



DATE: November 18, 2019

CATEGORY: New Business

DEPT.: Public Works

TITLE: **Recycled Water Advanced Treatment and Wastewater Purification Agreement**

RECOMMENDATION

Adopt a Resolution Authorizing the City Manager or His Designee to Enter into a Partnership Agreement with the City of Palo Alto and the Santa Clara Valley Water District to Advance Resilient Water Reuse Programs in Santa Clara County, to be read in title only, further reading waived (Attachment 1 to the Council report).

EXECUTIVE SUMMARY

Staff is recommending approval of a partnership agreement with the City of Palo Alto and the Santa Clara Valley Water District (Valley Water) based on the following considerations:

- The City operates a recycled water system in the North Bayshore Area. The high salinity of the recycled water has been a barrier to increasing consumption due to the impacts on salt-sensitive landscaping. Valley Water will fund \$16 million of the estimated \$20 million cost of a recycled water advanced treatment facility to be constructed in Palo Alto. The new facility will provide high-quality recycled water, suitable for all anticipated nonpotable uses. The City's share of the construction cost is approximately \$3 million and Palo Alto's share is approximately \$1 million.
- Annual payments from Valley Water will offset a portion of the City's cost of operating the recycled water advanced treatment facility.
- Valley Water will receive 9.0 million gallons per day (MGD) of treated wastewater for purification and reuse.

- Increasing water reuse in the County supports the environmental sustainability goals of Mountain View, Palo Alto, and Valley Water and will reduce discharges of fresh water to the San Francisco Bay.
- The City has an adequate supply of potable water for long-term anticipated consumption and will not need the treated wastewater (effluent) being sold to Valley Water.
- The agreement includes an option for the City to secure a new source of water (up to 1.3 MGD) if needed.

BACKGROUND

The Regional Water Quality Control Plant (RWQCP) in Palo Alto provides wastewater treatment services to the City of Palo Alto and plant partner agencies, including the cities of Mountain View and Los Altos; the Town of Los Altos Hills; Stanford University; and the East Palo Alto Sanitary District. The effluent is used as recycled water by Mountain View and Palo Alto and discharged to the Bay. The basic agreement between Palo Alto and the partners details the rights and responsibilities of each agency. In Fiscal Year 2018-19, the City's average wastewater flow to the RWQCP was 7.3 MGD, approximately 38 percent of the total wastewater flow. The City owns its wastewater flowing to the plant and the corresponding effluent.

Recycled Water Supply

In 2009, the cities of Mountain View and Palo Alto completed construction of a recycled water distribution system from the RWQCP to Mountain View's North Bayshore Area. The system supplies recycled water to approximately 50 customers, providing an average of 0.4 MGD for landscape irrigation. The City has a contracted recycled water supply from the RWQCP for a maximum of 3.0 MGD through the year 2060. The City of Palo Alto uses approximately 0.27 MGD and is evaluating their long-term water recycled use plans.

The primary obstacle to increasing use of recycled water is the high level of salinity, which is typically expressed in parts per million (ppm) of total dissolved solids (TDS). Based on detailed analyses and long-term studies, a TDS level of approximately 600 ppm is adequate for use on all types of landscaping, including sensitive species, such as redwood trees. Between 2009 and 2013, the TDS of the City's recycled water ranged from 775 ppm to 1,100 ppm.

From 2013 to 2016, Mountain View, Palo Alto, and the East Palo Alto Sanitary District completed numerous sewer system repairs and rehabilitation and salinity reduction projects to improve the reliability of their wastewater collection systems and improve recycled water quality to a goal of 600 ppm. These efforts reduced TDS to approximately 700 ppm, but TDS levels gradually increased during the drought as decreased potable water consumption reduced wastewater flows to the RWQCP, resulting in a higher TDS concentration due to reduced dilution. Recent TDS levels average 835 ppm.

Advanced Treatment Feasibility Study

Recognizing that it was unlikely the TDS goal of 600 ppm would be met without additional treatment, Mountain View, Palo Alto, and Valley Water funded a feasibility study (completed in 2017) for implementation of the recycled water advanced treatment system. The goals of the study included estimating the cost to construct a treatment facility at the RWQCP designed to produce 1.125 MGD of treated effluent (TDS of 25 ppm to 50 ppm) and the cost to expand the capacity to 2.25 MGD. This highly treated effluent would be blended with recycled water that has not been through advanced treatment with the amount of recycled water produced (and TDS levels) varying based on demand. Staff estimates TDS levels would range from approximately 400 ppm (based on recycled water production of 2.0 MGD) to 550 ppm (based on recycled water production of 3.0 MGD). The blended recycled water would be suitable for uses such as irrigation, building systems (e.g., cooling towers), and toilet flushing.

The updated (2019) estimate for the construction and operating costs of a recycled water advanced treatment system is shown below:

	<u>1.125 MGD</u>	<u>2.25 MGD</u>
Construction Cost	\$20.0 million	\$25.0 million
Annual Operation and Maintenance Cost	\$600,000	\$1.2 million

Based on the current recycled water supply allocation between Palo Alto and Mountain View, the City would pay an estimated 75 percent of construction costs (\$15 million) and operating/maintenance costs (\$450,000), and be entitled to 75 percent of the blended recycled water supply. The City’s cost share will be significantly reduced by Valley Water’s funding contributions.

Valley Water Reuse Goals

To improve water supply reliability within Santa Clara County, Valley Water established an objective to meet at least 10 percent of the County's total water demand through water reuse (includes nonpotable and potable reuse). Valley Water's Water Supply Master Plan includes a goal of developing 24,000 acre-feet per year (approximately 21.4 MGD) of potable water reuse to assist in meeting this objective. Approving the agreement with Mountain View and Palo Alto will secure effluent to meet approximately one-third of the 24,000 acre-feet per year goal.

ANALYSIS

To support the water reuse goals of the three agencies, in 2017, staff began working to develop an agreement through which Valley Water would contribute funding for the construction and operation of a recycled water advanced treatment facility in Palo Alto and acquire effluent from Mountain View, Palo Alto, and other RWQCP partners for potential purification and reuse. Staff has provided updates to their governing bodies through memorandums and committee meetings and discussed the agreement terms with the Valley Water Joint Recycled Water Subcommittee (comprised of three Valley Water Board members and Council members from the cities of Palo Alto, Mountain View, and East Palo Alto). Staff has tentatively agreed on terms that provide benefits to each agency and is seeking approval of a long-term agreement. The Palo Alto City Council will consider final approval of the agreement on November 18, 2019, and the Valley Water Board of Directors will consider final approval on December 10, 2019.

The key terms are:

- **Purification Facility:**

Valley Water will be responsible for all purification facility and conveyance system design and construction costs and will have 13 years from agreement execution to begin accepting effluent. Staff anticipates the facility will be constructed at the RWQCP or other site in the City of Palo Alto.

- **Effluent Supply/Purification Facility:**

The agreement provides Valley Water the right to purchase up to 9.0 MGD of effluent to be used at the purification facility or for other beneficial uses.

- Other Beneficial Uses:

If Valley Water chooses not to build a purification facility, Valley Water will have the option to use the 9.0 MGD of effluent for other beneficial uses. Valley Water will have an additional 10 years (total of 23 years) to identify and initiate these beneficial uses. If Valley Water has not begun using effluent after 23 years, the option to purchase effluent will expire.

- Recycled Water Advanced Treatment Facility Project Funding:

The current estimated design and construction cost of the 1.125 MGD advanced treatment facility in Palo Alto is \$20.0 million. Valley Water will reimburse \$16.0 million of this cost, and Mountain View and Palo Alto will fund the remainder; the City's preliminary estimated cost-share is \$3.0 million. Mountain View and Palo Alto will seek grant funding to offset project costs; any grants received will be allocated to Palo Alto and Mountain View only. If the cost to design and construct the recycled water advanced treatment facility exceeds \$20.0 million, the parties will meet and confer to determine next steps, although Mountain View and Palo Alto will have the option to fund the additional cost at their discretion but will not be required to do so. If Mountain View and Palo Alto do not construct the treatment facility, the \$16.0 million payment may be used to fund recycled water, water reuse, or water conservation projects that are owned and operated by the RWQCP or an RWQCP partner. Funds provided by Valley Water must be expended within 18 years of agreement execution.

If the recycled water advanced treatment facility is constructed, Mountain View and Palo Alto will be required to operate the facility for a minimum of 30 years. The cost allocation between Mountain View and Palo Alto will be finalized through a separate agreement between the two agencies.

- Annual Option Payment:

Through the proposed agreement, Mountain View and Palo Alto would be committing their effluent flows to Valley Water for purification. Following execution of the agreement, Palo Alto staff will begin working with other RWQCP partners to commit their agency's effluent to Valley Water.

To compensate participating RWQCP partners, following execution of the agreement Valley Water will pay \$200,000 (2019 dollars, adjusted annually for inflation) per year. Half of the payment will be allocated to Mountain View and Palo Alto; the remainder will be allocated to other RWQCP partners that agree to

commit their share of the effluent for purification (Mountain View and Palo Alto will receive the share of other partners until participation agreements are in place). Payments will continue until Valley Water begins operating their water purification facility (up to 13 years).

- Effluent Share Payments:

When the Valley Water purification facility begins operation, or after 13 years, Valley Water will pay \$1.0 million (2019 dollars, adjusted annually for inflation) per year to the RWQCP partners that commit their share of the effluent to Valley Water. If Valley Water has not begun to accept effluent deliveries after 13 years, Valley Water will have the option to continue the annual payment for up to 10 additional years. If Valley Water has not begun using the effluent after 23 years, effluent share payments will cease and ownership of the effluent will revert back to the RWQCP and its partners.

- Minimum Supply to Mountain View, Palo Alto, and Valley Water:

Mountain View will be guaranteed a minimum supply of 2.5 MGD of recycled water, Palo Alto will be guaranteed a minimum supply of 1.0 MGD of recycled water, and Valley Water will be guaranteed a minimum supply of 9.0 MGD of effluent through the term of the contract. If there is insufficient supply of effluent to meet these flow obligations, the minimum supplies will be reduced proportionally, up to a 30 percent reduction (minimum recycled water flow of 1.75 MGD for Mountain View); if further reductions are needed, the agencies will meet and confer.

Based on an analysis of recent wastewater flows, staff does not anticipate significant challenges meeting the proposed future recycled water and effluent guarantees. If recycled water flows are insufficient to meet nonpotable demand in Mountain View and Palo Alto, and Valley Water's effluent flow guarantees as a result of droughts or unforeseen water supply shortages, Mountain View and Palo Alto would take steps to reduce all noncritical recycled water use. It is important to note that reduced recycled water flows will not impact the City's potable water supplies.

- New Potable Water Supply:

If the City enters into this agreement, Mountain View's unused RWQCP effluent will be sold to Valley Water for purification and will not be available for other uses. To ensure the City has access to an additional supply of water, Mountain

View will have periodic opportunities to notify Valley Water of the City's need for new potable and/or nonpotable water. Mountain View may request up to 1.3 MGD (approximately 15 percent of the City's current potable water consumption) and Valley Water would develop new supply opportunities. The City would fund the costs of the water and water supply development; water would be available as early as 16 years following the approval of the agreement, depending on the timing of the City's request, and delivery could continue through the agreement term (with possible term extensions). Palo Alto will have a corresponding opportunity to purchase up to 3.0 MGD of potable and/or nonpotable water.

- Term:

The term of the agreement will vary depending on actions taken by the parties.

If Valley Water constructs a purification facility, Valley Water will have rights to the RWQCP effluent for a term of 63 years, resulting in a maximum agreement term of 76 years (63 years, plus 13 years for Valley Water to construct a purification facility).

If Valley Water does not construct a purification facility within 13 years, Valley Water will have an additional 10 years to identify alternative beneficial uses for the RWQCP effluent. If, after 23 years, no alternative uses are identified, and Mountain View and Palo Alto have not constructed a recycled water advanced treatment facility, the agreement will terminate and ownership of the effluent will revert to RWQCP partners.

If Mountain View and Palo Alto construct a recycled water advanced treatment facility, the cities are obligated to operate the facility for a minimum of 30 years after the facility is placed in service at an estimated cost of \$600,000 per year.

Recycled Water Use – Anticipated System Enhancements

The recycled water system serves the area of North Bayshore illustrated in Attachment 2 with current consumption of approximately 0.4 MGD. Staff is estimating consumption in the existing service area will increase to approximately 1.0 MGD through the addition of dual-plumbed buildings and because the improved recycled water quality will facilitate use on a wider range of landscaping, including redwood trees and increased use on golf course turf. Staff is also planning two significant expansions of the recycled water service area.

- The City will begin providing recycled water service to the Bayview development and portions of NASA/Army properties (located east of Stevens Creek and outside of the City's utility service area) in approximately mid-2021. This expansion will increase consumption by an estimated 0.25 MGD.
- Staff anticipates a second expansion to the East Whisman Precise Plan (Middlefield/Ellis/Whisman) area south of Highway 101. This expansion, originally considered in the 2014 Recycled Water System Expansion Feasibility Study, would increase consumption by an estimated 0.15 MGD. There is currently no schedule for this expansion.

Staff is continuing to review the cost and operational requirements for extending the distribution system to the Middlefield/Ellis/Whisman area and is working with a consultant to update the 2014 Feasibility Study. The update is anticipated to be completed in late 2020 and will provide revised information regarding the estimated costs for constructing the distribution infrastructure as well as other needed enhancements, including increased pumping capacity and, potentially, a recycled water storage reservoir. The update will also quantify anticipated recycled-water demand increases from the City's 2017 dual-plumbing ordinance and the East Whisman Precise Plan.

Potable Water – Future Consumption

If the agreement is approved, the City's share of RWQCP effluent will be used to meet Valley Water's purification and reuse goals and will be unavailable for use for other City programs. To ensure the City's potable water supply is adequate to meet future demand and that the effluent will not be needed for local reuse programs, staff is working with the Bay Area Water Supply and Conservation Agency (BAWSCA) to update long-term water consumption estimates. BAWSCA recently provided preliminary projections through 2045, which incorporate consumption increases from drought recovery, approved building projects, and additional anticipated growth.

The City's projected total water consumption (including recycled water) in 2045 ranges from 12.25 to 13.60 MGD. Staff estimates approximately 1.15 MGD of the demand will be met with recycled water, reducing potable water consumption to 11.10 to 12.45 MGD. The City's anticipated potable water supply, which is comprised of treated water from the San Francisco Public Utilities Commission (SFPUC), Valley Water, and City wells, is 15.66 MGD, sufficient to meet projected consumption of 11.10 to 12.45 MGD. Based on the recent demand projections, staff believes there is adequate long-term potable supply to meet anticipated needs, and the City will not need access to the RWQCP effluent for future needs.

Environmental Considerations

A significant benefit of the agreement is the reduction of treated wastewater discharges to the San Francisco Bay. The lower south San Francisco Bay, which is relatively shallow and saline, receives freshwater discharges from numerous wastewater treatment plants. These discharges create freshwater marshes and reduce the habitat for the endangered species, including the Ridgway's rail and the salt marsh harvest mouse. Additionally, improving the quality of the recycled water will increase use in Mountain View, reducing the need for SFPUC water that is diverted from the Tuolumne River water. Increased recycled water use in Palo Alto will further reduce the need for SFPUC water.

The proposed agreement is consistent with an initiative in the City's adopted Sustainability Action Plan-4 to work with regional partners to improve the quality of the City's recycled water and explore the feasibility of a regional recycled water system. Securing 9.0 MGD of effluent through this agreement will also provide effluent sufficient to meet approximately one-third of Valley Water's potable reuse capacity goal.

Palo Alto will be the lead agency under the California Environmental Quality Act (CEQA) for all activities related to the local plant, and Valley Water will be the lead agency under CEQA for all activities related to the regional plant. This Agreement will not change the way the City of Mountain View currently processes and transmits its wastewater. Therefore, entering into the agreement is exempt from the California Environmental Quality Act pursuant to Section 15061(b)(3) of the CEQA Guidelines because it can be seen with certainty that there is no possibility that the activity may have a significant effect on the environment.

FISCAL IMPACT

If the agreement is approved, there are several anticipated financial impacts.

1. The estimated cost of designing and constructing the recycled water advance treatment facility is \$20.0 million. Per the proposed contract terms, Valley Water will contribute \$16.0 million, and the remainder will be funded by Mountain View and Palo Alto; the City's estimated share of design and construction costs is \$3.0 million. Because the Valley Water will reimburse moneys as expended by Mountain View and Palo Alto, it will be necessary to create a capital improvement project to pay project expenses. Staff anticipates Palo Alto will select a consultant to complete the facility design in 2020; staff will return to Council to request creation of a capital improvement project at a later date. Funds for this project would come from the Water Enterprise Fund unless outside sources are identified.

Staff is working with Palo Alto staff to complete an application for a State Revolving Fund (SRF) loan, which is being submitted independently by the City of Palo Alto. If approved, an SRF loan could provide a low-interest funding option for the City's capital costs, although the City would not be committed to accepting the loan terms.

If the advanced treatment facility is not constructed, the City would have no financial obligations but could use the City's share of Valley Water's \$16.0 million contribution on other water reuse projects.

2. Following construction of the advanced treatment facility, the City will incur ongoing costs. The estimated annual maintenance and operation cost of the facility is \$600,000; Mountain View's share is estimated to be approximately \$450,000.
3. The City's anticipated expenses would be partially offset by Valley Water payments. Following the execution of the agreement, Valley Water will pay \$200,000 annually to Mountain View and Palo Alto, and eventually other agencies that contribute their effluent for purification. After Valley Water begins operating their purification facility, the annual payment will increase to \$1.0 million, distributed proportionally to RWQCP partners that have committed their share of the effluent. These annual payments will be adjusted annually for inflation.

A summary of the estimated expenses and revenues is provided in Attachment 3. The estimate is based on the assumption that Mountain View and Palo Alto will construct a

recycled water advanced treatment facility, and Valley Water will construct a purification facility.

CONCLUSION

The proposed agreement will provide substantial funding for a recycled water advanced treatment facility, as well as an ongoing revenue stream to partially offset treatment facility operating and maintenance expenses. The treatment facility will produce high-quality recycled water that is suitable for nonpotable applications and salt-tolerant landscaping. The agreement will also promote water reuse in Santa Clara County while reducing potable water use and reduce treated effluent discharges to San Francisco Bay. The City has an adequate supply of potable water to meet long-term water consumption projections and will not need access to the RWQCP effluent being sold to Valley Water, although the City will have access to new water supplies (up to 1.3 MGD) if needed in the future. Based on the benefits to be received by the City, staff recommends approval of the proposed agreement.

NEXT STEPS

The Palo Alto City Council is considering the agreement for approval on November 18, 2019, and the Valley Water Board of Directors is considering the agreement on December 10, 2019. If the agreement is approved by all agencies, staff anticipates the following major milestones:

- December 2019: Agreement is finalized.
- January 2020: The City of Palo Alto will begin the process to hire a consultant to prepare plans and specifications for the advanced treatment facility and will begin working with other RWQCP customers to secure commitments for additional effluent.
- December 2020: Receive construction bids for the advanced treatment facility.
- February 2021: Mountain View and Palo Alto will finalize financial terms of constructing and operating the advanced treatment facility (via separate agreement). Mountain View and Palo Alto will also update the existing recycled water supply agreement (expires in 2060).
- June 2021: Begin advanced treatment facility construction.

ALTERNATIVES

1. Do not approve the agreement. Provide direction to staff regarding potential contract term revisions.
2. Provide alternate direction regarding the recycled water program.

PUBLIC NOTICING

Agenda posting, social media notices, and copies of the report sent to Palo Alto and Valley Water.

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- Attachments:
1. Resolution
 2. Recycled Water Distribution System Map
 3. Projected Revenues and Expenses

cc: CA, FASD