



DISCUSSION ITEM

Agenda Item # 8

AGENDA REPORT SUMMARY

Meeting Date: May 26, 2020

Subject: Regional Water Quality Control Plant (RWQCP) Long Range Facilities Plan Update

Prepared by: James Allen, Palo Alto RWQC Plant Manager

Reviewed by: Jim Sandoval, Engineering Services Director
Aida Fairman, Engineering Services Manager

Approved by: Chris Jordan, City Manager

Attachment:

1. Los Altos Study Session: Information Packet (Study Session Presentation Slides)

Initiated by:

Staff

Previous Council Consideration:

June 26, 2012

Fiscal Impact:

The RWQCP capital projects require over \$200 million of capital expenditures over a forty-year period. All service partners will share in the costs proportionately over the long-term. Individual projects will be brought to Los Altos Council.

Environmental Review:

Not applicable

Summary:

- The RWQCP provides wastewater treatment services for Los Altos The RWQCP facilities are aging and in need of replacement or rehabilitation
- The RWQCP has sequenced capital projects to address facility needs while spreading out costs and considering construction scheduling

Staff Recommendation:

Receive oral presentation from the City of Palo Alto regarding the Regional Water Quality Control Plant Long Range Facilities Plan and associated major capital projects for informational purposes

Reviewed By:

City Manager

CJ

City Attorney

JH

Finance Director

SE



Subject: Regional Water Quality Control Plant (RWQCP) Long Range Facilities Plan Update

Purpose

This informational update is being presented in conjunction with Council consideration of an amendment to the Basic Agreement between the City of Palo Alto, City of Mountain View, and City of Los Altos for the Acquisition, Construction and Maintenance of a Joint Sewer System.

Background

The Palo Alto Regional Water Quality Control Plant (RWQCP) provides wastewater treatment services for the cities of Palo Alto, Mountain View, Los Altos; Town of Los Altos Hills, East Palo Alto Sanitary District, and Stanford University. The RWQCP was originally constructed in 1934. In 2012, the RWQCP Long Range Facilities Plan (LRFP) was prepared to provide a plan for future capital improvement program projects, addressing aging equipment and increasing regulatory requirements. The primary recommendation of the LRFP was to rehabilitate and replace existing facilities nearing the end of their useful life.

Discussion/Analysis

RWQCP facilities that have been replaced recently or which are planned for rehabilitation or replacement in the next five years include interceptor, headworks, primary treatment, secondary treatment, disinfection, outfall, recycled water, solids handling and treatment, and support facilities. Implementation of projects addressing these facilities has sequenced to spread the cost and to facilitate construction scheduling.

The UV Disinfection Facility and Sludge Dewatering and Loadout Facility were the first of the RWQCP's several decades old facilities to be upgraded. The UV Disinfection Facility, which was a recommendation of the RWQCP Long Term Goals Study that predated the LRFP, was completed in 2009 and replaced the previous chlorine gas disinfection system. The Sludge Dewatering and Loadout Facility was completed in 2019 and allowed for retirement of the RWQCP's incinerators. Finding alternatives to the solids incineration process was a key component of the LRFP.

The Primary Sedimentation Tank Rehabilitation and Outfall Pipeline are the next two major capital projects scheduled for construction. Both projects address infrastructure near the end of its useful life. The design of both projects are complete, and the RWQCP plans to solicit bids this spring. The Secondary Treatment Process Upgrade and Operations Center & Laboratory are both in the design phase and anticipated to be ready for construction in 2022.



Subject: Regional Water Quality Control Plant (RWQCP) Long Range Facilities Plan Update

The Advanced Water Purification System, Headworks Facility Replacement, and 72-Inch Joint Interceptor Sewer are the next projects slated for design.

The projects discussed here cover the largest cost projects recommended in the LRFP.

Recommendation

Receive oral presentation from the City of Palo Alto regarding the Regional Water Quality Control Plant Long Range Facilities Plan and associated major capital projects for informational purposes.

RWQCP Long Range Facilities Plan Update

Los Altos Study Session

May 26, 2020

Overview

- WHAT is the Plan?
- WHAT has been accomplished?
- WHAT will we do NEXT ?

Overhead of RWQCP



Google Earth



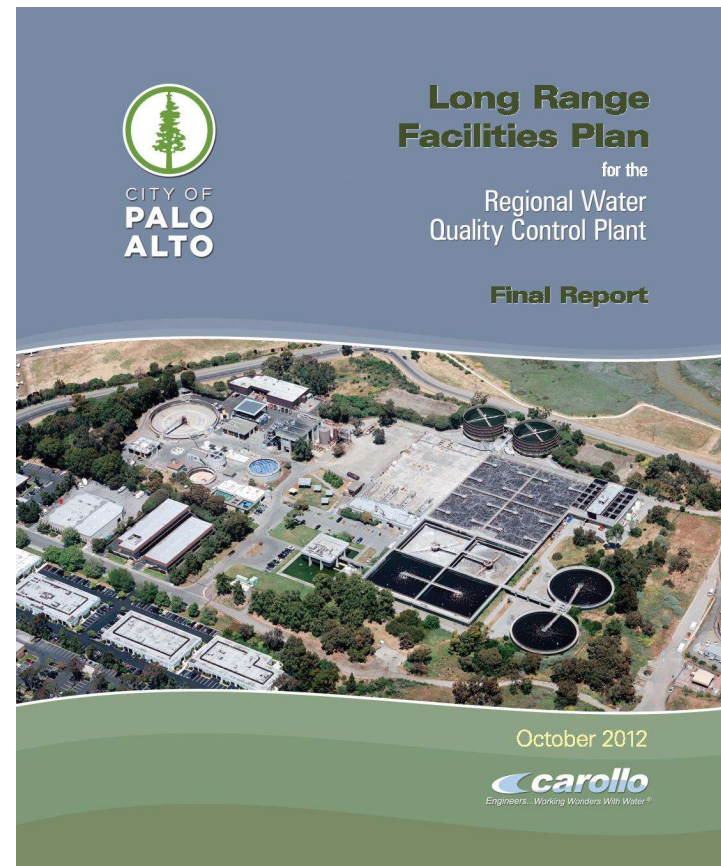
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PALO ALTO

RWQCP Service Area



Long Range Facilities Plan

- Completed in 2012
- First comprehensive plan for plant since 1966
- Plant originally constructed in 1934
- 2006 Facility Condition Assessment determined facilities though well maintained are nearing end of useful life
- Provides a plan for future capital improvement projects
- Recommends rehabilitation and replacement of facilities nearing end of useful life



RWQCP Facilities

- Joint Interceptor and Metering Station
- Influent Junction Box and Septage
- Headworks
- Primary Treatment
- Secondary Treatment
- Tertiary Treatment
- Disinfection
- Outfall
- Recycled Water
- Solids Treatment and Handling
- Utility Systems
- Buildings

Major Capital Projects

Project	Facility Addressed	Phase
Ultraviolet Disinfection Facility	Disinfection	Constructed
Biosolids and Sludge Dewatering Loadout Facility	Solids Treatment and Handling	Constructed
Primary Sedimentation Tank Rehabilitation	Primary Treatment	Design Complete
Outfall Pipeline	Outfall	Design Complete
Secondary Treatment Process Upgrade	Secondary Treatment	In Design
Operation Center & Laboratory	Buildings	In Design
Advanced Water Purification System	Recycled Water	In Design
Headworks Facility Replacement	Headworks	Planning
72-Inch Joint Interceptor Sewer	Interceptor	Planning

Minor Capital Projects

Project	Facility Addressed	Phase
Metering Station Upgrade	Metering Station	Complete
Old Pumping Plant Rehabilitation	Headworks	Complete
12kV Electrical Rehabilitation	Utility Systems	Design

Bonds/Loans (\$ Millions)

Project	Bonds/ Loans Issued	Cost	Los Altos Share	Other Partners' Share
Ultraviolet Disinfection Facility	2009	9	0.9	8.1
Biosolids and Sludge Dewatering Loadout Facility	2017	30*	2.8	27.2
Primary Sedimentation Tank Rehabilitation	2020	17	1.6	15.4
Outfall Pipeline	2020	12	1.1	10.9
Secondary Treatment Process Upgrade	2022	30**	2.8	27.2
Operation Center & Laboratory	2022	22**	2.1	19.9
Advanced Water Purification System	2021	23**	0	23.0
Headworks Facility Replacement	2024	39**	3.7	35.3
72-Inch Joint Interceptor Sewer	2024	31**	2.9	28.1
		213	18	195

Financing Recommendations

- CWSRF Loan
 - Primary Sedimentation Tank (Design & Construction)
 - Outfall Pipeline Construction (Construction)
- Prepare to issue utility revenue bond & apply for SRF loans concurrently
 - Secondary Treatment Upgrades (Design & Construction)
 - Operation Center & Laboratory (Design & Construction)
- Future SRF loan
 - Advanced Water Purification Facility
 - Headworks Facility Replacement
 - 72-Inch Joint Interceptor Sewer

Clean Water State Revolving Fund (SRF) Program

- Offers below-market interest rates
 - Rates in last two years ranged between 1.3% to 1.9%
 - Current rate 1.4%
 - Rate locked when agreement is finalized
- 30-year term
- SRF FY2019-20 Fundable List
 - Outfall Project
 - Primary Sedimentation Tank Project

Next Steps

1. Partner Approval of SRF Loan for Primary Sedimentation Tank Rehabilitation and Outfall Pipeline
2. Completion of Design for Secondary and Ops
3. Initiation of Design for Advanced Water Purification System and Headworks Facility Replacement
4. Investigation of 72-Inch Joint Interceptor Sewer

RWQCP Long Range Facilities Plan

Los Altos Study Session

May 26, 2020

FINAL SLIDE

Project Backup

Ultraviolet Disinfection Facility

- Constructed
- Addressed health and safety and environmental concerns
- Replaced disinfection system
- \$9 million



Biosolids and Sludge Dewatering Loadout Facility

- Constructed
- Addressed aging infrastructure
 - Incinerators at end of useful life
- Replaced solids treatment process
 - Allowed for retirement of incinerators
 - Avoided increasingly stringent air emissions regulations for combustion facilities
 - Mitigated climate change: incinerators produced ~3,000 metric tons CO₂ equivalent per year
- \$30 million
 - \$4 million of cost offset by Green Project Reserve loan forgiveness



Primary Sedimentation Tank Rehabilitation

- Shovel ready
- Addresses aging infrastructure
 - Coatings on interior of concrete structures failing
 - Aging equipment is costly to maintain and has led to partial process outages
- Provides opportunity to install more energy efficient equipment
- Rehabilitation of concrete structure
- Replacement and upgrade of mechanical and electrical equipment
- \$17 million



Outfall Pipeline

- Shovel ready
- Addresses aging infrastructure
 - Joints of existing pipeline failing
- Adapts to sea level rise
 - Decreased discharge capacity due to increasing sea level
 - Will accommodate additional 3 feet of sea level rise
- Rehabilitation of existing 54-inch outfall pipeline
- Construction of new 63-inch pipeline
- \$12 million



Secondary Treatment Process Upgrade

- Design underway
- Addresses aging infrastructure
 - Structure and media within fixed film reactors beyond useful life
- Maintains compliance with effluent discharge permit
- Establishes path toward future nutrient regulatory requirements
- Decommissioning of fixed film reactor towers
- Conversion of secondary treatment process
- \$30 million (initial planning estimate)



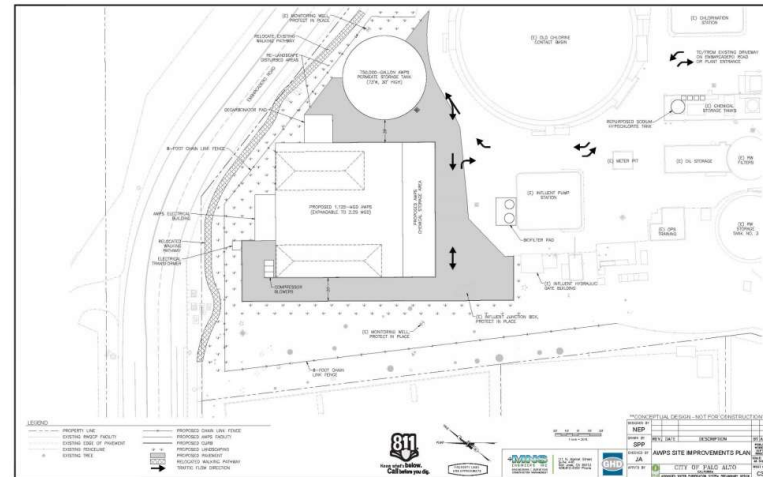
Operation Center & Laboratory

- Design underway
- Addresses outdated facilities
 - Administration building at end of useful life
 - Laboratory is outdated
- Provides space to facilitate recycled water infrastructure improvements
- Enhances collaboration by collocating staff
- Provides secure point of entry for the public
- Construction of a LEED silver certified building and state accredited laboratory
- \$22 million (initial planning estimate)



Advanced Water Purification System

- Conceptual design completed
- Final design anticipated to begin 2020
- Reduces salinity of recycled water to increase recycled water use
- Construction of 1.125 MGD facility with option to expand to 2.25 MGD
- \$23 million (initial planning estimate)



Headworks Facility Replacement

- Preliminary planning phase
- Design anticipated to begin 2021
- Addresses aging infrastructure
 - Equipment nearing end of useful life
- Construct new headworks to replace and co-locate bar screens, old and new pumping plant, and grit facility
- \$39 million (conceptual cost from LRFP)

72-Inch Joint Interceptor Sewer

- Preliminary planning phase
- Condition assessment to be performed in 2020
- Addresses aging infrastructure and capacity
 - Corroded pipes and structures
 - Appears to have inadequate capacity under peak wet weather condition
- \$31 million (conceptual cost from LRFP)

RWQCP Facilities

- Joint Interceptor and Metering Station
- Influent Junction Box and Septage
- Headworks
 - New and Old Pumping Plant
 - Preliminary Treatment
- Primary Treatment
- Secondary Treatment
- Tertiary Treatment
- Disinfection
- Outfall
- Recycled Water
- Solids Treatment and Handling
- Utility Systems
- Buildings



Funding Backup

SRF Update

Project	Status
UV Disinfection Facility	<ul style="list-style-type: none"> • Loan repayment
Solids Dewatering and Loadout	<ul style="list-style-type: none"> • Project Closeout Phase
Primary Rehabilitation	<ul style="list-style-type: none"> • Listed on SRF Intended Use Plan for funding in FY19/20 • Application is currently under State Review • Partners' Agreement needed
Outfall Pipeline	<ul style="list-style-type: none"> • Listed on SRF Intended Use Plan for funding in FY19/20 • Application is currently under State Review • Partners' Agreement needed
Secondary Process Upgrade	<ul style="list-style-type: none"> • Plan to submit in SRF application end of year 2020 (targeting FY21/22 Intended Use Plan)
RWQCP Operations Building	<ul style="list-style-type: none"> • If allowed under SRF, schedule would be similar to Secondary Process Upgrade
Advanced Water Purification System	<ul style="list-style-type: none"> • SRF application submitted 2019 • Currently reviewing scoring with State

SRF Update (continued)

Project	Status
Advanced Water Purification Facility	<ul style="list-style-type: none">• SRF application submitted 2019• Currently reviewing scoring with State
Headworks Facility Replacement	<ul style="list-style-type: none">• Plan to submit SRF application in 2021 (targeting FY22/23 Intended Use Plan)
72-inch Interceptor	<ul style="list-style-type: none">• Plan to submit SRF application in 2021 (targeting FY22/23 Intended Use Plan)



DISCUSSION ITEM

Agenda Item # 8

AGENDA REPORT SUMMARY

Meeting Date: May 26, 2020

Subject: Contract Amendment: Palo Alto Regional Water Quality Control Plant Upgrades (Outfall Pipeline and Primary Sedimentation Tank Rehabilitation Projects)

Prepared by: Aida Fairman, Engineering Services Manager

Reviewed by: James Sandoval, Engineering Services Director

Approved by: Chris Jordan, City Manager

Attachments:

None

Initiated by:

Palo Alto Regional Water Quality Control Plant (RWQCP) Long-Range Facilities Plan

Previous Council Consideration:

June 26, 2012 – RWQCP Long-Range Facilities Plan

Fiscal Impact:

The total overall estimated maximum cost of the rehabilitation of the outfall pipeline and the primary sedimentation tank project is \$29 million. A breakdown of the overall cost is shown in the table below.

Phase/Category	Outfall	Primary Sedimentation Tank
Design	n/a ¹	\$965,000
Construction	\$10,740,000	\$14,635,000
Construction Management	\$840,000	\$1,400,000
Program Administration	\$420,000	n/a ²
Total	\$12,000,000	\$17,000,000

¹Not intending to debt finance design costs for Outfall project

²Not seeking financing for the administration of Primary Sedimentation Tank

Reviewed By:

City Manager

CJ

City Attorney

JH

Finance Director

SE



Subject: Contract Amendment: Palo Alto Regional Water Quality Control Plant Upgrades (Outfall Pipeline and Primary Sedimentation Tank Rehabilitation Projects)

The projects will be financed through the federal-state State Revolving Fund program. Assuming an estimated maximum cost of \$29 million, an interest rate of 1.6 percent and a 30-year loan with repayments beginning the year after project completion, the estimated annual loan payment for Los Altos is \$115,981.31. The breakdown of partner agency annual contributions is shown in the table below. Annual payments begin approximately December 2023 and sunset approximately December 2052.

Partner Agency	Agency Share	Estimated Annual Payment
Palo Alto	38.16%	\$467,354.45
Mountain View	37.89%	\$464,047.70
Los Altos	9.47%	\$115,981.31
East Palo Alto Sanitary District	7.64%	\$93,568.87
Stanford University	5.26%	\$64,420.45
Los Altos Hills	1.58%	\$19,350.63

Environmental Review:

The City of Palo Alto performed an environmental review for the Outfall Project under provisions of the California Environmental Quality Act (CEQA). An Initial Study/Mitigated Negative Declaration was prepared for the project, and Palo Alto City Council approved the environmental documentation on May 21, 2018.

The Primary Sedimentation Tank Project was determined to be categorically exempt under CEQA. The City of Palo Alto filed a Notice of Exemption for the project on October 31, 2018.

Approval of the addendum and amendments to the partner agencies' agreements are not actions that require CEQA review.

Policy Question(s) for Council Consideration:

None

Summary:

- The Outfall Pipeline Project addresses aging infrastructure capacity limitations and sea-level rise
- The Primary Sedimentation Tank Rehabilitation Project addresses aging infrastructure

Staff Recommendation:

Authorize the City Manager to execute an amendment with the City of Palo Alto for the Outfall Pipeline and the Primary Sedimentation Tank Rehabilitation Projects on behalf of the City of Los Altos



Subject: Contract Amendment: Palo Alto Regional Water Quality Control Plant Upgrades (Outfall Pipeline and Primary Sedimentation Tank Rehabilitation Projects)

Purpose

Authorize the City Manager to execute an amendment with the City of Palo Alto for the Outfall Pipeline and the Primary Sedimentation Tank Rehabilitation Projects on behalf of the City of Los Altos.

Background

The Palo Alto Regional Water Quality Control Plant (RWQCP) provides wastewater treatment services for the cities of Palo Alto, Mountain View, Los Altos, Town of Los Altos Hills, East Palo Alto Sanitary District, and Stanford University. The RWQCP was originally constructed in 1934. The City of Los Altos initially entered into an agreement with the Cities of Palo Alto and Mountain View in 1968 for the construction and maintenance of a joint sewer system. The agreement has been amended over the years and costs for projects to upgrade the RWQCP have been shared proportionally by the various parties.

In 2012, the RWQCP Long-Range Facilities Plan (LRFP) was prepared to provide a plan for future capital improvement program projects--addressing aging equipment and increasing regulatory requirements. The major recommendation of the LRFP was to rehabilitate and replace existing facilities nearing the end of their useful life. The Outfall Pipeline and Primary Sedimentation Tank Rehabilitation Projects are recommended elements of the LRFP.

The State Water Resources Control Board (SWRCB) administers the State Revolving Fund (SRF) program. The program is a federal-state partnership that provides communities a permanent, independent source of below-market interest rates with 30-year financing for a wide range of water quality infrastructure projects. These favorable terms help lower total project costs, minimizing the financial impacts of projects on ratepayers.

The SRF program has a fixed amount of funds available each fiscal year. Applications are scored in accordance with criteria in the Clean Water SRF Policy. Each fiscal year projects above a recommended cut-off score are added to the SRF Fundable List, which indicates that the project may be funded if the applicant meets all eligibility requirements. The RWQCP Outfall and Primary Sedimentation Tank projects were placed on the SRF Fundable List for fiscal year 2019-20.

The RWQCP has previously obtained SRF loans for projects such as the Sludge Dewatering and Truck Loadout Facility, the UV Disinfection Facility, and the Recycled Water Pipeline.

Discussion/Analysis

The Outfall Project addresses aging infrastructure, capacity limitations, and sea-level rise mitigation. Outfall pipes discharge all treated wastewater to receiving waters (i.e., South San Francisco Bay). Over the last decade, the existing 54-inch-diameter concrete outfall pipe has been subject to temporary repairs to fix leaks where its aging joints had failed. When a joint fails, fully treated effluent leaks into



Subject: Contract Amendment: Palo Alto Regional Water Quality Control Plant Upgrades (Outfall Pipeline and Primary Sedimentation Tank Rehabilitation Projects)

subsurface soils instead of being discharged to the Bay. Additionally, with increasing sea level and pipe capacity limitations at certain tides, the pipelines are unable to convey the RWQCP's design peak wet weather flow of 80 million gallons per day (mgd). The project will rehabilitate the existing 54-inch outfall pipeline to address the leaks. The project will install a new 63-inch pipeline to address capacity limitations. Assuming an additional three feet of sea-level rise, the rehabilitated outfall and new pipeline will maintain sufficient capacity to convey the peak wet weather flow of 80 mgd for 50 years.

The Primary Sedimentation Tank Rehabilitation Project addresses aging infrastructure. The primary sedimentation tanks are four in number, each 220 feet long by 41 feet wide by 14 feet deep, and covered with a concrete slab. The purpose of these tanks is to remove the majority of the settleable solids. Removal of the settleable solids from the wastewater reduces the organic loading on the secondary treatment process. Electrical gear associated with the primary sedimentation tanks installed in 1972 distributes electrical power to the sludge pumping and sludge collection equipment. Periodically, failures of aged equipment have led to partial process outages and associated expedited repairs and expensive maintenance. The project will rehabilitate the primary sedimentation tank structure and upgrade the associated mechanical and electrical equipment.

Assuming an estimated maximum cost of \$29 million, an interest rate of 1.6 percent, and a 30-year loan with repayments beginning the year after project completion, the Partners' annual loan payments will be as shown on the second table under "Fiscal Impact" on page 1 of this report. For Los Altos, the estimated payment is \$115,981.31 annually for 30 years. Annual payments begin approximately December 2023 with final payment approximately December 2052.

Options

- 1) Approve the execution of the Amendment for the City of Palo Alto's Outfall Pipeline and Primary Sedimentation Tank Rehabilitation Projects.

Advantages: The rehabilitation of the aging infrastructure will ensure that the RQWCP is working adequately.

Disadvantages: None

- 2) Don't approve the execution of the Amendment for the City of Palo Alto's Outfall Pipeline and Primary Sedimentation Tank Rehabilitation Projects.

Advantages: None

Disadvantages: The Palo Alto RWQCP aging infrastructure will not be able to function as needed.



Subject: Contract Amendment: Palo Alto Regional Water Quality Control Plant Upgrades
(Outfall Pipeline and Primary Sedimentation Tank Rehabilitation Projects)

Recommendation

The staff recommends Option 1.