System	31-Dec-04	06-Dec-16
CENMSCIC01 Vicente St. Sewer Sys Imprv Ph 2	03-Jan-05	30-Nov-07



Planning Right-of-Way Construction
Environmental Design

APPENDIX 2.2: WWE CIP Project-Level Approved Schedule

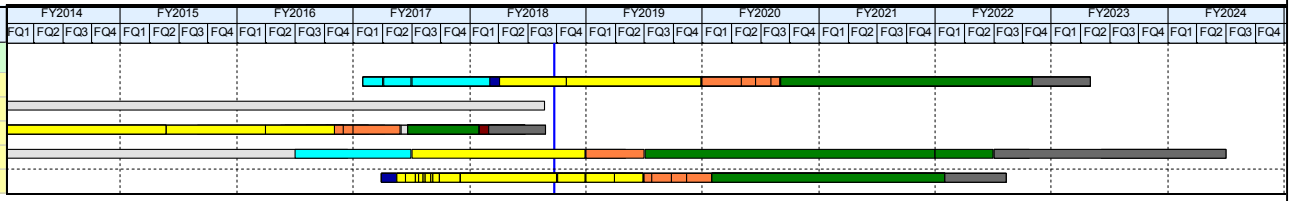
Project Name	Start	Finish
CENMSCIC02 Teresita Blvd "South" Sewer Replc	03-Jan-05	15-Oct-07
CENMSCIC03 Shotwell & 18th St. Drainage Imprv	31-Dec-04	27-Mar-08
CENMSCIC10 Brotherhood Way/St Charles Sewer Improven	07-Sep-05	28-Dec-09
CENMSCIC11 Cesar Chavez Sewer Imprv Ph 1	03-Oct-05	31-Dec-14
CENMSCIC12 Vicente St. Ph 1 Sewer Imprv	27-Apr-05	16-Mar-07
CENMSCIC13 Monterey, Baden, & Circular Sewer Imprv	16-May-05	29-Sep-06
CENMSCIC14 Mission & Foote Sewer Imprv	04-Jun-05	14-Nov-06
CENMSCIC15 Mission & Mt. Vernon Sewer Imprv Ph I	26-Sep-05	30-Sep-09
CENMSCIC18 Justin Dr/Marietta Ave/Del Vale Ave Sewer I	03-Jan-06	28-May-08
CENMSCIC23 Sunnydale Auxiliary Sewer	17-Jun-05	26-Mar-15
CENMSCIC24 Phelps/Topeka/Pomona Sewer Imprv	03-Apr-06	01-Jun-09
CENMSCIC25 Colon/Greenwood/Plymouth/Southwood/Mira	03-Jul-06	19-Jan-12
CENMSCIC26 Alemany & Sickles Sewer Improvements	16-Apr-07	28-Mar-08
CENMSCIC27 Ocean Ave Sewer Improvement	29-Jun-07	28-Feb-08
CENMSCIC32 Spot Sewer Repair Contract #23	18-Aug-09	12-May-11
CENMSCIC34 Folsom St Sewer Replacement	22-Mar-10	24-Feb-12
CENMSCIC35 Minna/Natoma/Russ Sewer Replacement	19-Apr-10	19-Aug-11
CENMSCIC43 Richmond Drainage Improvement Ph2	08-Feb-10	16-Jan-14
CENMSCIC44 Cesar Chavez Sewer Improvements Ph2	08-Feb-10	07-Feb-14
CENMSCIC46 Fell St Sewer Replacement	16-Aug-10	19-Aug-11
CENMSCIC49 Vallejo St Emergency St Replacement	01-Jun-10	10-May-11
CENMSCIC50 As Needed Sewer Replacement Contract #1	20-Sep-10	15-Nov-13
CENMSCIC51 Spot Sewer Repair Contract #25	27-Sep-10	02-Apr-12
CENMSCIC53 Downtown District Aging Sewer Replacemer	12-Oct-10	30-Dec-13
CENMSCIC54 Sunnydale Auxiliary Sewer Phase 2	04-Jan-11	20-Jul-16
CENMSCIC55 Church St/Duboce Sewer Replacement	28-Mar-11	09-Sep-13
CENMSCIC56 Powell and Mason Sewer Improvements (SHI	23-Nov-10	15-May-15
CENMSCIC57 Sewer Staff Facility Improvements	21-Mar-11	30-May-14
CENMSCIC58 Vactor Waste Staging Area	21-Mar-11	30-Sep-14
CENMSCIC59 Spot Sewer Repair Contract #26	14-Feb-11	26-Dec-12
CENMSCIC60 Spot Sewer Repair Contract #27	29-Jul-11	28-Jun-13
CENMSCIC63 Plymouth Avenue Sewer Replacement	19-Nov-12	06-Jan-14
CENMSCIC64 As-Needed Sewer Replacement	05-Nov-12	04-Nov-13
CENMSCIC65 Western Addition/Beach/Marina District Sew	02-Jan-13	08-Sep-13
CENMSCIC66 Greenwich/Leavenworth/Lombard Sewer Rej	15-Nov-12	13-May-13
CENMSCIC67 Block 2169 Emergency Easement Sewer Repl	08-Oct-12	04-Nov-12
CENMSCIC68 24th Street Sewer Replacement	03-Jan-13	29-Sep-13
CENMSCIC69 Various Location Replacement No.4	14-Jan-13	04-Feb-14
CENMSCIC71 Folsom Street Sewer Replacement	14-Jan-13	12-Jul-13
Int24 Cayuga North Sewer Improvements, Phase II	05-Apr-08	05-Apr-08
Int38 Spot Sewer Repair Contract #28	29-Jun-12	29-Jun-12
Int42 Aging Sewer Replacements	01-Jul-15	06-Dec-16



Planning
Right-of-Way
Construction
Environmental
Design

APPENDIX 2.3. WWE F&I Project-Level Approved Schedule

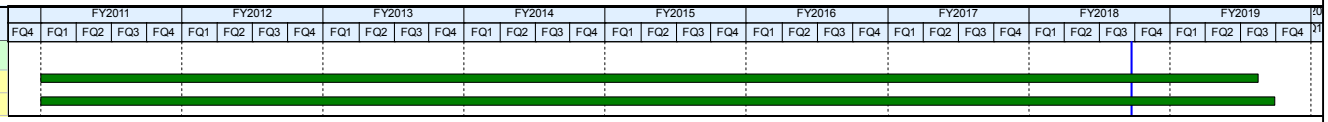
Project Name	Start	Finish
Wastewater Facilities and Infrastructure	01-Jan-11	29-Dec-23
CWP11001 Treasure Island - Existing Wastewater Facilities	01-Jan-11	01-Nov-22
CWWFAC01 Ocean Beach Project	23-Jul-12	19-Feb-18
CWWFAC02 Collection Division Consolidation (Griffith Y	01-Mar-13	23-Feb-18
CWWFAC03 Southeast Community Center and Greenhous	26-Jul-12	29-Dec-23
CWWFAC04 SEP Southeast Outfall	26-Sep-16	07-Feb-22



Project Management
Environmental
Bid & Award
Construction
Planning
Design
Construction Mgmt
Closeout

APPENDIX 2.4. WWE R&R Project-Level Approved Schedule

Project Name	Start	Finish
WWE Renewal & Replacement Program	01-Jul-10	29-Mar-19
CWWRNRTF R&R Treatment Facilities	01-Jul-10	14-Feb-19
CWWRNRCS R&R Collection Systems	01-Jul-10	29-Mar-19



Project Management
Environmental
Bid & Award
Construction
Planning
Design
Construction Mgmt
Closeout

APPENDIX 3. LIST OF ACRONYMS

AAR	Alternative Analysis Report
AQPI	Advanced Quantitative Precipitation Information
BAAQMD	Bay Area Air Quality Management District
BCDC	Bay Conservation and Development Commission
BCTD	Bay Corridor Transmission and Distribution
BDFP	Biosolids Digester Facilities Project
BEM	Bureau of Environmental Management
BFP	Backflow Preventer
BFS	Bruce Flynn Pump Station
BMS	Better Market Street
BRT	Bus Rapid Transit
Caltrans	California Department of Transportation
CATEX	Categorical Exemption
CBSIP	Central Bayside System Improvement Project
CCTV	Closed-Circuit Television
CEQA	California Environmental Quality Act
CER	Conceptual Engineering Report
CHS	Channel (Street) Pump Station
CHTL	Channel Tunnel
CIP	Capital Improvement Program; Cast-Iron Pipe
CM/GC	Construction Manager/General Contractor
CPAS	Combined Primary Activated Sludge
CPMC	California Pacific Medical Company
CSAMP	Collection System Asset Management Program
CSD	Combined Sewer Discharge
CSR	Collection System Reliability
CTLS	Channel Tunnel Lift Station
DCR	Design Criteria Report
DCS	Distributed Control System
DIP	Ductile Iron Pipe
DW	Dry Weather
EIP	Early Implementation Project
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMMS	Energy Monitoring and Management System
EMS	Energy Management System
EPA	Environmental Protection Agency
F&I	Facilities and Infrastructure
FAMIS	Financial Accounting and Management Information System
FOG	Fats, Oils, and Grease
FY	Fiscal Year
GFS	Griffith Pump Station
GGNRA	Golden Gate National Recreation Area
GI	Green Infrastructure
GPS	Griffith Pump Station
HDPE	High Density Polyethylene
HPO	High Purity Oxygen
HSW	High-Strength Waste
HVAC	Heating, Ventilation and Air Conditioning
IC	Internal Combustion
ICM	Integrated Catchment Model
IKG	Inedible Kitchen Grease
JOC	Job Order Contract
JST	Jackson Street Transport/Storage Box
KV	Kilovolt
LED	Light-Emitting Diode
LF	Linear Feet
LID	Low Impact Development
LMT	Lake Merced Tunnel
LOS	Levels of Service
LOX	Liquid Oxygen
MCC	Motor Control Center
MG	Million Gallons
MGD	Million Gallons per Day
MND	Mitigated Negative Declaration
MOU	Memorandum of Understanding
MPM	Minor Project Modification
MPS	Mariposa Pump Station
MSE	Mechanically Stabilized Earth
MTA	Municipal Transportation Agency (also shown as SFMTA)
MV PDS	Medium Voltage Power Distribution System
MW	Megawatt
N/A	Not Applicable
NAR	Needs Assessment Report

NEG DEC	Negative Declaration (also shown as ND)
NEPA	National Environmental Policy Act
NOD	Notice of Determination
NPDES	National Pollutant Discharge Elimination System
NPF	Northpoint (Wet-Weather) Facility
NPS	National Park Service
NSCFM	North Shore to Channel Force Main
NSFM	North Shore Force Main
NSS	Northshore Pump Station (also shown as NSPS)
NTP	Notice to Proceed
O&M	Operations and Maintenance
OBMP	Ocean Beach Master Plan
OCA	Office of Contract Administration
OCU	Odor Control Unit
OEM	Operations, Engineering, and Maintenance
OSP	Oceanside Water Pollution Control Plant
OSWPCP	Oceanside Water Pollution Control Plant
PE	Project Engineer
PID	Project Initiation Document
PLA	Project Labor Agreement
PLC	Programmable Logic Controller
PM	Program Management; Project Manager
PMC	Program Management Consultant
PS	Pump Station
PUC	Public Utilities Commission
R&R	Renewal and Replacement (also shown as RnR)
RCP	Reinforced Concrete Pipe
RFI	Request for Information
RFP	Request for Proposal
ROW	Right-of-Way
RPD	San Francisco Recreation & Parks Department (also shown as SFRPD)
RWQCB	Regional Water Quality Control Board
SECF	Southeast Community Facility
SEP	Southeast Plant; Southeast Water Pollution Control Plant
SEWPCP	Southeast Water Pollution Control Plant
SFCTA	San Francisco County Transportation Authority
SFMTA	San Francisco Municipal Transportation Agency (also shown as MTA)
SFPUC	San Francisco Public Utilities Commission
SFPW	San Francisco Public Works (formerly SFDPW)
SFRPD	San Francisco Recreation & Parks Department (also shown as RPD)
SIS	System Impact Study
SSIP	Sewer System Improvement Program
SSMP	Sewer System Master Plan
STATEX	Statutory Exemption
SWOO	Southwest Ocean Outfall
T/S	Transport and Storage
TAP	Transient Analysis Program
TBD	To be determined
TBL	Triple Bottom Line
TBM	Tunnel Boring Machine
TIDA	Treasure Island Development Authority
TM	Technical Memorandum
TPD	Tons Per Day
TSC	Technical Steering Committee
TSS	Total Suspended Solids
USEPA	United States Environmental Protection Agency
UWA	Urban Watershed Assessment
VCP	Vitrified Clay Pipe
VFD	Variable Frequency Drives
WAS	Waste Activated Sludge
WIFIA	Water Infrastructure and Innovation Finance Act
WIGP	Watershed Improvement Grant Program
WSIP	Water System Improvement Program
WSPS	West Side Pump Station (also shown as WSS)
WSS	Westside Pump Station (also shown as WSPS)
WWE	Wastewater Enterprise
WWE CIP	Wastewater Enterprise Capital Improvement Program

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San Francisco Water Power Sewer



Wastewater Financial Projections

Qualified Independent Consultant Report

July 10, 2017

BARTLE WELLS ASSOCIATES
INDEPENDENT PUBLIC FINANCE ADVISORS

BARTLE WELLS ASSOCIATES
INDEPENDENT PUBLIC FINANCE ADVISORS

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TO: San Francisco Public Utilities Commission

DATE: July 10, 2018

ATTN: Mike Brown – SFPUC Financial Services

FROM: Alex Handlers, CIPMA & Douglas Dove, CIPMA, P.E.

RE: SFPUC Qualified Independent Consultant Report - Wastewater

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Background

Bartle Wells Associates (BWA) was retained by the San Francisco Public Utilities Commission (SFPUC) to serve as a Qualified Independent Consultant and prepare a written report in support of the SFPUC's issuance of debt to fund or refinance (in the case of projects funded with commercial paper) wastewater system capital improvement projects. This report provides independent estimates of wastewater system a) revenues, b) operating and maintenance expenses, and c) net revenues in support of the SFPUC's issuance of wastewater debt.

Financial Projections

BWA developed financial projections through Fiscal Year 2026-27. The financial projections are based on data provided by the SFPUC as well as a number of independent calculations and assumptions which constitute such examination or investigation as is necessary to enable BWA to express an informed opinion as to whether the requirements of Proposition E and the Indenture have been satisfied. Based on the projections, the Wastewater Enterprise will generate net revenues (as defined per the Indenture) that are at least 1.25 times Annual Debt Service in each fiscal year. In accordance with the requirements of Proposition E, approved by the voters of the City and County of San Francisco on November 5, 2002, BWA certifies that estimated net revenue after payment of operating and maintenance expenses will be sufficient to meet debt service coverage and other indenture or resolution requirements, including debt service on the bonds to be issued, and estimated repair and replacement costs.

Attached Tables

The attached tables include:

- **Wastewater Enterprise Cash Flow Projections** – This table was developed by Bartle Wells Associates based on information provided by the SFPUC and a number of independent assumptions, and includes projections of future fund balances, revenues, operating and maintenance expenses, debt service, other non-operating expenses, net revenues, and debt service coverage.

- **Cash Flow Assumptions** – This table describes key assumptions used in developing the financial projections.

- **10-Year Capital Improvement Program** – This table shows projected SFPUC water system capital improvements and anticipated sources of funding.

- **Estimated Debt Service** – This table estimates annual debt service per each $100 million of project funding.

- **Projected Debt Service** – This table shows projected debt issued by fiscal year and calculates annual debt service for each issue.

- **Projected Debt Service on Future Financings** – This table projects debt service by fiscal year for each debt issue.

- **Outstanding Debt** – This table shows debt service due on outstanding debt issues.

The tables are based on information provided by the SFPUC as well as a number of independent calculations and assumptions. BWA takes no responsibility for the accuracy of information provided by the SFPUC, nor for any errors or omissions in information provided.

Submitted by: BARTLE WELLS ASSOCIATES

Alex Handlers, CIPMA
Principal/Vice President

Douglas R. Dove, CIPMA, P.E.
President

Table 1 - SFPUC Wastewater Cash Flow Projections

Years 1 - 5

	2017/18	2018/19	2019/20	2020/21	2021/22
ASSUMPTIONS					
Projected Rate Increases	11.0%	7.0%	7.0%	8.0%	8.0%
Change in Wastewater Sales	-	0.0%	0.0%	0.0%	0.0%
Interest Earnings Rate	-	1.75%	2.0%	2.0%	2.0%
O&M Cost Escalator	-	3.0%	3.0%	3.0%	3.0%
Beginning Fund Reserves	144,716,000	196,419,000	183,222,000	179,278,000	181,212,000
REVENUES					
Sewer Service Charges, Retail	296,661,000	317,427,000	339,647,000	366,819,000	396,165,000
Sewer Service Charges, Wholesale	8,360,000	9,414,000	10,019,000	10,762,000	11,638,000
Stormwater-Only Customer Charges	0	134,000	143,000	154,000	166,000
Interest Income	1,480,000	3,437,000	3,664,000	3,586,000	3,624,000
BABS Bond Subsidy	3,493,000	3,482,000	3,482,000	3,482,000	3,482,000
Other Revenues	1,805,000	1,342,000	1,381,000	1,422,000	1,465,000
Programmatic Revenues	3,559,000	4,125,000	4,254,000	4,390,000	4,555,000
Capacity Fees/Other Non-Debt Revs	6,430,000	2,547,000	2,548,000	2,549,000	2,550,000
Subtotal	321,788,000	341,908,000	365,138,000	393,164,000	423,645,000
Excluded from Coverage Calculation	(3,334,000)	(3,334,000)	(3,515,000)	(3,590,000)	(3,680,000)
Total	**318,454,000**	**338,574,000**	**361,623,000**	**389,574,000**	**419,965,000**
Debt Proceeds/Project Funding	370,000,000	907,464,000	561,793,000	429,994,000	632,587,000
EXPENSES					
Operating & Maintenance					
Salaries & Benefits	70,156,000	73,677,000	76,592,000	78,890,000	81,257,000
Utilities	11,817,000	12,166,000	12,166,000	12,531,000	12,907,000
Other Non-Personnel	16,004,000	17,146,000	17,541,000	18,067,000	18,609,000
Materials/Supplies/Equipment	11,314,000	12,673,000	13,530,000	13,936,000	14,354,000
Services of SFPUC Bureaus	28,706,000	30,474,000	31,492,000	32,437,000	33,410,000
Services of Other Depts	23,572,000	22,855,000	22,855,000	23,383,000	23,927,000
Other Operating Expenses	904,000	919,000	935,000	951,000	968,000
Programmatic Projects (Net of Lease)	3,858,000	4,365,000	4,020,000	4,140,000	4,265,000
Subtotal	166,331,000	174,275,000	179,131,000	184,335,000	189,697,000
Debt Service (Net of Cap I)					
Outstanding Bonds	50,496,000	62,192,000	64,286,000	64,358,000	62,895,000
Outstanding SRF Loans	0	0	2,129,000	3,023,000	3,883,000
Projected Bonds (Net of Cap I)	0	0	0	10,982,000	47,956,000
Subtotal	50,496,000	62,192,000	66,415,000	78,363,000	114,734,000
Non-Operating					
Pay-Go Capital Funding	47,500,000	112,880,000	117,597,000	122,517,000	116,223,000
525GG Lease	2,424,000	2,424,000	2,424,000	2,425,000	2,424,000
Subtotal	49,924,000	115,304,000	120,021,000	124,942,000	118,647,000
Total Expenses	**266,751,000**	**351,771,000**	**365,567,000**	**387,640,000**	**423,078,000**
Debt Financed Capital Projects	370,000,000	907,464,000	561,793,000	429,994,000	632,587,000
Revenues Less Expenses	51,703,000	(13,197,000)	(3,944,000)	1,934,000	(3,113,000)
Ending Fund Reserves	196,419,000	183,222,000	179,278,000	181,212,000	178,099,000
Annual Revenues	318,454,000	338,574,000	361,623,000	389,574,000	419,965,000
Less Revs Excluded from Coverage	(3,827,000)	(3,940,000)	(4,063,000)	(4,193,000)	(4,352,000)
Operating & Maintenance Expenses	(166,331,000)	(174,275,000)	(179,131,000)	(184,335,000)	(189,697,000)
Net Revenues (Current Basis)	148,296,000	160,359,000	178,429,000	201,046,000	225,916,000
Net Revs + Beginning Fund Reserves	293,012,000	356,778,000	361,651,000	380,324,000	407,128,000
Debt Service Coverage, Current Basis	2.94	2.58	2.69	2.57	1.97
Debt Service Coverage, Indenture Basis	5.80	5.74	5.45	4.85	3.55

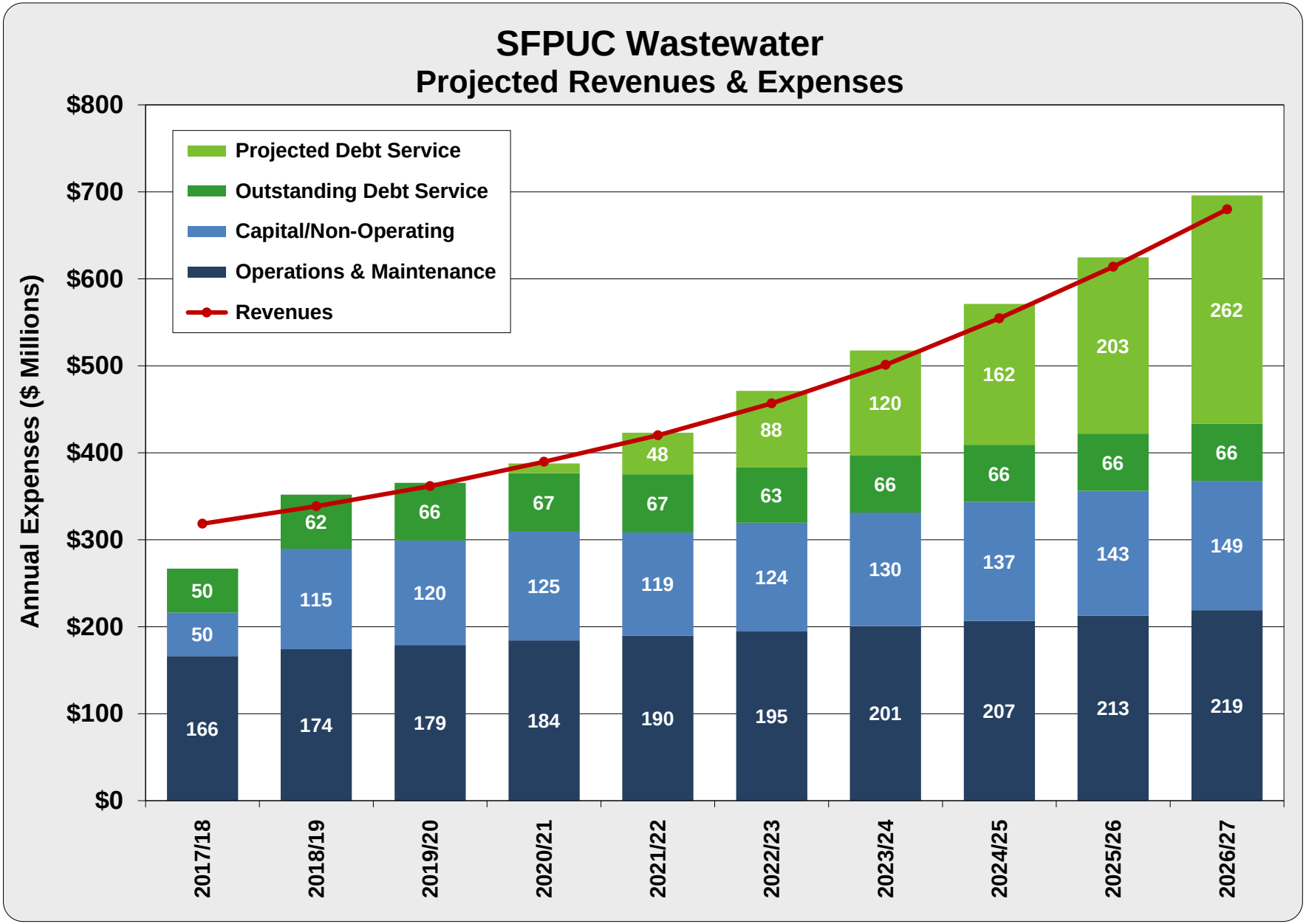
Table 1 - SFPUC Wastewater Cash Flow Projections

Years 6 - 10

	2022/23	2023/24	2024/25	2025/26	2026/27
ASSUMPTIONS					
Projected Rate Increases	9.0%	10.0%	11.0%	11.0%	11.0%
Change in Wastewater Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
O&M Cost Escalator	3.0%	3.0%	3.0%	3.0%	3.0%
Beginning Fund Reserves	178,099,000	163,785,000	147,291,000	130,556,000	119,727,000
REVENUES					
Sewer Service Charges, Retail	431,820,000	475,002,000	527,252,000	585,250,000	649,628,000
Sewer Service Charges, Wholesale	12,731,000	14,003,000	15,400,000	16,913,000	18,662,000
Stormwater-Only Customer Charges	181,000	199,000	219,000	241,000	265,000
Interest Income	3,562,000	3,276,000	2,946,000	2,611,000	2,395,000
BABS Bond Subsidy	3,427,000	3,313,000	3,194,000	3,066,000	2,930,000
Other Revenues	1,508,000	1,553,000	1,598,000	1,646,000	1,695,000
Programmatic Revenues	4,759,000	5,006,000	5,319,000	5,677,000	6,033,000
Capacity Fees/Other Non-Debt Revs	2,552,000	2,554,000	2,556,000	2,558,000	2,560,000
Subtotal	460,540,000	504,906,000	558,484,000	617,962,000	684,168,000
Excluded from Coverage Calculation	(3,778,000)	(3,896,000)	(4,029,000)	(4,167,000)	(4,318,000)
Total	**456,762,000**	**501,010,000**	**554,455,000**	**613,795,000**	**679,850,000**
Debt Proceeds/Project Funding	914,017,000	808,677,000	502,674,000	216,072,000	160,684,000
EXPENSES					
Operating & Maintenance					
Salaries & Benefits	83,695,000	86,206,000	88,792,000	91,456,000	94,200,000
Utilities	13,294,000	13,693,000	14,104,000	14,527,000	14,963,000
Other Non-Personnel	19,167,000	19,742,000	20,334,000	20,944,000	21,572,000
Materials/Supplies/Equipment	14,785,000	15,229,000	15,686,000	16,157,000	16,642,000
Services of SFPUC Bureaus	34,412,000	35,444,000	36,507,000	37,602,000	38,730,000
Services of Other Depts	24,487,000	25,063,000	25,655,000	26,265,000	26,892,000
Other Operating Expenses	985,000	1,003,000	1,021,000	1,040,000	1,059,000
Programmatic Projects (Net of Lease)	4,393,000	4,535,000	4,691,000	4,853,000	5,020,000
Subtotal	195,218,000	200,915,000	206,790,000	212,844,000	219,078,000
Debt Service (Net of Cap I)					
Outstanding Bonds	59,367,000	61,871,000	61,749,000	61,649,000	61,542,000
Outstanding SRF Loans	4,082,000	4,082,000	4,082,000	4,081,000	4,082,000
Projected Bonds (Net of Cap I)	88,029,000	120,251,000	161,889,000	202,766,000	262,409,000
Subtotal	151,478,000	186,204,000	227,720,000	268,496,000	328,033,000
Non-Operating					
Pay-Go Capital Funding	121,956,000	127,971,000	134,286,000	140,911,000	146,316,000
525GG Lease	2,424,000	2,414,000	2,394,000	2,373,000	2,352,000
Subtotal	124,380,000	130,385,000	136,680,000	143,284,000	148,668,000
Total Expenses	**471,076,000**	**517,504,000**	**571,190,000**	**624,624,000**	**695,779,000**
Debt Financed Capital Projects	914,017,000	808,677,000	502,674,000	216,072,000	160,684,000
Revenues Less Expenses	(14,314,000)	(16,494,000)	(16,735,000)	(10,829,000)	(15,929,000)
Ending Fund Reserves	163,785,000	147,291,000	130,556,000	119,727,000	103,798,000
Annual Revenues	456,762,000	501,010,000	554,455,000	613,795,000	679,850,000
Less Revs Excluded from Coverage	(4,546,000)	(4,792,000)	(5,107,000)	(5,467,000)	(5,817,000)
Operating & Maintenance Expenses	(195,218,000)	(200,915,000)	(206,790,000)	(212,844,000)	(219,078,000)
Net Revenues (Current Basis)	256,998,000	295,303,000	342,558,000	395,484,000	454,955,000
Net Revs + Beginning Fund Reserves	435,097,000	459,088,000	489,849,000	526,040,000	574,682,000
Debt Service Coverage, Current Basis	1.70	1.59	1.50	1.47	1.39
Debt Service Coverage, Indenture Basis	2.87	2.47	2.15	1.96	1.75

SFPUC Wastewater Financial Projections
Cash Flow Assumptions

SFPUC Model Basis	Financial projections are based on SFPUC's *FY19 Wastewater 10 Year Plan*
Projected Rate Increases	Future rate increases are based on SFPUC projections w ith very minor adjustments made by BWA in the outer years.
Beginning Fund Reserves	Beginning fund reserves based on SFPUC estimates.
Sewer Service Charges	Sewer Service Charges, Retail are based on SFPUC estimates for FY 2017/18 and SFPUC-projected rate increases, and assume no change in the volume of future wastewater sales. Sewer Service Charges, Wholesale are based on SFPUC projections.
Interest Income	Interest earnings starting FY 2018/19 are estimated based on the projected interest rate multiplied by beginning fund reserves for each year.
Other Miscellaneous Income	Based on SFPUC projections.
Operation & Maintenance Expenses	Most Operation & Maintenance Expenses are based on SFPUC projections through FY 2019/20 and subsequently escalate at the annual rate of 3.0% thereafter.
Capital Projects	Capital Project expenses and sources of funding are based on SFPUC projections. Revenue Bond funding amounts include SRF Loan financing.
Debt Service Assumptions	Debt assumptions are shown on Table 3, which calculates debt service per $100 million of project funding for bonds and SRF Loans based on assumptions shown on the table. Future debt service projections are based on SFPUC projections of annual debt financing requirements and BWA projections of debt service.
Annual Debt Service	Future debt service is based on BWA projections.
Other Non-Operating Expenses	Based on SFPUC projections.
Net Revenues	Pursuant to the Indenture, Net Revenues are defined as Annual Revenues (excluding interest earnings on any bond funds including the reserve fund, capitalized interest fund, and improvement fund; but including fund reserves available to pay debt service assuming the Commission determined such reserves should be "Revenues" under the Indenture) less Operation and Maintenance Expenses.
Debt Service Coverage, Current Basis	Coverage based on annual Net Revenues (excluding available fund reserves) divided by Annual Debt Service.
Debt Service Coverage, Indenture Basis	Coverage based on annual Net Revenues plus Beginning Fund Reserves (as allowed per Indenture) divided by Annual Debt Service.


SFPUC Wastewater
Projected Revenues & Expenses
Annual Expenses ($ Millions)
$800
$700
$600
$500
$400
$300
$200
$100
$0
Projected Debt Service
Outstanding Debt Service
Capital/Non-Operating
Operations & Maintenance
Revenues
2017/18
2018/19
2019/20
2020/21
2021/22
2022/23
2023/24
2024/25
2025/26
2026/27
50
50
166
62
115
174
66
120
179
67
125
184
48
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119
190
88
63
124
195
120
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130
201
162
66
137
207
203
66
143
213
262
66
149
219

Table 2
SFPUC Wastewater Enterprise
10-Year Capital Improvement Program
Includes Construction Cost Inflation

	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
CAPITAL IMPROVEMENT PROGRAM COSTS										
Sewer System Improvement Program (SSIP)										
Program Wide	16,983,000	16,590,000	16,500,000	16,500,000	12,500,000	11,500,000	11,500,000	17,591,000	10,141,000	8,911,000
Treatment Facilities	341,199,000	169,109,000	365,055,000	346,460,000	291,874,000	63,240,000	86,836,000	83,417,000	96,066,000	59,201,000
Sewer/Collection System	29,473,000	69,285,000	323,069,000	395,717,000	293,436,000	32,202,000	19,914,000	34,916,000	23,103,000	39,903,000
Stormwtr Mgmt/Flood Control	44,377,000	37,456,000	187,631,000	47,853,000	98,782,000	169,077,000	19,089,000	31,873,000	23,769,000	44,855,000
Renewal & Replacement	112,765,000	117,479,000	122,395,000	116,097,000	121,826,000	127,837,000	134,148,000	140,769,000	146,170,000	153,479,000
Treasure Island	6,373,000	23,957,000	13,000,000	0	0	0	0	0	0	0
Wastewater Facils & Infrastr	80,206,000	24,980,000	18,543,000	97,706,000	16,524,000	16,213,000	2,572,000	13,660,000	1,260,000	1,325,000
Total	631,376,000	458,856,000	1,046,192,000	1,020,334,000	834,942,000	420,069,000	274,059,000	322,225,000	300,509,000	307,673,000
FUNDING SOURCES										
New Debt Funding	518,611,000	341,377,000	923,797,000	904,237,000	713,116,000	292,232,000	139,911,000	181,456,000	154,339,000	154,194,000
Annual Revenues	106,765,000	112,979,000	117,895,000	111,597,000	117,326,000	123,337,000	129,648,000	136,269,000	141,670,000	148,979,000
Capacity Fees/Other	6,000,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000
Total	631,376,000	458,856,000	1,046,192,000	1,020,334,000	834,942,000	420,069,000	274,059,000	322,225,000	300,509,000	307,673,000
SURPLUS / (SHORTFALL)	0	0	0	0	0	0	0	0	0	0

Note: Amounts shown reflect capital improvements projected to be budgeted, but not necessarily funded or financed, each year.

Table 3
SFPUC Wastewater Enterprise
Estimated Debt Service
Per $100 Million of Project Funding

Funding Source		**Bonds**	**SRF Loans**
Repayment Term		30 Years	30 Years
Cap I Term		2.5 Years	n/a
Funding Target		$100,000,000	$100,000,000
Assumed Issuance & Payment Months			
Issuance Date		Mar-1	Oct-1
Payment: Semi-Annual Interest		Apr-1	Oct-1
Payment: Semi-Annual Interest + Principal		Oct-1	Oct-1
Total Debt Issue		$118,720,000	$102,600,000
Project Funding		$100,000,000	$100,000,000
Issuance Costs & Reserve Requirement			
Underwriter Discount	0.50%	$594,000	n/a
Issuance Costs	Est.	300,000	n/a
Reserve Requirement		0	n/a
Capitalized Interest	3.0	17,808,000	n/a
Accrued Interest During Construction		n/a	2,565,000
Rounding/Contingency		18,000	35,000
Total		18,720,000	2,600,000
Financing Terms			
Term (Years)		30	30
Interest Only (Years)		3	-
Principal Amortization (Years)		27	30
Est. Average Interest Rate		5.00%	2.50%
Annual Debt Service			
Interest Only Period		5,936,000	n/a
Principal Amortization Period		8,108,000	4,902,000

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Financing costs and interest rates estimated for financial planning purposes.

Table 4
SFPUC Wastewater Enterprise
Projected Debt Service

Debt Isuance	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Financing Terms	Bonds	Bonds	Bonds	Bonds	Bonds	Bonds	Bonds	Bonds	Bonds	Bonds
CIP Project Funding Target	370,000,000	604,976,000	302,488,000	561,793,000	429,994,000	632,587,000	914,017,000	808,677,000	502,674,000	216,072,000
Total Issue Size	379,620,000	620,710,000	310,350,000	576,400,000	510,490,000	751,010,000	1,085,120,000	960,060,000	596,770,000	256,520,000
Interest Payments	Apr-1 & Oct-1	Apr-1 & Oct-1	Apr-1 & Oct-1	Apr-1 & Oct-1	Apr-1 & Oct-1	Apr-1 & Oct-1	Apr-1 & Oct-1	Apr-1 & Oct-1	Apr-1 & Oct-1	Apr-1 & Oct-1
Principal Payments (Year 3+)	Oct-1	Oct-1	Oct-1	Oct-1	Oct-1	Oct-1	Oct-1	Oct-1	Oct-1	Oct-1
Average Interest Rate	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Repayment Term (Years)	30	30	30	30	30	30	30	30	30	30
Capitalized Interest (Years)	3	3	3	3	3	3	3	3	3	3
Debt Service per $100M										
Interest Only Period	5,936,000	5,936,000	5,936,000	5,936,000	5,936,000	5,936,000	5,936,000	5,936,000	5,936,000	5,936,000
Principal Amort Period	8,108,000	8,108,000	8,108,000	8,108,000	8,108,000	8,108,000	8,108,000	8,108,000	8,108,000	8,108,000
Annual Debt Service										
Interest Only Period	21,963,000	35,911,000	17,956,000	33,348,000	25,524,000	37,550,000	54,256,000	48,003,000	29,839,000	12,826,000
Principal Amort Period	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000
Cumulative MADS	30,000,000	79,051,000	103,577,000	149,127,000	183,991,000	235,281,000	309,389,000	374,957,000	415,714,000	433,233,000

Table 5
SFPUC Wastewater Enterprise
Projected Debt Service on Future Financings

Fiscal Year Ending June 30	2018 Bonds	2019 Bonds	2020 Bonds	2021 Bonds	2022 Bonds	2023 Bonds	2024 Bonds	2025 Bonds	2026 Bonds	2027 Bonds	2028 Bonds	Total Net of Cap I
2019	Cap I	Cap I										0
2020	Cap I	Cap I	Cap I									0
2021	10,982,000	Cap I	Cap I	Cap I								10,982,000
2022	30,000,000	17,956,000	Cap I	Cap I	Cap I							47,956,000
2023	30,000,000	49,051,000	8,978,000	Cap I	Cap I	Cap I						88,029,000
2024	30,000,000	49,051,000	24,526,000	16,674,000	Cap I	Cap I	Cap I					120,251,000
2025	30,000,000	49,051,000	24,526,000	45,550,000	12,762,000	Cap I	Cap I	Cap I				161,889,000
2026	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	18,775,000	Cap I	Cap I	Cap I			202,766,000
2027	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	27,128,000	Cap I	Cap I	Cap I		262,409,000
2028	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	24,002,000	Cap I	Cap I	Cap I	333,391,000
2029	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	14,920,000	Cap I	Cap I	389,877,000
2030	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	6,413,000	Cap I	422,127,000
2031	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	4,769,000	438,002,000
2032	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2033	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2034	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2035	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2036	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2037	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2038	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2039	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2040	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2041	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2042	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2043	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2044	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2045	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2046	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2047	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2048	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2049	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2050	30,000,000	49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	446,261,000
2051		49,051,000	24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	416,261,000
2052			24,526,000	45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	367,210,000
2053				45,550,000	34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	342,684,000
2054					34,864,000	51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	297,134,000
2055						51,290,000	74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	262,270,000
2056							74,108,000	65,568,000	40,757,000	17,519,000	13,028,000	210,980,000
2057								65,568,000	40,757,000	17,519,000	13,028,000	136,872,000
2058									40,757,000	17,519,000	13,028,000	71,304,000
2059										17,519,000	13,028,000	30,547,000
2059											13,028,000	13,028,000

Table 6
SFPUC Wastewater Enterprise
Outstanding Bond Payments

Fiscal Year	2010A	2010B Bonds (BABS)			2013A	2013B	2016A Bonds			2016B Bonds			SRF	Total	Total
Ending June 30	Bonds	Gross	Int Reimbs	Net	Bonds	Bonds	Bonds	Cap I	Net	Bonds	Cap I	Net	Loans	Gross	Net of Reimb
			32.690%												
2018	9,042,075	10,685,426	3,493,066	14,178,491	16,340,800	14,428,000	10,645,750	(10,645,750)	0	3,001,050	(3,001,050)	0		50,496,301	53,989,366
2019	9,042,100	10,685,426	3,493,066	14,178,491	16,398,300	14,428,000	10,645,750	(1,567,291)	9,078,459	3,001,050	(441,821)	2,559,229		62,191,513	65,684,579
2020	9,040,000	10,685,426	3,493,066	14,178,491	16,486,175	14,428,000	10,645,750		10,645,750	3,001,050		3,001,050	2,129,000	66,415,401	69,908,466
2021	9,040,750	10,685,426	3,493,066	14,178,491	16,557,300	14,428,000	10,645,750		10,645,750	3,001,050		3,001,050	3,023,000	67,381,276	70,874,341
2022	9,040,500	10,685,426	3,493,066	14,178,491	15,094,550	14,428,000	10,645,750		10,645,750	3,001,050		3,001,050	3,883,000	66,778,276	70,271,341
2023		17,796,166	3,437,735	21,233,900	13,495,800	14,428,000	10,645,750		10,645,750	3,001,050		3,001,050	4,082,000	63,448,766	66,886,500
2024		17,673,662	3,324,136	20,997,797	664,175	23,042,125	15,983,875		15,983,875	4,507,425		4,507,425	4,082,000	65,953,262	69,277,397
2025		17,545,666	3,203,838	20,749,503	672,600	23,034,250	15,988,000		15,988,000	4,508,175		4,508,175	4,082,000	65,830,691	69,034,528
2026		17,408,913	3,075,774	20,484,687	1,285,200	22,424,000	16,017,900		16,017,900	4,513,450		4,513,450	4,081,000	65,730,463	68,806,237
2027		17,261,893	2,939,450	20,201,343		23,707,875	16,047,675		16,047,675	4,524,475		4,524,475	4,082,000	65,623,918	68,563,368
2028		17,110,033	2,795,006	19,905,039		23,708,125	16,046,300		16,046,300	4,522,475		4,522,475	4,082,000	65,468,933	68,263,939
2029		16,943,973	2,642,651	19,586,624		23,709,625	16,048,175		16,048,175	4,520,850		4,520,850	4,082,000	65,304,623	67,947,274
2030		16,772,303	2,481,924	19,254,227		23,706,000	16,047,425		16,047,425	4,524,225		4,524,225	4,082,000	65,131,953	67,613,877
2031		16,593,293	2,312,259	18,905,552		23,705,750	16,048,175		16,048,175	4,522,350		4,522,350	4,082,000	64,951,568	67,263,827
2032		16,397,827	2,132,312	18,530,139		23,707,125	16,044,550		16,044,550	4,524,975		4,524,975	4,082,000	64,756,477	66,888,789
2033		16,194,233	1,943,170	18,137,403		23,708,375	16,045,550		16,045,550	4,521,850		4,521,850	4,082,000	64,552,008	66,495,178
2034		15,983,646	1,746,838	17,730,483		23,711,700	16,045,050		16,045,050	4,522,725		4,522,725	4,082,000	64,345,121	66,091,958
2035		15,765,202	1,543,034	17,308,236		23,712,500	16,046,925		16,046,925	4,522,225		4,522,225	4,082,000	64,128,852	65,671,886
2036		15,542,896	1,331,430	16,874,325		23,707,700	16,045,050		16,045,050	4,524,975		4,524,975	4,082,000	63,902,621	65,234,050
2037		15,306,552	1,110,333	16,416,885		23,706,300	16,048,175		16,048,175	4,525,600		4,525,600	4,082,000	63,668,627	64,778,960
2038		15,055,150	879,410	15,934,559		23,712,000	16,046,300		16,046,300	4,524,700		4,524,700	4,082,000	63,420,150	64,299,559
2039		14,801,539	639,592	15,441,131		23,703,800	16,048,300		16,048,300	4,523,400		4,523,400	4,082,000	63,159,039	63,798,631
2040		14,534,555	390,500	14,925,055		23,705,600	16,047,000		16,047,000	4,522,000		4,522,000	4,082,000	62,891,155	63,281,655
2041		14,258,181	131,800	14,389,980		23,706,000	16,046,700		16,046,700	4,525,200		4,525,200	4,082,000	62,618,081	62,749,880
2042						37,820,700	16,046,600		16,046,600	4,522,800		4,522,800	4,082,000	62,472,100	62,472,100
2043						37,821,600	16,045,900		16,045,900	4,524,600		4,524,600	4,082,000	62,474,100	62,474,100
2044							16,048,700		16,048,700	4,525,300		4,525,300	4,082,000	24,656,000	24,656,000
2045							16,044,200		16,044,200	4,524,700		4,524,700	4,082,000	24,650,900	24,650,900
2046							16,046,500		16,046,500	4,522,600		4,522,600	4,082,000	24,651,100	24,651,100
2047							16,044,600		16,044,600	4,523,700		4,523,700	4,082,000	24,650,300	24,650,300
2048													4,082,000	4,082,000	4,082,000
2049													4,082,000	4,082,000	4,082,000
2050													314,000	314,000	314,000
2051													314,000	314,000	314,000

SAN FRANCISCO
PLANNING DEPARTMENT

Certificate of City and County of San Francisco Planning Department Regarding Proposed Sale of Wastewater Revenue Bonds, Including Notes, Commercial Paper, and Other Forms of Indebtedness, in a not to exceed issuance amount of $987,414,494 for Capital Projects budgeted in Fiscal Years 2018-19 and 2019-20

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

Reception:
415.558.6378

Fax:
415.558.6409

Planning
Information:
415.558.6377

I, Lisa M. Gibson, Environmental Review Officer of the Planning Department of the City and County of San Francisco (the Planning Department), hereby certify as follows:

1. As the Environmental Review Officer (ERO) of the Planning Department, I am authorized to certify as to the compliance of the San Francisco Public Utilities Commission (SFPUC) with applicable requirements of the California Environmental Quality Act (CEQA).

2. After consultation with the SFPUC, I understand that the SFPUC proposes to sell Wastewater Revenue Bonds and Other Forms of Indebtedness (the "Revenue Indebtedness") to finance certain improvements to the Wastewater Enterprise of the City and County of San Francisco (the "City"). The improvements proposed for financing include those projects described in the following document, attached to this Certificate as Exhibit A and may represent a subset of the total available authorization.

3. I understand that Section 8B.124 of the City Charter grants authority to the City's Board of Supervisors to approve the issuance of Revenue Indebtedness, including revenue bonds, notes, and commercial paper, by ordinance upon two-thirds vote of its members and under certain conditions. A draft of the ordinance related to the debt issuance is attached hereto as Exhibit B (the Ordinance).

4. I understand that one of the conditions to the Board of Supervisor's authorization of such Revenue Indebtedness is the delivery of a certificate of the Planning Department regarding the projects or additional to be financed under the authorization provided in Exhibit B, the Ordinance.

5. The San Francisco Planning Commission certifies Environmental Impact Reports as they are completed pursuant to CEQA. In addition, the Planning Department approves Initial Study/Mitigated Negative Declarations, and the ERO approves Categorical Exemptions.

6. Based on a preliminary review of the additional Projects and discussions with the SFPUC regarding the requirements for undertaking such additional Projects, I certify that the Projects under the jurisdiction of the SFPUC to be funded with proceeds of the Revenue Indebtedness, as described in the Ordinance, (a) are not considered to be projects under CEQA, (b) are projects under CEQA and a CEQA determination has already been issued, or (c) are projects under CEQA and will undergo CEQA review prior to approval. Pursuant to the provisions of Chapter 31 of the San Francisco Administrative Code, any additional Project to be financed will comply with applicable requirements of CEQA prior to any draw on the Revenue Indebtedness proceeds to finance the acquisition or construction of such facilities.

In witness whereof, the undersigned has executed this certification as of this 26 day of June, 2018.

Lisa M. Gibson
Environmental Review Officer

EXHIBIT A
WASTEWATER ENTERPRISE REVENUE BONDS AND OTHER FORMS OF INDEBTEDNESS
FY 2018-2019 AND FY 2019-2020 CAPITAL IMPROVEMENT PROJECTS

Program	Project Number	Project Title	CEQA Compliance
Sewer System Improvement Program (SSIP)	CWWSIPPRPL00	SSIP - Program Wide Management	The individual projects are projects under CEQA and will undergo CEQA review prior to approval.
SSIP	CWWSIPPRPL00	SSIP – Land Reuse	Categorical Exemption Determination issued October 28, 2015 (Case No. 2015-004781ENV) for acquisition and relocation of Central Shops and Asphalt Plant from 1800 Jerrold Avenue and 1801 Jerrold Avenue adjacent to Southeast Plant
SSIP	CWWSIPDP00	Biosolids Digester Facilities Project	The Planning Commission certified the Final Environmental Impact Report (EIR) on March 8, 2018 (Case No. 2015-000644ENV).
SSIP	CWWSIPSE02	Southeast Plant- New Headworks (Grit) Replacement	Final MND was issued on December 19, 2016 (Case No. 2015-006224ENV).
SSIP	CWWSIPSE00	Southeast Plant Improvement	SEP Oxygen Generation Plant – A categorical exemption determination was issued August 23, 2012 (Case Number 2012.1084E). SEP Oxygen Generation Plant 01 – The project is a project under CEQA and will undergo CEQA review prior to approval (Case Number 2016-010393ENV). SEP Existing Digester Roof Repairs – An emergency statutory exemption concurrence was received April 19, 2013 (Case Number 2013.0500E). SEP Primary and Secondary Clarifiers Upgrades - A categorical exemption determination was issued on August 17, 2015 (Case No. 2015-010479ENV). SEP 521/522 and Disinfection Upgrades – A categorical exemption determination was issued August 18, 2015 (Case No. 2015-010484ENV). SEP Facility Wide DCS Control Upgrades - The project is a project under CEQA and will undergo CEQA review prior to approval. SEP Seismic Reliability and Condition Assessment – A categorical exemption determination was issued March 25, 2016 (Case Number 2016-007796ENV). SEP Existing Digester Gas Handling Improvements – A categorical exemption determination was issued January 29, 2016 (Case Number 2016-009399ENV). SEP Power Feed and Primary Switchgear Upgrade – A categorical exemption determination was issued February 22, 2018 (Case Number 2017-015855ENV).

EXHIBIT A
WASTEWATER ENTERPRISE REVENUE BONDS AND OTHER FORMS OF INDEBTEDNESS
FY 2018-2019 AND FY 2019-2020 CAPITAL IMPROVEMENT PROJECTS

Program	Project Number	Project Title	CEQA Compliance
SSIP	CWWSIPTPNP00	North Point Facility (NPF)	North Shore Wet Weather Pump Station Improvement and Disinfection – A categorical exemption was issued October 13, 2017 (Case Number 2017-010521 ENV). NPF Outfall System Rehabilitation – A categorical exemption was issued September 18, 2015 (Case Number 2014.1261E).
SSIP	CWWSIPTPOP00	Oceanside Treatment Plant (OSP) Improvements	OSP Digester Gas Utilization Upgrade - A categorical exemption was issued June 14, 2017 (Case Number 2017-006119ENV). OSP Condition Assessment Repairs - The project is a project under CEQA and will undergo CEQA review prior to approval. OSP Odor Control Optimization - The project is a project under CEQA and will undergo CEQA review prior to approval. Westside PS Reliability Improvements - A categorical exemption was issued April 20, 2017 (Case Number 2016-014160ENV).
SSIP	CWWSIPCT00	Central Bayside System Improvements	The project is a project under CEQA and will undergo CEQA review prior to approval.
SSIP	CWWSIPCS00	Collection System Improvements – Interceptors/Tunnels/Odor Control	Collection System Condition Assessment – The project is a project under CEQA and will undergo CEQA review prior to approval. Kansas and Marin Streets Sewer Improvements – A categorical exemption determination was issued May 12, 2015 (Case Number 2015-005036ENV) for the Public Property option. The SFPW Yard Option is a project under CEQA and will undergo CEQA review prior to approval. Drumm and Jackson Streets Sewer System Improvement – A categorical exemption determination was issued on November 10, 2016 (Case Number 2016-013787ENV). Cargo Way Sewer Box Odor Reduction – The project is a project under CEQA and will undergo CEQA review prior to approval. Rutland Sewer Improvements – A Mitigated Negative Declaration was issued on April 5, 2010 under the Sunnydale Sewer Improvement Project (Case Number 2009.0311E). SSIP Sewer Improvement Projects – The individual projects are projects under CEQA and will undergo CEQA review prior to approval.

EXHIBIT A
WASTEWATER ENTERPRISE REVENUE BONDS AND OTHER FORMS OF INDEBTEDNESS
FY 2018-2019 AND FY 2019-2020 CAPITAL IMPROVEMENT PROJECTS

Program	Project Number	Project Title	CEQA Compliance
SSIP	CWWSIPCSSR	Collection System Improvements – Interdepartmental Projects	Van Ness Bus Rapid Transit (BRT) Sewer Improvements – The San Francisco County Transportation Authority issued a Final Environmental Impact Report/Environmental Impact Statement (EIR/EIS) September 13, 2013. Better Market Street Sewer Improvements - Planning and Design Phases only, not a "project" under CEQA §15378; The San Francisco Planning Department issued an initial study March 30, 2016; Subsequent environmental review will be required once the preferred project alternative (including utility improvements) is selected. The project is a project under CEQA and will undergo CEQA review prior to approval. Geary BRT Sewer Improvements Phase 1 - A categorical exemption determination was issued on April 14, 2017 (Case Number 2017-004149ENV). Central Subway Sewer Improvements – The San Francisco County Transportation Authority issued a Final EIR/EIS in 2008 (Case Number 1996.0281E). Mission Bay Loop Sewer Improvements – SFMTA is the project lead and obtained CEQA approval by relying on the Third Street Light Rail EIR (certified December 3, 1998, Case Number 96.281E). Masonic Avenue Sewer Improvements – A categorical exemption determination was issued December 18, 2014 (Case Number 2014-002956ENV). Taraval Sewer Improvements - A categorical exemption determination was issued April 14, 2017 (Case Number 2017-004381ENV). Geary BRT Sewer Improvements Phase 2 - The project is a project under CEQA and will undergo CEQA review prior to approval.

Program	Project Number	Project Title	CEQA Compliance
SSIP	CWWSIPCSPS00	Pump Stations/Bayside & Westside	Hudson Avenue Pump Station and Outfall Improvements – Project completed with only Planning phase. Force Main Rehab at Embarcadero and Jackson – A categorical exemption was issued on October 16, 2016 (Case Number 2011.1370E). Mariposa Dry Weather Pump Station & Force Main – A categorical exemption determination was issued on April 25, 2017 (Case Number 2017-000818ENV). Cesar Chavez Pump Station – Project completed with AAR. Marin Street Sewer Replacement – A categorical exemption determination was issued April 21, 2015 (Case Number 2015-005036ENV). Griffith Pump Station Improvements – A categorical exemption determination was issued November 21, 2016 (Case Number 2016-015030ENV). Northshore to Channel Force Main – A FMND was issued on April 24, 2012 (Case Number 2011.1370E).
SSIP	CWWSIPFR00	Flood Resilience/Hydraulic Improvements	17th and Folsom Wet Weather Storage – Planning and Design Phases only, not a "project" under CEQA §15378. Flood Resilience Analysis and Flood Resilience – Early Projects (Planning Phase Only) - Planning and Design Phases only, not a "project" under CEQA §15378. Flood Resilience Early Projects – Planning and Design Phases only, not a "project" under CEQA §15378 Wawona St and 15th Ave Stormwater Detention – The project is a project under CEQA and will undergo CEQA review prior to approval. Cayuga Avenue Stormwater Detention – The project is a project under CEQA and will undergo CEQA review prior to approval. Folsom Area Stormwater Improvement – The project is a project under CEQA and will undergo CEQA review prior to approval. 17th and Folsom Permanent Barriers – The project is a project under CEQA and will undergo CEQA review prior to approval. Hydraulic and Drainage Sewer Improvements consists of two sub projects. For Foerster Street Auxiliary and Various Sewer Replacements (WW-650), a statutory exemption concurrence was received from Planning on October 14, 2016 (Case Number 2016-013235ENV). For Urbano Drive and Victoria Street Drainage Sewer Improvements (JOC-60-05), a categorical exemption determination was issued December 8, 2016 (Case Number 2016-015526ENV).

EXHIBIT A
WASTEWATER ENTERPRISE REVENUE BONDS AND OTHER FORMS OF INDEBTEDNESS
FY 2018-2019 AND FY 2019-2020 CAPITAL IMPROVEMENT PROJECTS

Program	Project Number	Project Title	CEQA Compliance
SSIP	CWWSIPFCDB00	Green Infrastructure Projects	Islais Creek Green Infrastructure – Environmental review was completed for the Infrastructure Project under the Final MND for the Mission District Streetscape Project (Case Number 2008.1075 E). Sunset Green Infrastructure – A categorical exemption determination was issued December 5, 2014 (Case Number 2014-002443ENV). North Shore Green Infrastructure – A categorical exemption determination was issued October 6, 2015 (Case Number 2015-012554ENV). Lake Merced Green Infrastructure – A categorical exemption determination was issued August 28, 2014 (Case Number 2015.002821ENV). Sunnydale Green Infrastructure – A categorical exemption determination was issued August 28, 2014 (Case Number 2014.1320E). Richmond Green Infrastructure – A categorical exemption determination was issued June 4, 2015 (Case Number 2015-007090ENV). Yosemite Green Infrastructure – A categorical exemption determination was issued August 15, 2017 (Case Number 2015-004546ENV). Channel Green Infrastructure – A categorical exemption determination was issued (Case Number 2014.0397E).
SSIP	CWWSIPFCRP00	Advanced Rainfall/Operating Decision System	Advanced Rainfall Prediction – The project is a project under CEQA and will undergo CEQA review prior to approval. Operational Decision System – Not a "project" under CEQA §15378, with determination memo issued in March 2015.
Capital	CWP11001	Treasure Island	Final Environmental Impact Report Certified June 7, 2011 (Case Number 2007.0903E).
Capital	CWWFAC01	Ocean Beach Visioning Process	Planning and Design Phases only, not a "project" under CEQA §15378; A Local Coastal Program Amendment is currently in process at the San Francisco Planning Department.
Capital	CWWFAC03	Southeast Community Center Improvements	The individual projects are projects under CEQA and will undergo CEQA review prior to approval.
Capital	CWWFAC04	Islais Creek Outfall	The project is a project under CEQA and will undergo CEQA review prior to approval.
Capital	CWWFAC04	Southeast Outfall Condition Assessment & Rehab	A categorical exemption determination was issued June 15, 2018 (Case Number 2018-008069ENV).

[San Francisco Public Utilities Commission Wastewater Revenue Bond Issuance----Not to Exceed $987,414,494]

Ordinance authorizing the issuance and sale of tax-exempt or taxable Wastewater Revenue Bonds and other forms of indebtedness (as described below) by the San Francisco Public Utilities Commission (Commission) in an aggregate principal amount not to exceed $987,414,494 to finance the costs of various capital wastewater projects benefitting the Wastewater Enterprise pursuant to amendments to the Charter of the City and County of San Francisco enacted by the voters on November 5, 2002 as Proposition E; authorizing the issuance of Wastewater Revenue Refunding Bonds; declaring the Official Intent of the Commission to reimburse Itself with one or more issues of tax-exempt bonds or other forms of indebtedness; and ratifying previous actions taken in connection therewith.

NOTE: **Unchanged Code text and uncodified text** are in plain Arial font.
Additions to Codes are in *single-underline italics Times New Roman font*.
Deletions to Codes are in ~~*strikethrough italics Times New Roman font*~~.
Board amendment additions are in double-underlined Arial font.
Board amendment deletions are in ~~strikethrough Arial font~~.
Asterisks (* * * *) indicate the omission of unchanged Code subsections or parts of tables.

Be it ordained by the People of the City and County of San Francisco:

Section 1. Findings. The Board of Supervisors (the "Board") of the City hereby finds and declares as follows:

A. On November 5, 2002, the voters of the City and County of San Francisco (the "City") approved Proposition E ("Proposition E"), which among other things, authorized the San Francisco Public Utilities Commission (the "Commission") to issue revenue bonds, including notes, commercial paper or other forms of indebtedness (which forms of

indebtedness may include without limitation for purposes of Proposition E, loans and other forms of indebtedness provided by governmental agencies and/or commercial or investment banks), when authorized by ordinance approved by a two-thirds vote of the Board of Supervisors, for the purpose of reconstructing, replacing, expanding, repairing or improving water facilities or clean water facilities or combinations of water and clean water facilities under the jurisdiction of the Commission; and

B. The Commission adopted the Indenture dated as of January 1, 2003, as further amended and supplemented from time to time (the “Indenture”), between the Commission and U. S. Bank National Association and in connection therewith, has from time to time issued revenue bonds to finance projects benefitting the Wastewater Enterprise; and

C. By Resolution 18-0023 adopted by the Commission on February 13, 2018 (the “Commission Resolution”) the Commission has determined to issue Wastewater Revenue Bonds (the “Wastewater Revenue Bonds”) and other forms of indebtedness (including without limitation SRF Loans or WIFIA Loans , as described below), as well as interim funding vehicles such as commercial paper, revolving credit notes, bond anticipation notes or other forms of notes, which interim funding vehicles will be issued in advance of being paid off by either Wastewater Revenue Bonds or other forms of indebtedness (including without limitation SRF Loans or WIFIA Loans), to finance the costs of various capital wastewater projects benefitting the Wastewater Enterprise (the "Capital Improvement Projects" such projects being more fully described in the Commission Resolution), pursuant to Proposition E, and has formally requested this Board to authorize the issuance and sale of Wastewater Revenue Bonds for such purposes, such Commission Resolution being on file with the Clerk of the Board in File No. _____; and

D. In order to finance the costs of the Capital Improvement Projects, the Board now desires to authorize pursuant to Proposition E the issuance and sale of Wastewater Revenue

Bonds and other forms of indebtedness for such purposes, including without limitation State Revolving Fund Loans and/or grants from the State Water Resources Control Board (“SRF Loans”) or U.S. Environmental Protection Agency Water Infrastructure Finance and Innovation Act loans (“WIFIA Loans”) and such other indebtedness as may be advantageous to the Commission; and

E. The Commission has paid, beginning no earlier than 60 days prior to the adoption of this Ordinance and will pay, on and after the date hereof, certain expenditures (the “Expenditures”) in connection with the acquisition, construction and/or equipping of the Capital Improvement Projects; and

F. This Board is concurrently considering with this Ordinance, another Ordinance approving a Capital Improvement Program related supplemental appropriation totaling $ 1,217,658,494 for fiscal years ending 2019 and 2020, including the proceeds of such Wastewater Revenue Bonds and other forms of indebtedness (including SRF Loans, WIFIA Loans, commercial paper, revolving credit notes and bond anticipation notes); and

G. This Board, on behalf of the Commission, adopts this Ordinance as official action of the Commission in order to comply with Treasury Regulation §1.150-2 and any other regulations of the Internal Revenue Service relating to the qualification for reimbursement of Commission expenditures incurred prior to the date of issue of the Wastewater Revenue Bonds or other forms of indebtedness (including SRF Loans, WIFIA Loans, commercial paper, revolving credit notes and bond anticipation notes).

Section 2. Authorization to Issue Wastewater Revenue Bonds and other forms of indebtedness. The Board hereby authorizes the issuance and sale of Wastewater Revenue Bonds in one or more series from time to time by the Commission pursuant to Proposition E and in accordance with the Commission Resolution and the execution and delivery of SRF Loan or WIFIA Loan agreements or the issuance of commercial paper, revolving credit notes,

or bond anticipation notes, in an aggregate principal amount not to exceed $987,414,494 (inclusive of financing costs), but exclusive of refunding indebtedness, bearing a maximum rate or rates of interest of not to exceed twelve percent (12%) per annum to finance a portion of the costs of the design, acquisition and construction of the Capital Improvement Projects. Without limiting the foregoing, the Commission shall be authorized to incur SRF Loans from the State Water Resources Control Board or WIFIA Loans from the U.S. Environmental Protection Agency at such time, in such amounts, and upon such other terms and conditions as the Commission may deem advantageous. The Commission is hereby further authorized to determine the timing, amount and manner of sale (i.e., competitive or negotiated) of each series of Wastewater Revenue Bonds, commercial paper, revolving credit notes, or bond anticipation notes pursuant to this authorization; provided however, the Commission's authorization to issue Wastewater Revenue Bonds or incur other forms of indebtedness (including SRF Loans, WIFIA Loans, bond anticipation notes, commercial paper or revolving credit notes) is subject to approval by the Commission of the form of substantially final offering document related to such obligations (if any) and the approval of any related agreements, financing documents and the filing with its Board and the Clerk of the Board any certifications required by Proposition E prior to the issuance of any bonds or the incurrence of any indebtedness herein authorized. The Commission shall also file, within 30 days of any bond sale authorized hereby, with the Clerk of the Board of Supervisors a report showing the results of the sale of Water Revenue Bonds, SRF Loans or other form of indebtedness including (i) principal amount sold and method of sale, (ii) true interest cost, (iii) final maturity, (iv) the facilities constructed and/or improved, and (v) a statement about the remaining bonding authorization under this Ordinance (the "Report"); provided however that failure to file the Report shall not affect the validity of any bonds authorized hereunder.

Section 3. Authorization to Issue Wastewater Revenue Refunding Bonds. The Board further authorizes and approves the issuance by the Commission of Wastewater Revenue Refunding Bonds (the "Refunding Bonds") to refund any outstanding obligations of the Wastewater Enterprise, without limitation as to principal amount, in one or more series on one or more dates, at a maximum interest rate or rates of interest not to exceed twelve percent (12%) per annum, provided that each such Refunding Bond issue is permitted under the applicable policies and procedures of the Commission and authorized by Section 9.109 of the Charter (including related ordinances and resolutions of the Board). The Refunding Bonds may be issued as tax-exempt or taxable obligations, or any combination thereof. Refunding Bonds authorized hereunder shall be subject to the further following conditions, that: (i) three percent (3%) net present value debt service savings or greater is achieved to ensure ratepayer savings (exclusive of any issuance to refund commercial paper or bond anticipation notes); (ii) that the maturity of the refunded bonds is not extended; (iii) this authorization is subject to a 2-year term through June 30, 2020, at which time this Board may consider an extension; principal payments and term may be adjusted, where permitted under federal and state tax law, only if and when the underlying capital asset funded through said refunded bonds has a useful life not in excess of any limit permitted under federal and state tax law than the refunded term; and (iv) the Commission shall within 30 days of any executed refunding transaction provide a savings report prepared by its financial advisors (that reflects at least a three percent (3%) net present value debt service savings) to the Board, together with a copy of the final Official Statement (if any) with respect to such series of Refunding Bonds; provided that the failure to deliver such report shall in no way affect the validity of any Refunding Bonds. Notwithstanding the foregoing, the Commission is authorized to issue Refunding Bonds for non-economic factors, including by way of illustration, eliminating onerous covenants and obsolete provisions contained in the Commission's indenture or other

security documents. The Commission shall request a waiver of the savings requirement for any Refunding Bonds issued for non-economic reasons.

Section 4. Declaration of Official Intent. The Board, on behalf of the Commission, hereby declares the official intent of the Commission to reimburse the Commission with proceeds of the Wastewater Revenue Bonds or other forms of indebtedness (including SRF Loans, WIFIA Loans, bond anticipation notes or commercial paper) for the Expenditures with respect to the Capital Improvement Projects made on and after a date that is no more than 60 days prior to the adoption of this Ordinance. The Commission reasonably expects on the date hereof that it will reimburse the Expenditures with proceeds of the Wastewater Revenue Bonds or other forms of indebtedness (including SRF Loans, WIFIA Loans, bond anticipation notes or commercial paper). Each said Expenditure was and will be either (A) of a type properly chargeable to a capital account under general federal income tax principles (determined in each case as of the date of the Expenditure), (B) a cost of issuance with respect to such obligations , (C) a nonrecurring item that is not customarily payable from current revenues, or (D) a grant to pay a party that is not related to or an agent of the issuer so long as such grant does not impose any obligation or condition (directly or indirectly) to repay any amount to or for the benefit of the Commission. The Commission will make a reimbursement allocation, which is a written allocation by the Issuer that evidences the Commission's use of proceeds of the Wastewater Revenue Bonds or other forms of indebtedness to reimburse an Expenditure, no later than 18 months after the later of the date on which the Expenditure is paid or the component of the Capital Improvement Projects is placed in service or abandoned, but in no event more than three years after the date on which the Expenditure is paid. The Commission recognizes that exceptions are available for certain "preliminary expenditures," costs of issuance, certain de minimis amounts, expenditures by

"small issuers" (based on the year of issuance and not the year of expenditure) and expenditures for construction projects of at least 5 years.

Section 5. General Authority. The Controller, Treasurer, the City Attorney and other officers of the City, including the Director of the Office of Public Finance, and their duly authorized deputies and agents are hereby authorized and directed, jointly and severally, to take such actions and to execute and deliver such certificates, agreements, requests or other documents, as they may deem necessary or desirable to facilitate the issuance, sale and delivery of the Wastewater Revenue Bonds, SRF Loans, WIFIA Loans, bond anticipation notes, commercial paper or Refunding Bonds, to obtain bond insurance or other credit or liquidity enhancements with respect to any such obligations, and otherwise to carry out the provisions of this Ordinance. The Commission is hereby directed to provide the final form to the Clerk of the Board of any disclosure document (if any) prepared in connection with the execution of any Wastewater Revenue Bonds, SRF Loans, WIFIA Loans, bond anticipation notes, commercial paper or Refunding Bonds, and the final executed Installment Sale Agreement or other document reflecting the incurrence of an SRF Loan or a WIFIA Loan, within 30 days of the closing of such transactions; provided however that failure to provide such report shall not affect the validity of the obligations authorized hereunder.

Section 6. Ratification of Prior Actions. All actions authorized and directed by this Ordinance in connection with the issuance of the Wastewater Revenue Bonds or other forms of indebtedness (including SRF Loans, WIFIA Loans, bond anticipation notes or commercial paper), Refunding Bonds, and heretofore taken are hereby ratified, approved and confirmed by this Board.

Section 7. File Documents. All documents referred to as on file with the Clerk of the Board are in File Nos. _____.

Section 8. Effective Date. Pursuant to Charter Section 8B.124, this Ordinance shall take effect thirty (30) days after its adoption.

APPROVED AS TO FORM:
DENNIS J. HERRERA, City Attorney

By: _____
Mark D. Blake
Deputy City Attorney