



DATE: May 8, 2018

TO: Mayor and City Council

FROM: Director of Utilities & Environmental Services

SUBJECT Recycled Water Treatment Facility Project Phase I: Approval of Plans and Specifications and Call for Bids for Procurement of Membrane Treatment System Equipment

RECOMMENDATION

That Council adopts the attached resolution approving the plans and specifications for the procurement of membrane treatment system equipment for the Recycled Water Treatment Facility Project Phase I and calling for bids to be received on June 19, 2018.

SUMMARY

The City is implementing the Recycled Water Storage and Distribution System Project (Recycled Water Project), which will provide a locally sustainable and drought-proof supply of recycled water to customers for irrigation and industrial uses. In December 2017, Council authorized staff to proceed with design of a City-owned recycled water treatment facility to ensure sufficient recycled water supplies are available to meet the demand for the first phase of the City's Recycled Water Project. The proposed City-owned recycled water treatment facility will be a package membrane treatment system capable of producing up to 500,000 gallons per day of disinfected tertiary treated recycled water. A typical approach for designing a package membrane treatment system is to pre-select the membrane system supplier so final design documents can be prepared for installing the selected system equipment. This approach reduces time and the risk of change orders during construction.

BACKGROUND

The City's Recycled Water Storage and Distribution System Project (Recycled Water Project) consists of constructing a storage tank and pump station at the City's Water Pollution Control Facility (WPCF) and installing distribution pipelines and customer connections to deliver recycled water to customers for irrigation and industrial uses. The initial phase of the project includes installation of approximately nine miles of distribution pipelines and is anticipated to deliver an estimated 290 acre-feet per year, or about 260,000 gallons per day (gpd), of disinfected tertiary treated recycled water for parks, schools, businesses and industrial parks within a three-mile radius of the WPCF. Once the initial distribution pipelines and storage system are constructed, there may be opportunities to expand the system and include more customers in future phases.

Until recently, the provision for a recycled water treatment facility had not been included in the project planning as staff anticipated obtaining recycled water from the Russell City Energy Corporation, LLC's (RCEC) Recycled Water Facility, located adjacent to the WPCF. However, due to concerns that a supply agreement cannot be implemented with RCEC in a timely manner, on December 12, 2017, Council authorized staff to move forward, in parallel, with design of a City-owned, 500,000 gpd recycled water treatment facility to meet the demand of the first phase of the City's project. Funding for the installation of a City-owned recycled water treatment facility for Phase I of the Recycled Water Project is included as a separate project in the ten-year Capital Improvement Program. Additional background and discussion on the two recycled water supply options can be found in the December 12, 2017 staff report at the following link: <http://bit.ly/2HebfPK>.

The Phase I recycled water treatment facility would supply the initial phase of the Recycled Water Project and could potentially be expanded to meet the City's near-term recycled water demands. The City's long-term plans anticipate delivering significantly greater quantities of recycled water in the future. Staff plans to update the Recycled Water Facilities Plan in 2019 to serve as a guide for implementing future phases of the City's recycled water program. The study would look at expanding the recycled water distribution system to serve additional users. It would also evaluate a range of long-term recycled water supply options to meet the City's future buildout recycled water demands, including construction of a conventional recycled water treatment plant.

The proposed Phase I City-owned recycled water treatment facility would be a package membrane treatment system, capable of producing up to 500,000 gpd of disinfected tertiary treated recycled water for the initial phase of the City's Recycled Water Project. The treatment facility would be sited at the WPCF, adjacent to the future recycled water storage tank and pump station, and consist of a feed pump station, a containerized membrane treatment system, and chlorine disinfection. Package membrane treatment systems are reliable, expandable, and can be installed in a relatively short time-frame of about nine months. Given their versatility and reliability, package membrane treatment systems are at times employed in situations where water treatment may be needed on a temporary basis such as when the permanent treatment system may be malfunctioning and needs to be taken out of service for repairs and upgrades.

On December 12, 2017, Council approved Resolution 17-190, authorizing the City to enter into a Professional Services Agreement with HydroScience Engineers, Inc. for engineering services related to design of a recycled water package membrane treatment system.

DISCUSSION

Staff anticipates completing final design of the City-owned recycled water treatment facility in late 2018. Since December 2017, there has been no additional progress made towards finalizing a supply agreement with RCEC. Even if a supply agreement can be executed with RCEC in the next few months, implementation of the agreement is still conditioned upon RCEC's ability to obtain all necessary permit approvals to supply recycled water to the City,

including approval from the California Energy Commission, which could be a lengthy process. At this point, staff believes that it is unlikely that the option to obtain recycled water from RCEC can be implemented for the initial phase of the City's Recycled Water Project.

A typical approach for designing a package membrane treatment system is to pre-select the membrane system supplier so final design documents can be prepared for installing the selected membrane treatment system equipment. This approach reduces time and the risk of change orders during construction. Staff has worked with a consultant to prepare bid documents to procure the membrane treatment system equipment.

Although the procurement of membrane treatment system equipment is not subject to the requirements of the City's Community Workforce Agreement (CWA), the CWA requirements will be included in the bid package being prepared for installation of the membrane treatment system equipment.

Membrane Treatment System Equipment

The bid documents include procurement of a 500,000 gpd package membrane treatment system that will be pre-assembled within a shipping container. All components of the membrane treatment system will be designed, coordinated, and supplied by a single membrane system manufacturer or supplier. The bid package also includes procurement of chemical storage tanks and feed pumps that will be located adjacent to the container and interconnecting piping and a pipe rack to be installed between the storage tanks and containerized membrane system.

The specifications require the membrane system supplier to meet minimum qualifications. These minimum qualifications include (1) being licensed to build membrane systems utilizing membranes specified by the City as proven to be effective for treating wastewater effluent with characteristics similar to the City's wastewater effluent and (2) having demonstrated experience designing, fabricating, and furnishing a membrane system that has been successfully operating for at least two years.

The specifications require work to be completed in two stages. The first stage includes engineering services for the membrane system supplier to provide technical information and drawings needed for the City to complete final design of the recycled water treatment facility. The second stage includes fabrication and furnishing of the membrane treatment system equipment. The City's intent is to include the membrane treatment system equipment contract in the bid package being prepared for construction of the recycled water treatment facility and require the General Contractor to purchase and install the membrane treatment system equipment as part of their contract. Notice to commence fabrication on the containerized membrane treatment system would be dependent on and not occur until Council has approved a contract to construct the City-owned recycled water treatment facility.

Schedule

Development of technical information and drawings by the selected membrane system supplier is anticipated to take approximately two months after Notice to Proceed is issued. The detailed piping layouts will be incorporated into the design drawings for the recycled water treatment facility and the bid package for construction of the recycled water treatment facility could be ready to be advertised by late 2018. Fabrication of the membrane treatment system equipment is anticipated to take eight months. The current schedule shows that construction of the City-owned recycled water treatment facility could be completed and operational by the end of 2019. This schedule matches the schedule for construction of the recycled water storage and distribution system.

ECONOMIC IMPACT

The economic impact of the Recycled Water Project on customers will depend on the total costs to implement the City's Recycled Water Project. These costs include the capital and operating costs for the storage and distribution system and the costs to either obtain recycled water from RCEC or construct, operate, and maintain a City-owned recycled water treatment facility. Over a twenty-year period, the costs to obtain recycled water from RCEC and the City-owned recycled water treatment facility are estimated to be roughly the same. To the extent that the project is partially funded by grants, the overall cost impact to customers will be reduced. Once the costs are finalized and funding sources are in place, staff will recommend a rate structure that provides a balance between recovering costs over the life of the project and offering an incentive to customers who are able to receive recycled water. The community will benefit from this project by having diversity and reliability of water supplies, especially during periods of drought.

FISCAL IMPACT

The total estimated costs for Phase I of the Recycled Water Treatment Facility Project are as follows:

Design and Engineering Services – Consultant	\$ 296,000
Membrane Treatment System Equipment Contract (estimate)	
Stage I – Engineering Services	\$ 80,000
Stage II – Fabrication	\$1,247,000
<i>Subtotal</i>	<u><i>\$1,327,000</i></u>
Construction Contract (estimate)	\$1,388,000
Construction Management and Inspection – City Staff (estimate)	<u>\$ 100,000</u>
	\$3,111,000

The estimate for procurement of the membrane treatment system equipment is \$1,327,000, which includes a 30 percent contingency to reflect the current bidding climate that has been affected by local and national disasters that have increased the demand for raw materials and labor. The preliminary estimate to install the membrane treatment system equipment and complete construction of the City-owned recycled water treatment facility is \$1,388,000. Expected accuracy for a preliminary design stage estimate typically ranges from 30 percent below or above the actual cost.

The proposed FY 2019 Capital Improvement Program (CIP) includes \$2.3 million for the construction of the City-owned recycled water treatment facility. The extent of any funding shortfall will be determined after construction bids are received for the project in early 2019. If additional monies are needed, staff will ask Council to consider the increased funding in the Water Improvement and Sewer Improvement Funds. Implementation of the City-owned recycled water treatment facility option will not utilize any General Fund.

STRATEGIC INITIATIVES

Implementation of the Recycled Water Project supports the Tennyson Corridor Strategic Initiative. The purpose of this initiative is to develop an attractive, cohesive, thriving Tennyson Corridor through thoughtful engagement with residents, businesses and community partnerships. There are two sites located in the Tennyson Corridor that are proposed to be connected to the recycled water system, and would therefore support the following goal and objectives:

Goal 3: Improve Community Appearance

Objective 1: Enhance landscaping

Objective 3: Decrease blight

The use of recycled water will help create attractive outdoor spaces in the Tennyson Corridor. Since recycled water is a sustainable and drought-proof source of supply, customers will be able to maintain their landscaping during water supply shortages when drinking water supplies are limited.

SUSTAINABILITY FEATURES

The use of recycled water will reduce the demand for drinking water and improve the reliability and availability of drinking water, while providing a sustainable and drought-proof water supply for some irrigation uses. It will also reduce the volume of wastewater and associated residual pollutants discharged to San Francisco Bay, which is required to meet increasingly stringent discharge regulations.

PUBLIC CONTACT

The City completed an environmental review of the Recycled Water Project in October 2014 and a draft Initial Study/Mitigated Negative Declaration (IS/MND) was circulated for a thirty-day public review from October 24, 2014 through November 24, 2014. Considering the potential uncertainties with the RCEC option, the IS/MND included environmental review of both obtaining a recycled water supply from RCEC and construction of a City-owned recycled water treatment facility. The IS/MND was adopted on December 16, 2014, incorporating all the comments that were received.

The Council Sustainability Committee was updated on the status of the water supply agreement with RCEC and the City-owned treatment option on May 8, 2017 and November 13, 2017. At both meetings, the Committee expressed support for proceeding with the City-owned recycled water treatment facility option to ensure a supply for the initial phase of the City's Recycled Water Project.

NEXT STEPS

If Council approves the plans and specifications, staff will advertise procurement of the membrane treatment equipment for public bidding. Staff will return to Council for award of the equipment procurement contract after bids have been received and reviewed.

Prepared by: Jan Lee, Water Resources Manager
Feng Chang, Senior Utilities Engineer

Recommended by: Alex Ameri, Director of Utilities & Environmental Services

Approved by:



Kelly McAdoo, City Manager