Date



Memorandum

TO: JOINT CITY COUNCIL/VALLEY WATER DISTRICT BOARD

FROM: Kerrie Romanow

SUBJECT: PURIFIED AND RECYCLED WATER

DATE: November 8, 2023

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11/13/2023

RECOMMENDATION

Santa Clara Valley Water District (Valley Water) Board and the City of San Jose (City) Mayor and City Council:

- A. Receive an update and provide feedback on the expansion of the purified and recycled water system and development of a potable reuse project to ensure our community is more drought resilient; and
- B. Refer further discussion to the Joint Recycled Water Policy Advisory Committee with the City of San José and City of Santa Clara.

BACKGROUND

In January 2023, Valley Water, City of San José, and City of Santa Clara (Cities) executed a Letter of Intent for Collaborating on the Expansion of Recycled and Purified Water in Santa Clara County. The Letter of Intent recognizes that climate change makes our community more vulnerable to extreme weather conditions, including periods of long-term drought and more intense wet-weather events. To prepare for these extreme and uncertain events, the availability of a drought proof water supply and efficient water management justifies the significant and rapid expansion of recycling treated wastewater from the San José-Santa Clara Regional Wastewater Facility. This expansion program will provide the flexibility to serve many uses including the outdoor irrigation of functional landscape and the provision of advanced purified recycled water for drinking water purposes.

Santa Clara County relies on imported water for half its water supply, which becomes vulnerable as the snowpack shrinks due to climate change. A principal goal agreed to by the Cities and Valley Water in the Letter of Intent is to maximize the use of treated wastewater to best serve the water supply needs of the community and to develop a more sustainable, water-resilient future in the face of climate change.

ANALYSIS

Utilizing treated wastewater to best serve our residents and businesses can be achieved through recycled water expansion and potentially potable reuse.

Non-Potable Recycled Water Expansion

Valley Water and the Cities have long collaborated on recycled water projects. This has included the development of South Bay Water Recycling, a non-potable system (aka purple pipe), and the Silicon Valley Advanced Water Purification Center (SVAWPC), which opened in 2014. The SVAWPC has been a success story and instrumental in boosting the non-potable recycled water usage at more landscape and industrial settings by producing purified water and mixing it with recycled water to enhance the water quality (e.g., decreasing the total dissolved solids). In addition, the SVAWPC has helped Valley Water garner more public support for future potable reuse and perform critical studies that have helped prepare for future regulations.

San José plans to increase recycled water use through South Bay Water Recycling by 10,000 acre feet per year with a focus on irrigation at schools and parks. South Bay Water Recycling currently delivers water to over 900 customers in San José, Santa Clara, and Milpitas for irrigation, dual toilet flushing, cooling towers and other industrial purposes. Valley Water's Water Supply Master Plan recognizes that wastewater partners in the county will expand non-potable reuse.

Potable Reuse

Valley Water worked with the wastewater agencies within the county to develop the Countywide Water Reuse Master Plan (CoRe Plan) in 2021. The CoRe Plan's main emphasis was on Valley Water's goal of developing 24,000 Acre Feet Per Year of potable reuse in the county. The CoRe Plan included evaluation of wastewater availability, regulatory and technical needs, governance structure, and potential project portfolios. At the time, Indirect Potable Reuse, which uses advanced purified water to replenish groundwater basins, was the only possible type of potable reuse and is therefore the first phase of Valley Water's potable reuse implementation. Valley Water is currently making progress on this goal with an up to 10,000 acre feet per year indirect potable reuse project in Palo Alto.

Since then, the Direct Potable Reuse regulations have been released for public comment and are likely to be finalized in 2024. Direct Potable Reuse regulations will permit the delivery of advanced purified water directly to consumers or delivery before a water treatment facility. Direct Potable Reuse allows the water to efficiently serve many uses, in a more flexible manner than groundwater replenishment. Consequently, it was determined to be the preferred potable reuse approach for collaboration between the Cities and Valley Water. Compared to the SVAWPC, the Direct Potable Reuse treatment method will be more stringent and includes additional treatment steps to ensure that the water is always safe to drink. A Direct Potable Reuse facility would be situated next to, but separate from the SVAWPC, since the SVAWPC provides an essential and permitted function to the South Bay Water Recycling system. The existing infrastructure would be integrated as much as feasible.

Based on consultation with our technical experts and discussions with our peer agencies, and due to uncertainty with the Direct Potable Reuse regulations, development of a demonstration facility as part of developing a full-scale facility is needed. Specifically, the draft regulations state in § 64669.50. Chemical Control:

"(2) A Direct Potable Reuse Responsible Agency shall submit a validation study protocol for the ozone/BAC process that complies with this subsection to the State Board for review and written approval prior to conducting the validation study. ... The validation study protocol shall include proposed surrogate and/or operational parameters to be used in the validation study. The ozone/BAC process shall be re-validated when the fullscale operating conditions or control strategy are inconsistent with the previous validation study conditions."

And § 64669.45. Pathogen Control

A validation study report documenting the validation study methodology and **results** shall be submitted to the State Board as part of the submittal of the engineering report prepared pursuant to section 64669.75... The validation study report shall identify the LRV (log removal value) demonstrated by each treatment process for each pathogen pursuant to subsection (a)(5)(C)(9.), the operating envelope, and the critical limit(s) for each validated treatment process... § 64669.45.(a)(5)(D)

The draft regulations specify a very specific and costly treatment train, however there is some flexibility that would allow alternatives. These alternatives would be allowed with a validation study and could result in a less costly alternative treatment train. A demonstration facility will provide this initial validation and in addition, will take into account the RWF wastewater quality. Using alternatives could save significant capital and operating costs if not all treatment trains are needed. A demonstration facility will allow the full-scale facility to be designed in the most efficient and effective way and allow for consideration of future advances in technologies that would meet the desired outcome of protecting public health.

In addition, operating a full-scale Direct Potable Reuse facility requires new highly trained certified operators as well as new institutional arrangements and a clear division of the duties and responsibilities of the wastewater and water agencies involved. The demonstration facility would help expedite a full-scale facility and provide the following benefits:

- Operational and performance testing to inform treatment process selection and research;
- Regulatory approvals and permitting;
- Public outreach and education;
- Development of needed institutional arrangements; and
- Training of operations staff and required state certification to run a purification facility.

The proposed demonstration facility will play a crucial role in the assessment and demonstration of treatment technologies to satisfy the new Direct Potable Reuse regulatory requirements. It will

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also provide the engineering framework for building a full-scale Direct Potable Reuse facility that would safeguard public health and provide drought-proof potable water.

Our peer agencies, Metropolitan Water District and Los Angeles Water and Power are planning direct potable reuse demonstration facilities to ensure the most cost-effective design for future full-scale facilities, operator training, permitting, and public support.

Considerations

Staff from the Cities and Valley Water are addressing all needed elements for a collaborative Direct Potable Reuse project. The technical, environmental, and regulatory considerations are just as critical and complex as the financial and institutional arrangements. The following items need to be addressed:

- Technical Issues:
 - Understand wastewater availability and appropriate sizing of a future facility considering the expansion of the non-potable system and the impacts of water conservation on wastewater flows, as well as seasonal changes in flow. A technical analysis is currently being performed to develop this information.
 - Understand water utilization in the water supply system. A study is currently being performed to develop delivery connection alternatives.
 - Wastewater quality considerations including analysis of additional source control needs, if any, while avoiding impacts to businesses and development.
 - Treatment steps and meeting Direct Potable Reuse regulations requirements.
 - Development of demonstration facility, including needed additional land.
- Financial and Institutional Arrangements:
 - Development of a wastewater delivery agreement.
 - Development of a lease agreement for additional land that will be needed adjacent to SVAWPC.
 - Operations and maintenance arrangements, including data sharing, waste stream discharges including Reverse Osmosis concentrate, and permitting.
 - Formation of a Direct Potable Reuse Responsible Agency as required by the Direct Potable Reuse regulations.
 - Private activity analysis for San José Santa Clara Regional Wastewater Facility bonds, which may further refine the size of the facility and the delivery method.
 - San Francisco Public Utilities Commission (SFPUC) collaboration: The Cities performed a feasibility study with SFPUC for a potable reuse project related to the SFPUC Alternative Water Supply Plan.
 - Financial arrangements.
- Environmental Impacts
 - Analyzing California Environmental Quality Act (CEQA) and, if needed, National Environmental Policy Act (NEPA).
 - Understanding energy use and consumption.
 - Ensuring Reverse Osmosis Concentrate management in an environmentally responsible manner.

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- Procurement, Design, Construction and Permitting
 - Determination of delivery method (e.g., design bid build, design build, etc.).
 - Preparation of engineering and validation reports to support permitting.
 - Design, construction, permitting of demonstration and full-scale facility.
- Public Outreach: Ensure public support for potable reuse, via tours of SVAWPC, speakers bureau, multi-lingual outreach, mobile outreach, etc.
- Affordability: Ensure grant readiness via preparation of a feasibility study and CEQA/NEPA

Funding and Timeline

In February 2023, the Cities and Valley Water collaborated on a grant application to the United States Bureau of Reclamation WaterSMART program for financial resources to implement the Letter of Intent. The San José-Santa Clara Purified Water Program Feasibility Study was recently funded with \$381,249 from Reclamation for a total project cost of \$1,524,996. Preparation of a feasibility study is a prerequisite for obtaining construction grants in the future with Cities and Valley Water committed to work together on its development.

Valley Water staff, in collaboration with the Cities' staff, is continuing to develop the Direct Potable Reuse project, including updating the costs and developing a Capital Improvement Program project for a 1 million gallon per day Direct Potable Reuse Demonstration Project. At this time, preliminary cost estimates are \$42 Million for capital and \$2 Million for operation and maintenance. Valley Water staff will work with Cities staff to better refine project needs. The timeline to implement the Direct Potable Reuse demonstration facility is three to five years.

To ensure a full-scale facility is viable, staff from the Cities and Valley Water will begin work on the financial and institutional arrangements. Staff proposes to have a progress report to the Joint Recycled Water Policy Advisory Committee at least annually and fully developed lease and water availability agreements within two years.

To support progress in these areas, the City of San José's 2023-2024 Adopted Budget allocated a Senior Environmental Program Manager position on an ongoing basis. Twenty percent is funded through General Fund, and the recycled water utility funds the remainder. This position will support efforts in leading the recycled water utility (South Bay Water Recycling) in new water supply focus areas supporting the increased use and availability of recycled water, such as increasing use of recycled water in a manner that supports the RWF in long-term Nutrient Removal Strategies, negotiate and implement contracts and agreements with local stakeholders, and lead implementation of studies or pilots to mitigate contaminants of emerging concern. The position will also lead South Bay Water Recycling in water utility-focused initiatives, including all current and anticipated aspects of administration, regulatory compliance, and adherence to state-approved rules and regulations; public safety; contract and agreement negotiations; development and implementation of operating and capital budgets; and to represent the recycled water utility with local partners and stakeholders.

In addition to the 0.20 FTE available to support water supply projects, per a 2022 Master Agreement between Valley Water and the City of San José, Valley Water provided \$100,000 to fund City of San José staff costs in supporting Valley Water's Purified Water Program.

Next Steps and Discussion Points

Staff seeks the following guidance from the Valley Water Board and City of San José City Council to ensure development of win-win solutions that meet the Cities' and Valley Water's needs:

- Confirm support for aggressively pursuing a joint project to meet local water supply needs, including both a demonstration and full-scale potable reuse project that is the largest size practicable within funding, environmental, and technical constraints.
- Confirm support for development of the feasibility study, demonstration facility and institutional arrangements, including lease and wastewater availability agreements, within two years.
- Confirm support for a coordinated public outreach program to ensure the success of a Direct Potable Reuse project.
- Provide updates twice a year or as needed to Joint Recycled Water Policy Advisory Committee.

COORDINATION

This memorandum has been coordinated with the City Attorney's Office and the City Manager's Budget Office.

/s/ KERRIE ROMANOW Director, Environmental Services

For questions, please contact Jeff Provenzano, Deputy Director, at (408) 277-3671.