



Santa Clara Valley Water District Recycled Water Committee Meeting

Headquarters Building Boardroom
5700 Almaden Expressway
San Jose, CA 95118

REGULAR MEETING AGENDA

**Wednesday, July 10, 2019
12:00 PM**

District Mission: Provide Silicon Valley safe, clean water for a healthy life, environment and economy.

<p>RECYCLED WATER COMMITTEE</p> <p>Tony Estremera - District 6, Committee Chair Barbara Keegan - District 2, Committee Vice Chair Gary Kremen - District 7</p>	<p>The Recycled Water Committee was enacted to develop long-term proposals with local agencies on recycled water within district boundaries, and to establish a collaborative process for policy discussion and information sharing. It meets individually with other entities (Sunnyvale, Palo Alto, CSJ SC/TPAC) as required/necessary, and can meet with new entities if needed. Public records for this Committee are available for inspection in the Clerk of the Board's Office, 5700 Almaden Expressway, San Jose, CA 95118. Materials are available to the public at the same time they are made available to the committee. The District will make reasonable efforts to accommodate persons with disabilities wishing to attend meetings. Please advise the Clerk of the Board of any special needs by calling (408) 265-2306.</p>	<p>HOSSEIN ASHKTORAB Committee Liaison</p> <p>EVA SANS Assistant Deputy Clerk II Office/Clerk of the Board (408) 265-2306 esans@valleywater.org</p>
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Note: The finalized Board Agenda, agenda items and supplemental items will be posted prior to the meeting in accordance with the Brown Act.

**Santa Clara Valley Water District
Recycled Water Committee
REGULAR MEETING
AGENDA**

Wednesday, July 10, 2019

12:00 PM

Headquarters Building Boardroom

1. CALL TO ORDER:

1.1. Roll Call.

1.2 Time Open for Public Comment On Any Item Not On The Agenda

2. APPROVAL OF MINUTES:

2.1. Approval of Minutes.

[19-0568](#)

Recommendation: Approve the minutes of the May 20, 2019 meeting.

Manager: Michelle King, 408-630-2711

Attachments: [Attachment 1: 052019 Meeting Minutes](#)

3. ACTION ITEMS:

3.1. Policy Options Related to Centralized and Decentralized Water Reuse.

[19-0573](#)

Recommendation: Receive information and provide direction on policy options related to centralized and decentralized water reuse.

Manager: Jerry De La Piedra, 408-630-2257

Attachments: [Attachment 1: CUWA Fact Sheet](#)

Est. Staff Time: 10 Minutes

3.2. Update on Conceptual Refinery Recycled Water Exchange with Contra Costa Water District and Central Contra Costa Sanitary District.

[19-0661](#)

Recommendation: Receive information on the status and next steps for the Refinery Recycled Water Exchange Project.

Manager: Jerry De La Piedra, 408-630-2257

Est. Staff Time: 10 Minutes

- 3.3. Update on Bottling Purified Water at the Silicon Valley Advanced Water Purification Center. [19-0596](#)
- Recommendation: Receive information and provide input on staff's efforts to develop an Advanced Purified Demonstration Water Bottling Plan.
- Manager: Jerry De La Piedra, 408-630-2257
- Attachments: [Attachment 1: PowerPoint](#)
[Attachment 2: Draft Implementation Plan](#)
- Est. Staff Time: 15 Minutes
- 3.4. Update on the 5th Independent Advisory Panel Meeting. [19-0597](#)
- Recommendation: Receive information on the 5th meeting of the Independent Advisory Panel for evaluation of Santa Clara Valley Water District's Potable Reuse program and efforts.
- Manager: Jerry De La Piedra, 408-630-2257
- Attachments: [Attachment 1: PowerPoint Presentation](#)
- Est. Staff Time: 5 Minutes
- 3.5. Review Recycled Water Committee Work Plan. [19-0569](#)
- Recommendation: Review and make necessary adjustments to the Committee Work Plan, and confirm next meeting time, date, and discussion subjects.
- Manager: Michele King, 408-630-2711
- Attachments: [Attachment 1: 2019 RWC Work Plan](#)

4. INFORMATION ITEMS:

- 4.1. Update on the Recycled and Purified Water Outreach Activities. [19-0529](#)
- Recommendation: Receive information on the recycled and purified water outreach activities in Fiscal Year 2019 (FY19).
- Manager: Rick Callender, 408-630-2017
- Attachments: [Attachment 1: PowerPoint](#)
- Est. Staff Time: 10 Minutes

5. CLERK REVIEW AND CLARIFICATION OF COMMITTEE REQUESTS.

This is an opportunity for the Clerk to review and obtain clarification on any formally moved, seconded, and approved requests and recommendations made by the Committee during the meeting.

6. ADJOURN:

- 6.1. Adjourn to Regular Meeting at 12:00 p.m., on August 14, 2019, in the Santa Clara Valley Water District Headquarter's Building Boardroom at 5700 Almaden Expressway, San Jose, California.



Santa Clara Valley Water District

File No.: 19-0568

Agenda Date: 7/10/2019

Item No.: 2.1.

COMMITTEE AGENDA MEMORANDUM

Recycled Water Committee

SUBJECT:

Approval of Minutes.

RECOMMENDATION:

Approve the minutes of the May 20, 2019 meeting.

SUMMARY:

In accordance with the Ralph M. Brown Act, a summary of Committee discussions, and details of all actions taken by the Committee, during all open and public Committee meetings, is transcribed and submitted to the Committee for review and approval.

Upon Committee approval, minutes transcripts are finalized and entered into the District's historical records archives and serve as historical records of the Committee's meetings.

ATTACHMENTS:

Attachment 1: 052019 RWC Minutes

UNCLASSIFIED MANAGER:

Michelle King, 408-630-2711



RECYCLED WATER COMMITTEE MEETING

MINUTES

**Monday, May 20, 2019
3:00 PM**

(Paragraph numbers coincide with agenda item numbers)

1. CALL TO ORDER

A rescheduled regular meeting of the Santa Clara Valley Water District (Valley Water) Recycled Water Committee (Committee) was called to order in the Valley Water Headquarters Boardroom, 5700 Almaden Expressway, San Jose, California at 3:00 PM.

1.1 Roll Call.

Committee members in attendance were District 2 Director B. Keegan, District 7 Director G. Kremen, and District 6 Director T. Estremera, Chairperson presiding, constituting a quorum of the Committee.

Staff members in attendance were H. Ashktorab, A. Baker, H. Barrientos, N. Dominguez, A. Fulcher, G. Hall, E. Latedjou-Durand, K. Oven, L. Orta, B. Redmond, M. Silva, M. Sinaki, D. Tucker, and B. Yerrapotu.

Also in attendance was P. Daniel, HDR, Inc.

1.2 Time Open for Public Comment on Any Item Not on the Agenda.

Chairperson Estremera declared time open for public comment on any item not on the agenda.

Mr. Patrick Ferraro, former District 2 Director and San Jose State University (SJSU) professor, encouraged the Committee to consider discussing SB 332 (Hertzberg) the Local Water Reliability Act; expressed concern that studies associated with the act would increase costs and create unnecessary delays to advanced recycled water treatment; and advised the Committee that a letter-writing campaign was underway by himself and his SJSU students, requesting state legislators amend the bill and expressing opposition to it.

2. APPROVAL OF MINUTES

2.1 Approval of Minutes.

Recommendation: Approve the minutes of the November 14, 2018 meeting.

The Committee considered the attached minutes of the November 14, 2018 meeting. It was moved by Director Keegan, seconded by Director Kremen, and unanimously carried that the minutes be approved as presented.

3. ELECTION OF CHAIRPERSON/VICE CHAIRPERSON

Recommendation: Nominate and elect a committee Chairperson and Vice Chairperson for the 2019 calendar year.

It was moved by Director Keegan, seconded by Director Kremen, and unanimously carried, to nominate and elect Director Estremera as 2019 Chairperson, and Director Keegan as 2019 Vice Chairperson.

4. ACTION ITEMS

4.1 Update on Countywide Water Reuse Master Plan.

Recommendation: A. Receive information on the status and next steps for the Countywide Water Reuse Master Plan;
B. Receive information on Staff's responses to comments from the November 14, 2018 Recycled Water Committee meeting, and;
C. Recommend to the Board of Directors that it authorize the Chief Executive Officer to negotiate and execute an amendment consistent with Option II to the Agreement with Brown & Caldwell for the Countywide Water Reuse Master Plan Project (Agreement No. A4120A).

Mr. Garth Hall, Deputy Operating Officer, reviewed the information on this item, per the attached Committee Agenda Memo, and Mr. Miguel Silva, Associate Engineer, reviewed the corresponding presentation materials contained in Attachments 1 and 2.

It was moved by Director Kremen, seconded by Director Keegan, and unanimously carried that the Committee approve Recommendation C (Option II), and recommend to the Board of Directors that it authorize the Chief Executive Officer (CEO) to negotiate and execute an amendment to Agreement No. A4120A, with Brown and Caldwell, for the Countywide Water Reuse Master Plan, amending the original agreement scope, schedule and budget to account for a source water assumption change, added project flexibility, programmatic CEQA and Federal Grant eligibility, treated water augmentation evaluation at 10 percent of design, and additional stakeholder review time and scope and cost control safeguards, as outlined in Attachment 1, Page 6, Option II.

Mr. Stan Williams, Poseidon Water and Pure Water Silicon Valley, acknowledged the benefits of the proposed agreement amendment.

4.2 Reverse Osmosis Concentrate Management Plan Update.

- Recommendation:
- A. Receive information on the Reverse Osmosis Concentrate Management Plan; and
 - B. Recommend to the Board of Directors (Board) that they authorize the Chief Executive Officer to negotiate and execute a second amendment (Amendment No. 2 to the Agreement between the Santa Clara Valley Water District and GHD Inc. for the Reverse Osmosis Concentrate Management Plan (Agreement No. A4034Ga), for a not-to-exceed fee of \$125,000, for a total not-to-exceed fee of \$2,433,524.

Mr. Henry Barrientos, Associate Engineer, reviewed the information on this item, per the attached Committee Agenda Memo, and the corresponding presentation materials contained in Attachment 1.

It was moved by Director Kremen, seconded by Director Keegan, and unanimously carried to recommend the Board authorize the CEO to negotiate and execute a second Amendment to Agreement No. A4034Ga with GHD, Inc., for the Reverse Osmosis Concentrate Management Plan.

4.3 Debrief on the May 1, 2019 Joint Recycled Water Policy Advisory Committee (City of San Jose/Valley Water/City of Santa Clara).

- Recommendation: Receive and discuss information on the May 1, 2019 Joint Recycled Water Policy Advisory Committee Meeting.

Mr. Medi Sinaki, Senior Engineer, reviewed the information on this item, per the attached Committee Agenda Memo, and corresponding presentation materials contained in Attachment 3.

During the presentation, the Committee made the following requests of staff:

- Send copies of the Model Ordinance for Water Efficiency Standards discussed under Item 4.1 of the May 1, 2019 Joint Water Recycle Policy Committee Meeting to Council Members of the Cities of San Jose and Santa Clara by July 2019; and
- Schedule a presentation in September 2019 to the San Jose and Santa Clara City Councils on establishment of water rates including rates for recycled water.

The Committee noted the information, without formal action.

4.4 Recycled Water Committee 2018 Accomplishment Report and Proposed 2019 Work Plan.

- Recommendation:
- A. Accept the 2018 Recycled Water Committee Accomplishment Report; and
 - B. Review and provide direction to staff on the proposed 2019 Recycled Water Committee Work Plan.

The Committee added the following items to its 2019 Work Plan:

- A. Staff to evaluate and propose policy options related to centralized and decentralized reuse for the Committee's consideration; and
- B. Staff to present updates on recent regional discussions on options to meeting the Board's 10% recycled water goal using either desalination or brackish water.

5. INFORMATION ITEMS

- 5.1 Staff Response to Questions Raised by Mr. Doug Muirhead to the Water Supply and Demand Management Committee, Regarding Direct Potable Reuse Regulations.

Recommendation: Receive the information.

Manager: Michele King, 408-630-2711

The Committee noted the information, without formal action.

6. ADJOURN

- 6.1 Clerk Review and Clarification of Committee Requests.

With regard to Item 4.3:

- Staff to send copies of the Model Ordinance for Water Efficiency Standards discussed under Item 4.1 of the May 1, 2019 Joint Water Recycle Policy Committee Meeting to Council Members of the Cities of San Jose and Santa Clara by July 2019; and
- Staff to schedule a presentation in September 2019 to the San Jose and Santa Clara city councils on establishment of water rates including rates for recycled water.

With regard to Item 4.4:

- Staff to evaluate and propose policy options related to centralized and decentralized reuse for Committee's consideration; and
- Staff to present updates on recent regional discussions on options to meeting the Board's 10% recycled water goal using either desalination or brackish water.

- 6.2 Chairperson Estremera adjourned the meeting at 3:50 p.m. to the next scheduled meeting at 12:00 p.m. on June 12, 2019, in the Santa Clara Valley Water District Headquarters Board Conference Room, 5700 Almaden Expressway, San Jose, California.

Natalie Dominguez
Assistant Deputy Clerk II



Santa Clara Valley Water District

File No.: 19-0573

Agenda Date: 7/10/2019

Item No.: 3.1.

COMMITTEE AGENDA MEMORANDUM

Recycled Water Committee

SUBJECT:

Policy Options Related to Centralized and Decentralized Water Reuse.

RECOMMENDATION:

Receive information and provide direction on policy options related to centralized and decentralized water reuse.

SUMMARY:

This item responds to the Recycled Water Committee's (Committee) request from November 14, 2018, that staff return to the Committee to discuss the development of policies and guiding principles related to onsite water reuse (i.e., centralized versus decentralized water reuse).

The Santa Clara Valley Water District (Valley Water) has a long history of promoting and supporting the development of water reuse, including partnering with the local wastewater providers to develop and expand non-potable recycled water as well as constructing the Silicon Valley Advanced Water Purification Center. These are both examples of centralized (i.e., large scale) water reuse. More recently, Valley Water has included various small scale decentralized water reuse programs in their water conservation portfolio, including providing financial and technical assistance for graywater and rainwater capture.

To continue to provide a reliable water supply while accounting for population growth, climate change, new regulations, and other constraints, it will be important for Valley Water and our local partners to maximize both centralized (e.g. potable reuse) and decentralized (e.g. onsite reuse, graywater, rainwater, stormwater) water reuse where possible. However, as noted in the California Urban Water Agencies (CUWA) fact sheet regarding distributed systems (Attachment 1), there are pros and cons to both, including a potential decrease in flows to a centralized system due to decentralized efforts.

Valley Water staff has had preliminary discussions with local cities and the County regarding recent requests from local businesses to install onsite reuse systems. Through these discussions, it is clear that policies and regulations are needed to help guide decision making. To that end, recent legislation at the state level (SB 966, 2018) requires the state to develop onsite reuse regulations by December 2022. In addition, Valley Water staff is in the process of developing guidelines or themes to help guide the Committee's discussion on establishing policy principles related to this topic. A draft will be published on July 5, 2019 Amended Committee Agenda, as Attachment 2 to this memorandum, or distributed at the meeting as a Handout.

File No.: 19-0573

Agenda Date: 7/10/2019
Item No.: 3.1.

ATTACHMENTS:

Attachment 1: CUWA Fact Sheet

UNCLASSIFIED MANAGER:

Jerry De La Piedra, 408-630-2257



WHO IS CUWA?

Established in 1990, the California Urban Water Agencies (CUWA) is a nonprofit corporation of 11 major urban water agencies that collectively deliver drinking water to approximately two-thirds of California's population. Water delivered by CUWA's 11 member agencies is a lifeline supporting California's urban populations and powering the bulk of the state's over \$2.7 trillion economy.

DISTRIBUTED SYSTEMS APPROACH

The distributed systems approach is a regionally optimized blend of both centralized and onsite reuse. This approach considers competing demands for wastewater, along with system impacts, cost, energy, and other factors.

GUIDING REGIONAL REUSE OPTIONS - A DISTRIBUTED SYSTEMS APPROACH


Climate change, population growth, and regulatory drivers are putting pressure on California's urban water supplies, inspiring greater water supply diversification. By recycling water, agencies can extend their local water supplies to improve supply reliability and resiliency, support growth and development, and supplement environmental flows. California's State Water Board has ambitious recycled water goals, and CUWA agencies have conceptual plans to double their water reuse by 2035.

DEVELOPING A FIT-FOR-COMMUNITY PORTFOLIO

Water reuse can be achieved through both centralized and onsite (decentralized) systems for non-potable and potable uses. While no one reuse strategy fits all communities, an integrated water management approach can help utilities tailor their water supply portfolio to meet site-specific conditions and objectives.

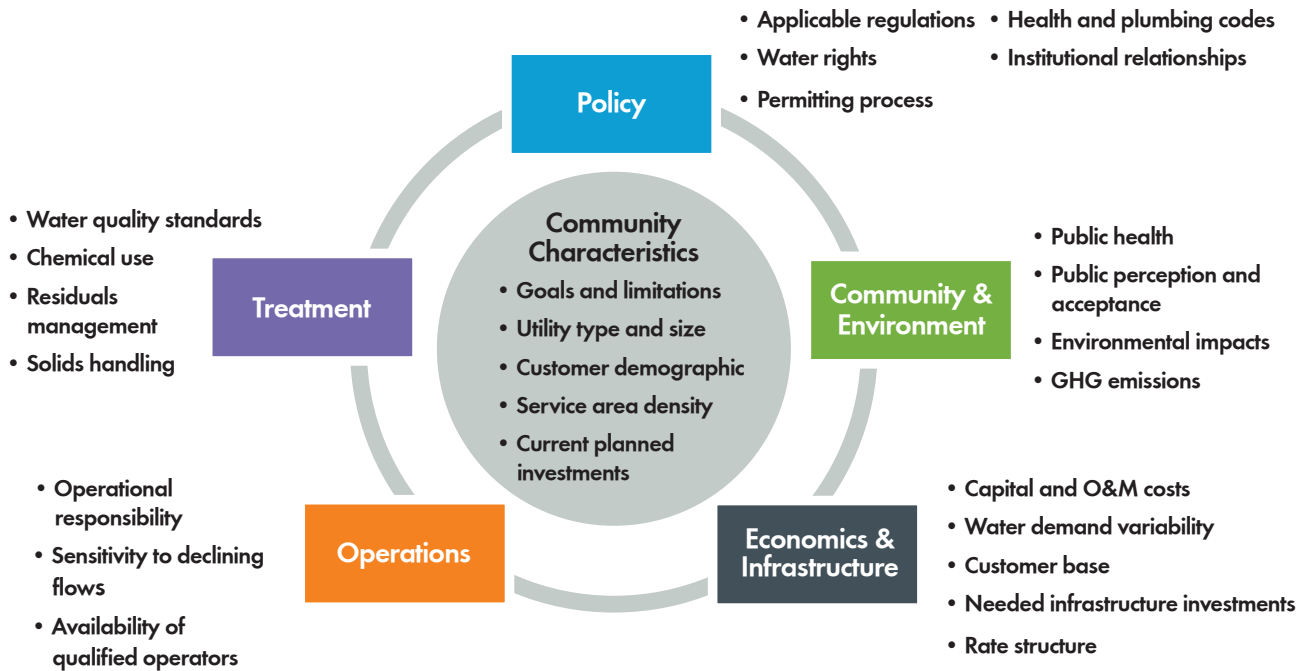
With several reuse options available, utilities can apply a **distributed systems approach**, defined as a regionally optimized combination of water reuse strategies for local conditions, to produce an effective "fit-for-community" reuse strategy.

The right reuse portfolio for a given region will account for system and community considerations and enabling conditions. Favorable conditions for a range of reuse options are summarized below. Evaluating factors in advance can help save costs, reduce greenhouse gas emissions, increase public awareness, and advance environmental stewardship within a community.

	Non-Potable Reuse (NPR)	Potable Reuse (PR)	Onsite Reuse (Onsite)
 Favorable Conditions	<ul style="list-style-type: none"> • Large, consistent demand for recycled water (non-potable) • Customers in proximity of centralized facility or existing distribution system • Recycled water needed to support community development and growth 	<ul style="list-style-type: none"> • Community goal to expand locally controlled potable water supplies • Desire for sustainable groundwater management and mitigation of land subsidence • Access to cost-effective means for concentrate management • Prior investments in advanced water treatment within the system 	<ul style="list-style-type: none"> • Recycled water demand in dense urban environments or challenging topography • Existing water or wastewater systems close to capacity • Planned growth or new development in areas where expansion of water or wastewater infrastructure would be cost prohibitive

CONSIDERATIONS TO ACHIEVE FIT-FOR-COMMUNITY SOLUTIONS

Why are some agencies moving toward potable reuse rather than expanding non-potable reuse supplies? What local conditions favor various reuse options, and what are the needed factors for successful implementation? The following sections address these questions and highlight the key considerations for various reuse strategies, based on the elements shown below.

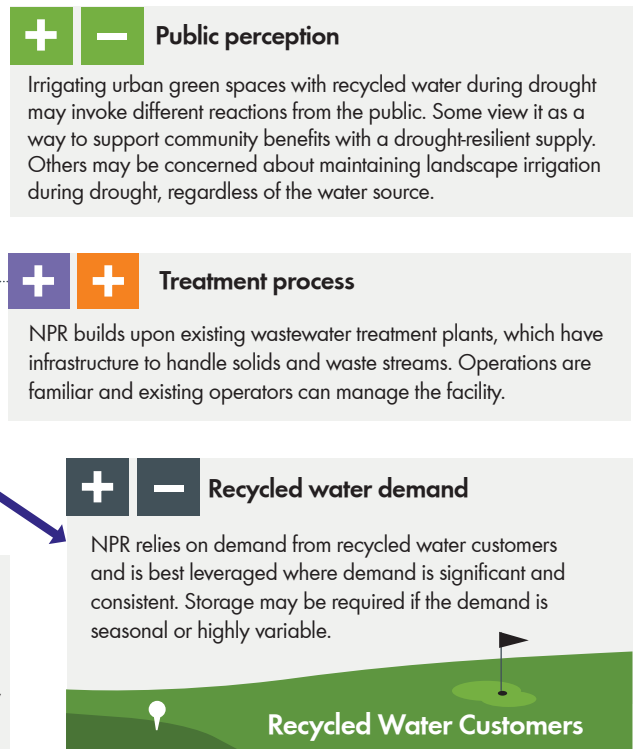
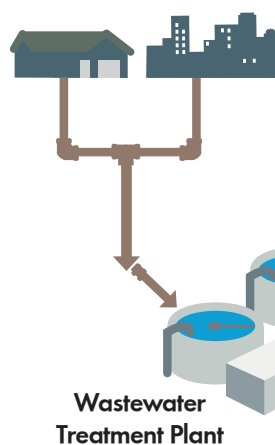


*Colors associated with each category carry through the subsequent figures.

NPR

Non-potable reuse: any application of recycled water not involving human consumption.

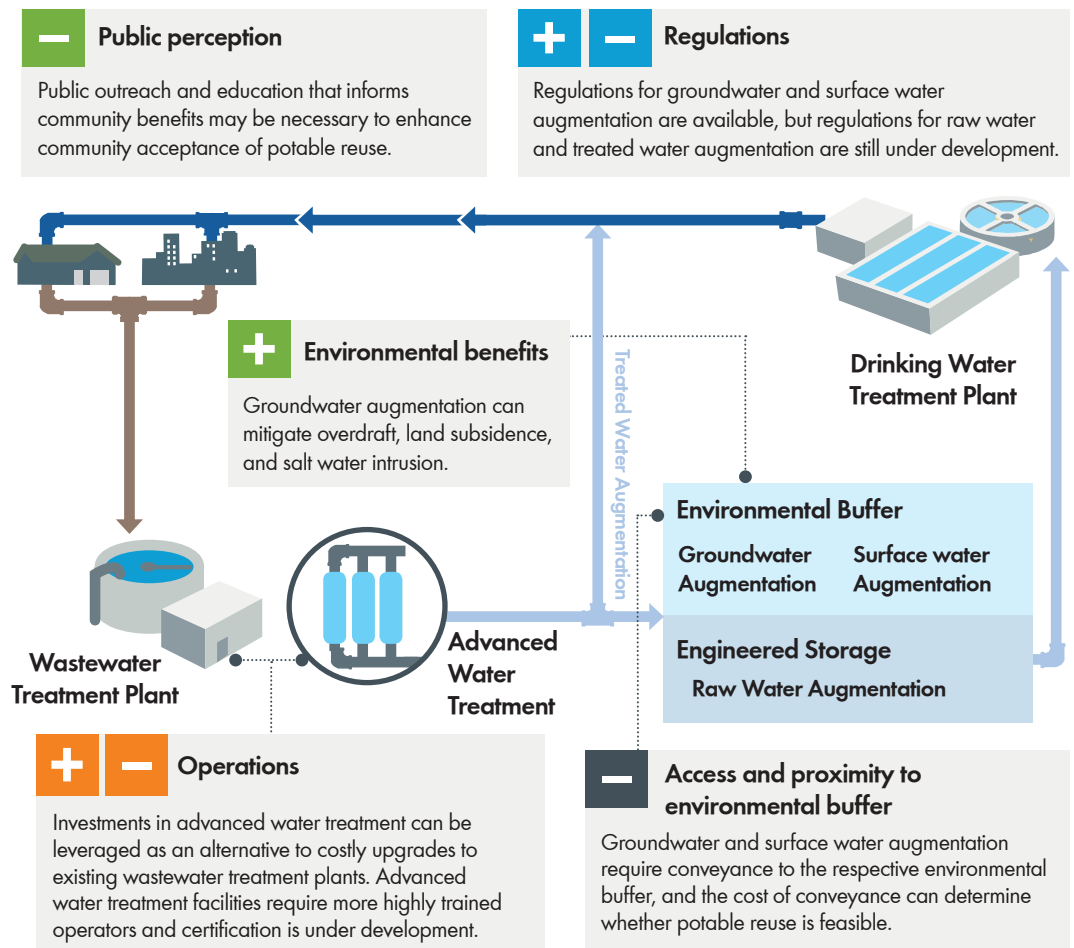
NPR has an important role to play, as using recycled water offsets demand on potable supply and helps to enhance urban green space and quality of life. NPR uses a separate distribution system, which may require significant capital investment and construction. NPR is more favored in new development or areas with existing dual distribution systems.



PR

Potable reuse: application of purified water (achieved through additional levels of treatment) to augment a potable water supply.

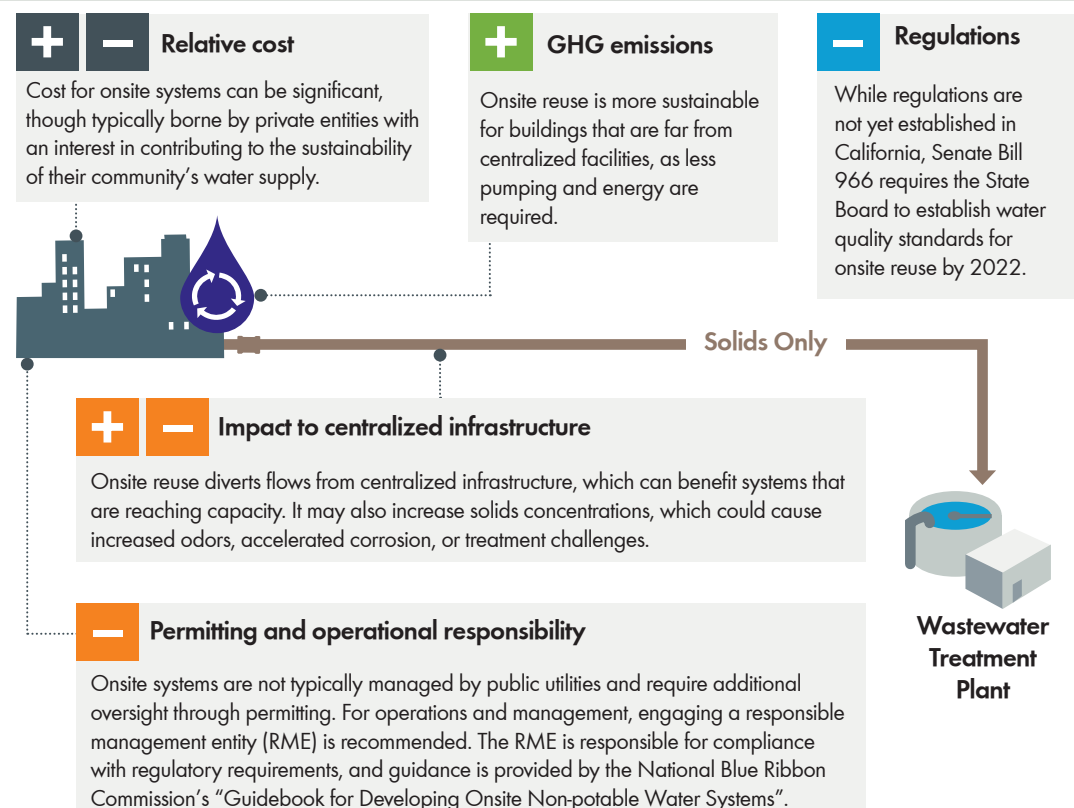
Potable reuse has taken off recently in the U.S. and has been in practice for several decades in other countries. It leverages existing water distribution infrastructure, circumventing the need for a separate distribution system. As potable reuse continues to evolve, there is a need for further research to support regulations and safe and cost-effective implementation.



ONSITE

Onsite reuse: onsite treatment and reuse of alternative sources of water (e.g., rainwater, graywater, blackwater) at the building or district scale.

Onsite reuse is gaining momentum as a strategy that's implementable by building owners with support from their local utility. It provides the building owners, and their community, with a sense of environmental stewardship and serves as one of the strategies to gain environmental credits through rating programs like LEED.



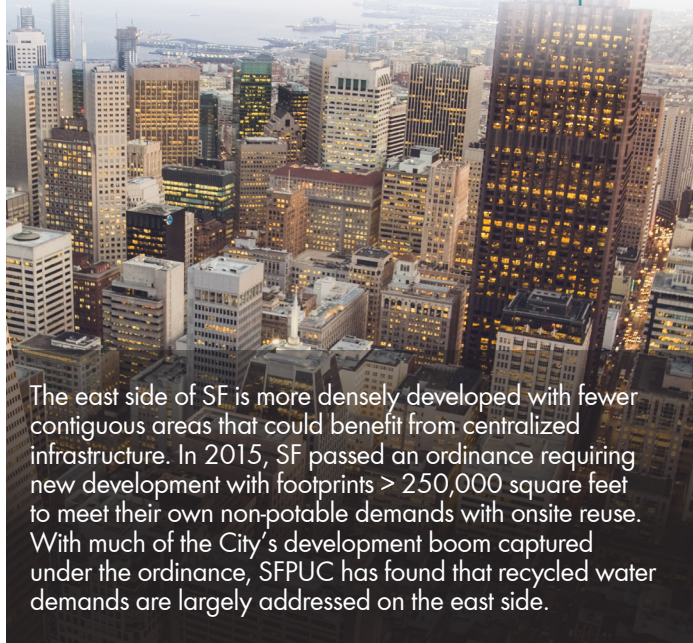
SFPUC OPTIMIZES REGIONAL REUSE THROUGH A DISTRIBUTED SYSTEMS APPROACH

Centralized NPR for larger parcels of irrigated land



The western side of SF is home to large irrigation customers, such as the Golden Gate park, golf courses, and San Francisco Zoo. To capitalize on economies of scale, SFPUC is building a large centralized recycled water plant to serve them.

Onsite reuse for dense urban development



The east side of SF is more densely developed with fewer contiguous areas that could benefit from centralized infrastructure. In 2015, SF passed an ordinance requiring new development with footprints > 250,000 square feet to meet their own non-potable demands with onsite reuse. With much of the City's development boom captured under the ordinance, SFPUC has found that recycled water demands are largely addressed on the east side.

WORKING TOGETHER TO ADVANCE FIT-FOR-COMMUNITY REUSE

For businesses looking to incorporate water sustainability into their culture:

- Align with urban water agencies to invest in regional strategies that reflect the interconnectedness of our water systems and optimize a community's available wastewater
- When contemplating onsite systems, team with a responsible management entity with experience in long-term operations

For policy makers: maintain flexibility at the local level. Any legislation or codes related to water reuse should enable implementation of the reuse strategy that best fits local community needs.

For utilities leading efforts to optimize water supply reliability:

- Evaluate centralized and onsite reuse opportunities through a distributed systems approach
- Engage policy makers and public health officials to explore barriers and incentives

EXPANDING LEED CREDITS TO REFLECT ALL SUSTAINABLE REUSE OPTIONS

A building, neighborhood, or community can employ multiple strategies to increase their water efficiency. Many developers opt for onsite reuse to achieve green building certification through rating systems like LEED. However, LEED offers water efficiency credits for using any type of alternative water source, including centralized reuse, and further clarification of the rating criteria will improve awareness of this opportunity. Rewarding whichever combination of reuse strategies makes the most sense from a holistic, regional perspective aligns with the distributed systems approach and would enable development of fit-for-community solutions through partnerships between businesses and utilities.

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Santa Clara Valley Water District

File No.: 19-0661

Agenda Date: 7/10/2019

Item No.: 3.2.

COMMITTEE AGENDA MEMORANDUM

Recycled Water Committee

SUBJECT:

Update on Conceptual Refinery Recycled Water Exchange with Contra Costa Water District and Central Contra Costa Sanitary District.

RECOMMENDATION:

Receive information on the status and next steps for the Refinery Recycled Water Exchange Project.

SUMMARY:

In 2017, Santa Clara Valley Water District (Valley Water) was approached by Central Contra Costa Sanitary District (Central San) regarding a conceptual refinery Recycled Water Exchange Project (Project) involving Contra Costa Water District (CCWD). Central San is a wastewater agency in Contra Costa County that currently produces approximately 2,000 acre-feet per year (AFY) of recycled water but has wastewater flows that could support more than 25,000 AFY of recycled water production. The conceptual Project would involve Central San delivering recycled water to nearby refineries that are currently receiving CCWD Central Valley Project (CVP) water; in exchange, Valley Water would receive some of CCWD's CVP water.

Valley Water executed a Memorandum of Understanding (MOU) with Project partners Central San and CCWD on April 30, 2018 to conduct a preliminary feasibility study. The work contemplated in the MOU is for evaluation purposes only and is a cursory review of the potential feasibility of the Project. Upon completion, the Partners will review the preliminary feasibility results, and if the Project shows promise, the Partners will determine if additional feasibility study is desired. To conduct the preliminary study, the partners developed a work plan which identified the tasks and roles and responsibilities of each Project partner. These include:

1. Summarizing and updating the information developed from previous efforts by Central San and others.
2. Evaluating the project yield by analyzing how much recycled water Central San is capable of reliably producing, how much of its CVP water supply the CCWD system is capable of yielding, and how much of CCWD's CVP water supply Valley Water is capable of receiving.
3. Developing costs for producing recycled water, conveying the recycled water to the refineries, conveying the yielded CVP water through the CCWD system, and conveying the yielded CVP water from CCWD system to Valley Water.

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4. Following a “beneficiary pays” principle, evaluating the cost and benefit allocation between Central San and Valley Water.

The tasks under the work plan are near completion. Preliminary work to date indicates the potential average annual yield (water supply CCWD system is capable of relinquishing) for this Project is an average of 11,000 AFY. Valley Water is in the process of evaluating how much of the Project yield can be utilized under several planning scenarios. The Project partners have developed preliminary cost estimates for most of the Project elements. Total estimated Project costs (not including any cost/benefit allocations) range from \$2,200 to \$2,800/AFY. Central San is continuing to evaluate costs, benefits, and potential cost allocations for the Project.

The MOU is set to expire on June 30, 2019; the Project partners are in the process of extending the MOU to June 30, 2020 to complete the remaining tasks under the work plan, which include:

- Valley Water to complete its utilization rate analysis.
- Central San to complete the cost allocation task.
- Partners prepare a final report.

If, at the end of this pre-feasibility work, the Project is still desirable by the partners, the Project partners may amend the existing MOU or enter into another MOU to continue analysis and refine the pre-feasibility study to answer any remaining questions.

Valley Water staff will update the Recycled Water Committee upon completion of the current work plan tasks.

ATTACHMENTS:

None.

UNCLASSIFIED MANAGER:

Jerry De La Piedra, 408-630-2257



Santa Clara Valley Water District

File No.: 19-0596

Agenda Date: 7/10/2019

Item No.: 3.3.

COMMITTEE AGENDA MEMORANDUM

Recycled Water Committee

SUBJECT:

Update on Bottling Purified Water at the Silicon Valley Advanced Water Purification Center.

RECOMMENDATION:

Receive information and provide input on staff's efforts to develop an Advanced Purified Demonstration Water Bottling Plan.

SUMMARY:

Per request of Director Estremera, the Office of Civic Engagement (OCE) initiated research in early 2018 on a marketing and outreach program that would allow the Santa Clara Valley Water District (Valley Water) to bottle advanced purified demonstration water for future marketing and outreach purposes. During the August 8, 2018 Recycled Water Committee meeting, staff from OCE presented on the importance of providing taste test samples of purified water as part of a comprehensive outreach strategy for gaining public acceptance and support of purified water. Staff indicated they would continue to investigate bottling purified water for outreach purposes in accordance with the requirements established under Assembly Bill 2022 (AB 2022) in 2017. This memorandum provides an update on these efforts and outlines staff's draft Implementation Plan for Bottling Purified Demonstration Water (Implementation Plan) (Attachment 2).

Advanced Purified Demonstration Water Workgroup

In early 2018, staff from the OCE and the Recycled and Purified Water (RPW) Unit began discussions to provide a safe, potable and attractive outreach tool to reach new audiences and further their understanding of advanced purified water for future drinking water purposes. The Advanced Purified Demonstration Water Workgroup (Workgroup) was formed to review existing demonstration water practices and evaluate bottling purified water prospects for future marketing and outreach efforts. The Workgroup includes staff from the OCE, RPW, Water Quality Unit, Laboratory Services Unit, North Water Treatment Operations Unit, Office of Government Relations and the Office of District Counsel.

The Workgroup initially reviewed and clarified regulatory standing of current operations at the Silicon Valley Advanced Water Purification Center (SVAWPC) and its ability to produce advanced purified demonstration water that satisfies the advanced treatment production requirements stipulated in Title 22. This analysis included a comprehensive review of AB 2022 requirements, which authorizes an operator of an advanced water purification facility to cause advanced purified demonstration water to be bottled and distributed for educational and marketing purposes and to promote purified water.

Following review of the existing regulations, the Workgroup collaboratively developed a draft Implementation Plan.

Implementation Plan for Bottling Advanced Purified Demonstration Water

The draft Implementation Plan provides a road map for utilizing existing infrastructure, with minor improvements, at the SVAWPC to produce up to 16,000 8-ounce bottles, or 1,000 gallons, per year of advanced purified demonstration water for education and outreach purposes.

Based on AB 2022, several requirements must be satisfied prior to bottling advanced purified demonstration water, including demonstration that the purified water meets state and federal drinking water standards, and complies with the treatment requirements of California Code of Regulations Title 22 Section 60320.201.

The SVAWPC currently produces up to eight million gallons per day of purified water from treated municipal wastewater through microfiltration, reverse osmosis, and ultraviolet (UV) disinfection treatment processes. The SVAWPC also includes a side-stream, pilot-scale UV advanced oxidation process (AOP) system that produces fully advanced treated water for operational and research studies. The draft Implementation Plan outlines several modifications to the UV/AOP system that would allow the system to run full-time and be integrated into the facility's supervisory control and data acquisition (SCADA) system. Additionally, the draft Implementation Plan includes installation of post-treatment stabilization of the water which will add minerals back to the water to help increase alkalinity and reduce corrosivity.

Following modifications to the UV/AOP system, an extensive suite of challenge and long-term testing will be performed on the system. Data will be analyzed and compiled to ensure the system is running reliably and is consistently meeting AB 2022 requirements.

To date, only Orange County Water District (OCWD), has produced bottled advanced purified demonstration water. Valley Water staff has been in constant contact with OCWD and will therefore work closely with State and local regulators to ensure operation and testing are carried out in a manner consistent with existing regulations. Following a year of continuous testing, and with approval from State and local regulators, advanced purified demonstration water will then be sent to a qualified FDA-licensed water bottling facility for packaging.

Staff will also evaluate the feasibility of using glass bottles, or other recyclable materials for bottling and distribution of advanced purified demonstration water.

Staff estimates the project will take approximately 24 months to complete and will require approximately \$640,000 for external services.

Next Steps

Staff will begin procurement of consultant services to provide technical and regulatory support and will begin procurement of supplies and materials to modify the existing UV/AOP system. Staff will bring project updates and procurement recommendations to the Board as implementation progresses. In parallel, staff will meet with the Division of Drinking Water to discuss our plans for

modification of the system and our intended sampling and analysis plan.

ATTACHMENTS:

Attachment 1: PowerPoint

Attachment 2: Draft Implementation Plan

UNCLASSIFIED MANAGER:

Jerry De La Piedra, 408-630-2257

Update on Bottling Advanced Purified Demonstration Water at the Silicon Valley Advanced Water Purification Center



Valley Water

Clean Water • Healthy Environment • Flood Protection

1

Recycled Water Committee Meeting – July 10, 2019

AB 2022 (Gordon) – Advanced Purified Demonstration Water

- Allows bottling of “advanced purified demonstration water” for outreach and educational purposes if:
 - Treated by microfiltration, reverse osmosis, advanced oxidation
 - Meets state and federal drinking water standards
- Restrictions:
 - 1,000 gallons per year
 - 8 oz servings



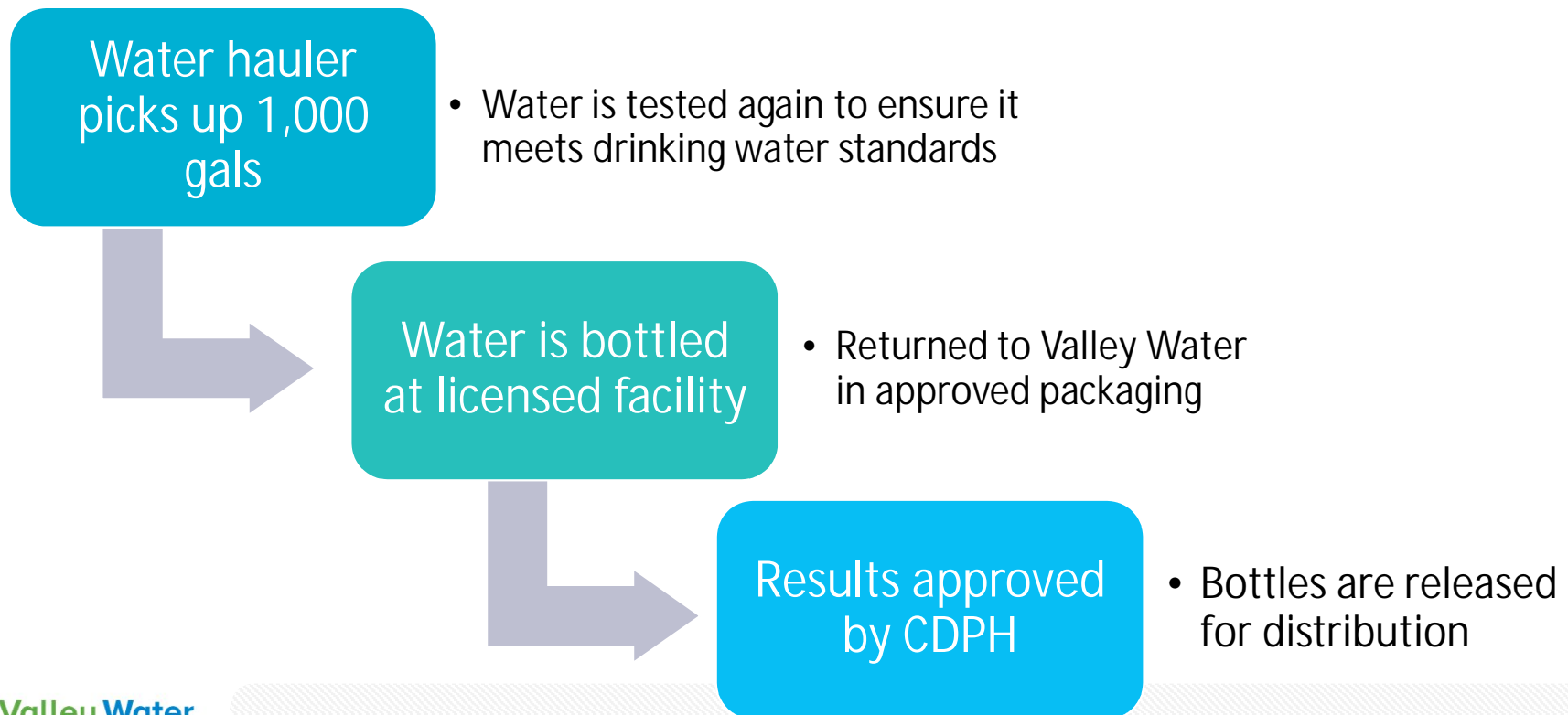
OCWD's advanced purified demonstration water.

Workgroup Developed Draft Implementation Plan

Provides a roadmap to produce up to 16,000 bottles of advanced purified demonstration water for education and outreach purposes.



Bottling Advanced Purified Demonstration Water



Draft Implementation Plan Schedule

Today

Project Phase	2018	2019				2020				2021			
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Implementation Plan													
Meetings with Regulators (as needed)													
Procurement & Installation													
Startup & Challenge Testing													
Continuous Operation & Ongoing Monitoring													
Submit Long-Term Monitoring Report													
Bottle Demonstration Water													
Bottler/ Trucking/ Labels/ Recycling/ Outreach													

Draft Implementation Plan Cost

Description	Anticipated Cost
System modifications and improvements	\$39,000
Post-treatment water stabilization design/installation	\$101,000
Additional online sensors	\$125,000
SCADA integration	\$30,000
Subtotal:	\$295,000
Contingency (25%)	\$73,750
Overhead (15%)	\$44,250
Construction Total:	\$413,000
Consultant Services (technical and regulatory support)	\$100,000
External Laboratory Services	\$125,000
Total:	\$638,000

Draft Implementation Plan: Next Steps

- Meet with regulators to discuss implementation plan and schedule.
- Begin procurement of consultant services, supplies and equipment.
- Provide program updates and procurement recommendations to the Board.
- Begin development of sampling and analysis plan.

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IMPLEMENTATION PLAN FOR BOTTLING PURIFIED DEMONSTRATION WATER



Valley Water

Clean Water • Healthy Environment • Flood Protection

June 2019

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Executive Summary

The Santa Clara Valley Water District, now known as Valley Water, works to provide the people of Santa Clara County with safe, clean water and to ensure water is available to meet future water supply needs. To develop a more reliable, drought-resilient water supply, Valley Water is committed to increasing the use of water reuse within the County to eventually supply up to 10% of countywide water demand by expanding non-potable and potable reuse.

To support the successful implementation of future water reuse projects, Valley Water administers the Recycled and Purified Water Outreach Program (Outreach Program). The Outreach Program's goals include gaining public acceptance of potable reuse through education and community outreach and gaining key stakeholder support. The Outreach Program utilizes a range of strategic engagement strategies, including social media, public relation campaigns, and tours of the Silicon Valley Advanced Water Purification Center (SVAWPC), to build widespread support for water reuse.

Tours of the SVAWPC allow stakeholders and members of the public the opportunity to learn about the proven technology behind the water purification processes. Until recently, tour participants were offered purified demonstration water to observe first-hand the facility's ability to produce water that meets state and federal drinking water standards.

In 2017, Assembly Bill 2022 (AB 2022) standardized the regulatory process for water purification facilities to produce bottled purified demonstration water for marketing and outreach purposes. The use of bottled samples of purified demonstration water has many benefits including the ability to easily transport samples offsite for distribution at community events.

In order to capitalize on this new engagement strategy, Valley Water staff is proposing to implement a Purified Water Bottling Project (Bottling Project) with the goal of ultimately bottling samples of purified water for distribution to key stakeholders and the general public. The Bottling Project will include:

1. Modification and optimization of the existing UV/AOP system at the SVAWPC,
2. Challenge testing and long-term monitoring of the UV/AOP system to demonstrate compliance with AB 2022 and Title 22 requirements,
3. Engagement with state water resource regulators, and
4. Production of up to 1000 gallons per year of Advanced Purified Demonstration Water produced from the SVAWPC.

To support an expedited and successful implementation of the project, staff intends to:

1. Procure consultant services to provide technical and regulatory support, and
2. Procure design-build services to modify the UV/AOP system and ancillary infrastructure at the SVAWPC.

Staff estimates that the Bottling Project will take approximately 24 months to complete and will require \$637,160 for external services. Funds are available in Project No. 91101004 Recycled and Purified Water Program.

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Background

The SVAWPC offers free tours to the public to educate them about advanced water treatment processes and the role of recycled and purified water as a future sustainable water supply. The SVAWPC demonstrates proven technologies to produce purified water that can be used for a variety of purposes, including expanding Silicon Valley's future drinking water supplies. At the end of the tour, participants were until recently provided the opportunity to taste purified demonstration water produced using full advanced treatment: microfiltration - reverse osmosis - UV advanced oxidation process (MF-RO-UV/AOP). This product water meets state and federal drinking water standards and is produced in accordance with the advanced treatment criteria specified in Section 60320.201 of Title 22 of the California Code of Regulations.

In early 2018, Valley Water's Office of Civic Engagement (OCE) initiated research on a marketing and outreach program that would allow Valley Water to bottle purified demonstration water for future marketing and outreach purposes. Assembly Bill 2022 (AB 2022), effective January 1, 2017, authorized an operator of an advanced water purification facility to cause advanced purified demonstration water to be bottled and distributed as samples for educational purposes, and to promote water recycling. Subsequently in May 2018, staff from OCE and the Recycled and Purified Water (RPW) Unit began discussions to advance the project and provide a safe, potable, and attractive outreach tool to reach new audiences to further their understanding of advanced purified water for future drinking water purposes. Consequently, the Purified Demonstration Water Workgroup was formed to review existing demonstration water practices and evaluate the prospect of bottling purified water for future marketing and outreach efforts. The Workgroup includes staff from the OCE, RPW, Water Quality Unit, Laboratory Services Unit, North Water Treatment Operations Unit, Office of Government Relations, and the Office of District Counsel.

The Workgroup has reviewed and clarified the regulatory standing of current operations to produce purified demonstration water and whether the process satisfies advanced treatment production requirements contained in Title 22. Valley Water has already invested significant resources and effort documenting its capability to produce purified drinking water that meets state and federal regulatory criteria.

Regulatory Framework

The adoption of AB 2022 has standardized the regulatory process necessary to produce and subsequently bottle purified demonstration water. The process involves strict protocols for the production (advanced treatment criteria) of purified demonstration water, as well as regulatory criteria to ensure bottling and distribution satisfy California Health and Safety Code standards. Under AB 2022, agencies such as Orange County Water District (OCWD), are allowed to bottle highly purified recycled water to be distributed at no cost as an educational tool.

To ensure purified demonstration water is produced in a manner that is protective of public health, AB 2022 requires that the water meet the following requirements prior to bottling:

1. Be produced in accordance with the advanced treatment criteria for purified water specified in Section 60320.201 of Title 22 of the California Code of Regulations, and
2. Meet all federal and state drinking water standards, including all maximum contaminant levels applicable to public drinking water systems.

Additionally, AB 2022 establishes requirements for use of licensed water-bottling facilities, places restrictions on bottle sizes and number of people served, and establishes guidelines for bottle labels, tracking their distribution, and reporting to the state.

The SVAWPC is currently permitted to produce tertiary disinfected recycled water under the authority of General Water Reuse Order 96-011 (Order 96-011) issued by the San Francisco Bay Region Regional Water Quality Control Board. As part of the SVAWPC's enrollment in Order 96-011, the California Department of Public Health (CDPH) reviewed the SVAWPC's Title 22 Engineer's Report (2011), which describes the facility's full-scale treatment processes, operations strategies, and reliability features. The CDPH found that the report and supplemental information "generally addresses the production of tertiary recycled water..."

In order to satisfy the requirements of AB 2022, modifications to the pilot-scale UV/ AOP system will be made and additional water quality testing will be performed.

Existing Facilities

SVAWPC UV/AOP pre-treatment systems include microfiltration and reverse osmosis membrane treatment, and decarbonation for pH adjustment.

Microfiltration (MF) System

The MF system consists of eight filter racks containing 112 Pall Microzoa® (UNA-620A) modules per rack, MF feed strainers, and MF feed water pH, turbidity, and total chlorine residual analyzers. The MF system is designed for 11.7 mgd feed flow and 90% recovery, resulting in a 10.5 mgd filtrate flow. Flow from the MF membranes is directed to a 250,000-gallon capacity inter-process storage tank designed to equalize the flow between the MF and RO systems.

Microzoa® MF membranes are rated to 0.1 micron (µm) nominal pore size. These are designed to achieve a filtrate turbidity of less than 0.1 NTU. MF is used to remove particulate and microbial contaminants, Giardia, and Cryptosporidium using a low-pressure filtration system. Because the MF system is located upstream of RO, it mitigates RO membrane fouling by reducing the level of particulates and larger colloids. MF also reduces the concentration of particulate-associated bacteria.



Figure 1. SVAWPC MF System

Reverse Osmosis (RO) System

The RO system is from Doosan, using membrane LG BW 400 ES. The RO process consists of three (3) two-stage trains with a total combined capacity of 8 mgd. Each train consists of 80 pressure vessels (52 first-stage, 28 second-stage), containing seven RO membrane elements each, resulting in a total of 560 RO membrane elements per train. The system is designed for a nominal flux of 12 gfd and 80-85% recovery.

The non-porous RO membranes remove salt ions and organic molecules by size exclusion and by electrostatic charge. Although some salts and organic molecules may pass through the membrane by diffusion, their removal rates should generally be greater than 99%. Because RO membranes are non-porous, they should form an absolute barrier to pathogens.



Figure 2. SVAWPC RO System

Decarbonation Towers

Decarbonation is required to stabilize the RO permeate (ROP) stream because excess carbon dioxide builds-up through the RO system as a result of the lower feed pH to the RO process. The excess carbon dioxide drives down the pH of the ROP water. To remove excess carbon dioxide, before the UV/AOP process, the ROP is sent to decarbonation towers. These towers are filled with a plastic media and the water being treated is trickled down over the media while a counter-current fan blows air onto the water, off-gassing, or releasing, the excess carbon dioxide. To ensure that not all the acidity is removed, a portion of the ROP water is bypassed around the decarbonation process and then mixed back with the decarbonated stream.



Figure 3. SVAWPC Decarbonation Towers

Hydrogen Peroxide/UV Advanced Oxidation Process (AOP)

The advanced oxidation pilot system at the SVAWPC is a smaller-scale version of the LBX1000 UV reactor for use at full-scale. The LBX90 reactor houses four (4) 330W low-pressure high-output lamps. The pilot AOP system operates at 10 gpm flow rate, 5-6 mg/L hydrogen peroxide dose, and 100% UV power.

The pilot setup comprises an upstream flash mixer, flow meter, a hydrogen peroxide storage tank, and a peroxide dosing station. RO membranes will periodically pass trace contaminants at the nanogram per liter (ng/L) or part per trillion level and the subsequent advanced oxidation system can be used to break down many of these compounds.

Table 1. UV/AOP Pilot Unit Design Parameters

Parameter	Value
Design flow rate	10 gpm
Inlet pressure requirement	25 psi
Total suspended solids (max)	<5 mg/L
Allowable Effluent Temperature Range	41-86 °F
UV transmittance at 253.7 nm	80%, minimum
UV dose	200,000 $\mu\text{Ws}/\text{cm}^2$ MF
Peroxide dose	5-6 ppm



Figure 4. SVAWPC UV/AOP Pilot System

Listed below are the critical alarms that turn off the UV vessel.

- Vessel 1 24V power supply failure
- Vessel 1 ballast temperature high alarm
- Vessel 1 enclosure temperature very high alarm
- Vessel 1 remote I/O communication failure
- Vessel 1 temperature high alarm (if equipped)

Hydrogen peroxide pump flow rate can be manually set on the pump controller. The hydrogen peroxide will be controlled via the control buttons on the front of the pump panel to manually set the flow rate of the pump. The control of the pump will be based upon maintaining the dosage rate. The set point is maintained until the unit is off or the set point changed. The UV system can be set up to monitor and record data from the pump.

The HMI monitor is located on the front of the control panel that is mounted beside the UV/AOP skid. The HMI has an AOP screen that can be used for setting of the system parameters. The operation of the pilot skid is a semi-automatic function. The pilot unit set points are manually

adjusted by changing the UV dose set point or the peroxide pump dose rate to achieve the target destruction. Once peroxide dose increases over 6 ppm of peroxide the UV disinfection could be degraded. The UV system target dose rate is set and the PLC controls the power to the lamps to achieve the target dose set point.

The existing hydrogen peroxide pump is sized for 4.4 l/h flow rate. With dose rate of 5 mg/l of 5% solution, the expected usage for 26-gallons of hydrogen peroxide solution is about 20 days without having to fill the tank.

Table 2. Hydrogen Peroxide Dose Rate vs. Flow Rate

Solution Concentration weight %	Hydrogen Peroxide			
	Dose mg/L	Flow Rate		
		ml/min	l/h	g/d
35	3	0.2	0.011	0.1
10	3	0.7	0.043	0.3
5	3	1.5	0.088	0.6
35	5	0.3	0.019	0.1
10	5	1.2	0.072	0.5
5	5	3.3	0.197	1.2
35	10	0.8	0.050	0.3
10	10	3.2	0.193	1.2
5	10	6.6	0.393	2.5

The maintenance and cleaning requirements for the AOP system will be identical to the full-scale units. The cleaning cart used for the full-scale UV system can be used for AOP system as well.

Implementation Plan for Bottling Recycled Water

The Purified Demonstration Water Workgroup has developed this Implementation Plan to outline the steps necessary to satisfy the requirements established in AB 2022 and ultimately provide bottled advanced purified demonstration for educational and outreach purposes.

Infrastructure and SCADA Improvements

While the SVAWPC continues to produce high-quality tertiary disinfected recycled water through the MF, RO, and full-scale UV disinfection system, several modifications to the UV/AOP pilot skid will be required to ensure that advanced purified demonstration water is produced safely and reliably.

Infrastructure Improvements

The UV/AOP pilot skid infrastructure improvements will include the following:

- Upgrade existing hydrogen peroxide injection pump
- Change peroxide injection location to pre-flush mixer
- Install modulated control valve before the flow meter to control flow automatically from Wedeco HMI system
- Add calibration column for chemical metering pump (HACH H₂O₂ test kit (CAT #22917-00) will also be used to verify peroxide dose rate)
- Add level sensor for peroxide tank and secondary containment
- Add a stainless-steel sample sink to collect all samples from RO permeate, UV feed, UV product and final product water (FPW).
- Add electronic valve to close upon process alarm to prevent “delivery” to sample sink, to satisfy T22 Article 10
- Add dual online analyzers: UVT analyzer pre-UV reactor, total chlorine analyzer pre-peroxide injection, high purity pH sensor post-calcite contactor, peroxide analyzer, and TOC analyzer at the FPW.
- Add valve at the end of the drain to achieve pressure for the sample line to flow
- Add calcite contactor after UV/AOP (see post-treatment strategy below for details).
- Add a sample location after calcite contactor

Post-treatment Strategy. A calcite contactor addition will be the final post-treatment step, adding minerals back into the MF-RO-UV/AOP-treated water in the form of calcium and alkalinity to help stabilize the FPW and reduce its corrosivity. The post-treatment strategy involves first targeting an alkalinity of 40 mg/L (as CaCO₃) and then a pH of about 7.8 in the FPW.

Calcite contactor media consists of a layer of limestone on the top and a layer of supporting media on the bottom. There are various factors that can affect the dissolution of limestone such as the quality of water to be stabilized and the physical and chemical characteristics of limestone to be used.

Calcite contactor decision tree (Figure 5) has been used to determine the feasibility of the calcite contactor.

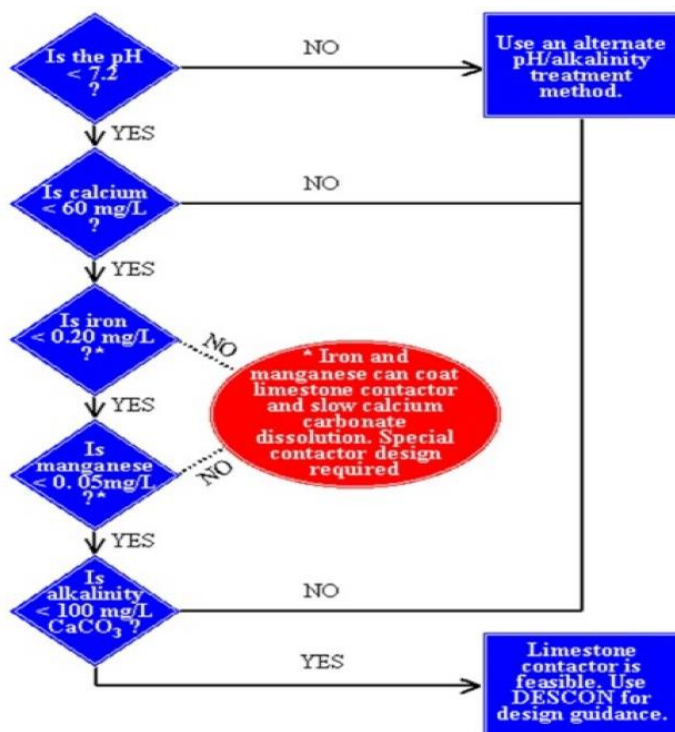


Figure 5. Limestone Contactor Decision Tree

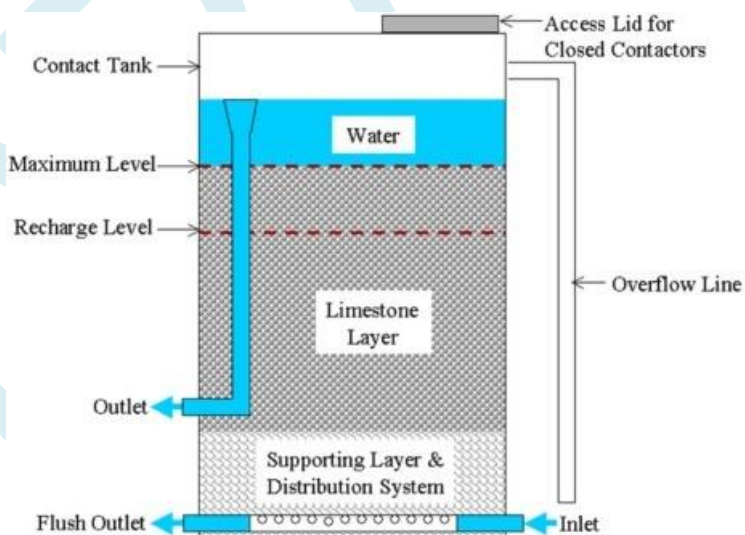


Figure 6. Typical Calcite Contactor

The height of the limestone bed in a contactor depends on the contact time and superficial flow rate. According to Stauder (2002), the height of the limestone bed should be in the range of 4 to 10 feet (1 to 3 meters). This should yield an empty bed contact time (EBCT) of 15 to 60 minutes,

which is an optimum range for contactor design. EBCT is equal to the volume of the empty bed divided by the flow rate.

In general, the limestone used should contain a high amount of calcium carbonate. The limestone used should be of “sedimentary rock consisting of mainly carbonate and containing no more than 0 to 5% magnesium carbonate” as described in ASTM Standard C51: Standard Terminology Relating to Lime and Limestone (as used by the Industry). In addition, the testing of constituents in the stone should also adhere to the ASTM Standard 25-99: Chemical Analysis of Limestone, Quicklime, and Hydrated Lime. Since aluminum and iron can hinder dissolution by precipitating on the media, the weighted sum of aluminum and iron in the media should not exceed 10 mg/g of media. The optimal size of stone is within the range of 11 to 14 mm stone (0.4 to 0.55 inch).

Table 3. Calcite Contactor Design Criteria

Location in the Treatment Train	Post UV/H ₂ O ₂ disinfection
Water Quality Characteristics	The water to be treated with a limestone contactor must have a pH < 7.2, calcium < 20 mg/L, alkalinity < 100 mg/L, DIC < 10 mg/L as C, and low iron and turbidity content. All these conditions are met in SVAWPC RO permeate.
Empty Bed Contact Time (EBCT)	15.6 minutes
Loading Rate	1 gpm/ft ²
Flow Requirements	25 gpm - Limestone contactors must be designed to treat the maximum flow of the plant.
Limestone Bed Depth	2.1 feet
Limestone Characteristics	Limestone used should be that described in ASTM Standard C51-02 as “sedimentary rock consisting of mainly carbonate and containing no more than 0 to 5% magnesium carbonate”. Testing of constituents of stone must adhere to the ASTM Standard 25-99 (Chemical Analysis of Limestone, Quicklime and Hydrated Lime).
Limestone Grain Sizes	1.5 cm
Supporting Media	Supporting media used is based on the AWWA Standards for Filtering and Support Media. The size of the support media used should be larger than the limestone size.
Flush Outlet	Flush water from the calcite contactor will be drained to the floor drain inside of the process building where it will be eventually conveyed to the Emergency Basin Overflow Structure (EBOS) at the San José/Santa Clara Regional Wastewater Facility headworks for disposal along with the other waste streams from the SVAWPC.

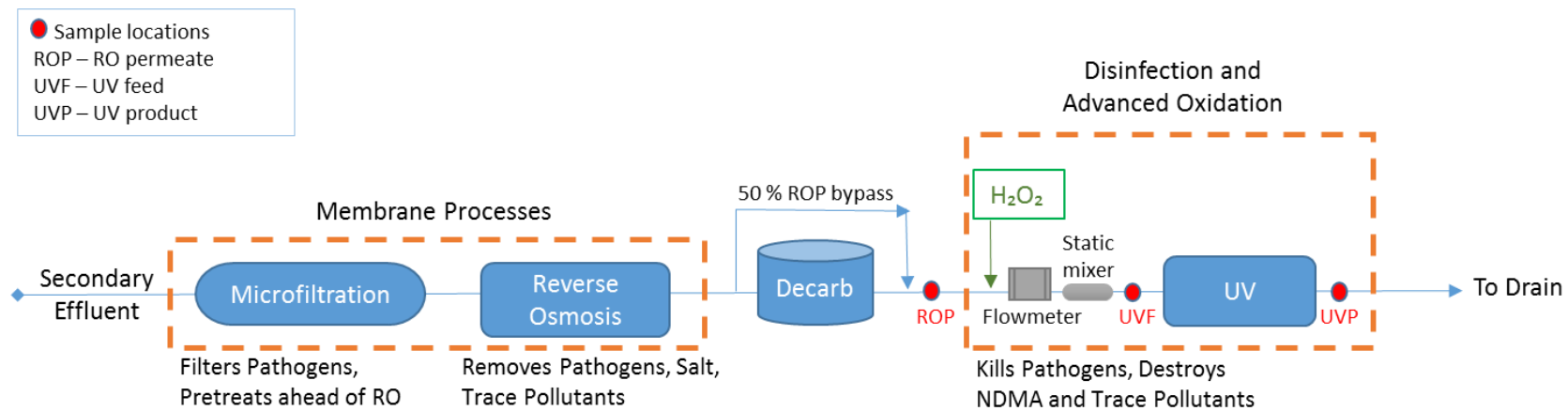


Figure 7. Existing MF-RO-UV/AOP Treatment Train

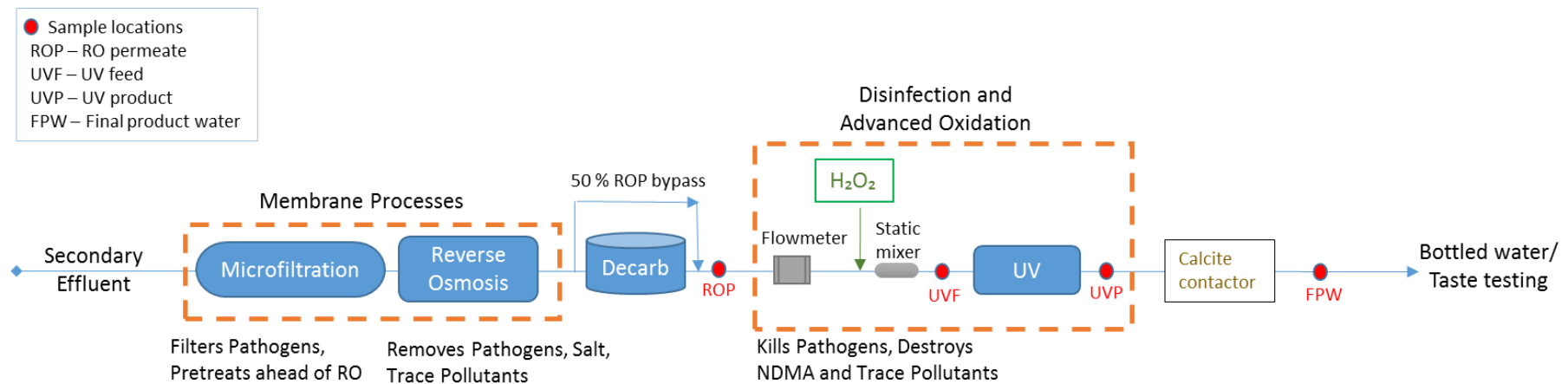


Figure 8. MF-RO-UV/AOP Treatment Train after UV/AOP Pilot Modification

SCADA Improvements

Valley Water is working with Wedeco Xylem to improve the programming of the LBX 90 UV/AOP skid to obtain operational data and more certainty of the operation of the UV/AOP process. SCADA improvements include updating the control algorithm for UV dose calculation, updating IP addresses for UV control equipment, setting up SCADA communication so that all process data can be monitored remotely, integrating LBX 90 UV/AOP system so that it can operate in auto-mode, and verification of proper system operation by Wedeco.

The UV/AOP pilot skid SCADA improvements will include the following:

- Add SCADA set-point for the feed flow; design flow rate for the UV reactor is 10 gpm
- Add SCADA low level set-point for the peroxide tank level sensor
- Alarms will be run through HMI and all alarms will be listed on the pilot unit HMI. Plant SCADA screen will show only Pilot is On/Off
- Connect online analyzers to plant SCADA and add tags to PI AF
- Connect modulated control valves to Wedeco HMI and show status on the pilot screen
- Set up SCADA communication to monitor pilot process remotely
- Update control algorithm for UV dose calculation
- Update IP addresses for UV control equipment
- Start-testing and verification

Evaluate Reusing AOP Treated Water

To facilitate the timely implementation of the Bottling Project, water that is not used for water quality testing or for bottling will be diverted to the existing floor drain at the SVAWPC where it will ultimately be conveyed back to the San José-Santa Clara Regional Wastewater Facility. Once the project is underway, Valley Water staff will evaluate ways to recycle the highly treated water from the UV/AOP process. Possible alternatives may include diverting the treated water to the decarbonation towers or to the SVAWPC intake pumps. Implementation of these additional modifications will occur in a timely manner following evaluation of impacts to operations, permit compliance, water quality concerns, and associated cost.

Challenge Testing and Long-Term Monitoring

Prior to distribution, advanced purified demonstration water must be shown to meet the following requirements:

1. Be produced in accordance with the advanced treatment criteria for purified water specified in Section 60320.201 of Title 22 of the California Code of Regulations, and
2. Meet all federal and state drinking water standards, including all maximum contaminant levels applicable to public drinking water systems.

Title 22 Advanced Treatment Criteria. Section 60320.201 of Title 22 establishes operational and performance criteria for RO and AOP used in the production of recycled water for groundwater replenishment via subsurface application.

Reverse Osmosis System

Salt Rejection. RO systems that are operated in accordance with the advanced treatment criteria are required to utilize membrane elements that achieve a minimum sodium chloride rejection of no less than 99.0% and an average (nominal) sodium chloride rejection of no less than 99.2%, as demonstrated in accordance with ASTM D4194-03 Method A (2008).

The LG NanoH₂O BW440 ES RO membranes installed on the SVAWPC RO system are certified by the manufacturer to exceed the required minimum and average sodium chloride rejection.

Total Organic Carbon (TOC) Removal. The advanced treatment criteria require monitoring of TOC in RO permeate during the first twenty weeks of full-scale operation. No more than 5% of the collected samples shall have concentrations greater than 0.25 mg/L.

RO permeate TOC is monitored in real-time using GE Sievers M9 on-line analyzer installed at the WQ6 – decarb effluent analyzer panel. Weekly verification samples are taken and analyzed by Valley Water's Water Quality Laboratory.

On-Going Performance Monitoring. Use existing monitoring set points per SVAWPC Operations Plan.

Advanced Oxidation System

To demonstrate sufficient oxidation processes are occurring, challenge testing using 1,4-dioxane spiking will be used to demonstrate that at least 0.5-log reduction of 1,4-dioxane is observed under anticipated operational conditions. A testing protocol will be developed to detail anticipated flow regimes, UV dosages, 1,4-dioxane spike concentrations, and field and analytical methods. The draft test protocol will be shared with the DDW for feedback prior to the beginning of challenge testing.

The results from the AOP challenge testing will be used to establish an acceptable operational range for running the AOP system to produce advanced purified demonstration water.

Water Quality Monitoring

Once improvements to the AOP system have been completed and challenge testing has been performed, operational parameters and identified surrogates will be monitored for 12 months to ensure real-time monitoring adequately ensures disinfection and oxidation is occurring.

Additionally, monthly samples of FPW (after UV/AOP and calcite contactor) will be collected and analyzed for contaminants that have:

- State and Federal Primary Maximum Contaminant Levels (MCLs)
- California secondary MCLs,
- California Notification Levels (NLs)
- Monitoring requirements identified in California's Recycled Water Policy

The 12 months of samples will demonstrate that water treated by the AOP system complies with State and Federal drinking water requirements. Results will be shared with DDW prior to bottling of advanced purified demonstration water.

Engagement with Regulators

Since the SVAWPC's Title 22 Engineer's Report did not address the operation of LBX 90 UV/AOP system or the operation of the facility to produce water in accordance with Title 22's Advance Treatment Criteria, Valley Water will consult with state regulators to ensure production and distribution of the water is compliant with the requirements of AB 2022. Several documents will be prepared and shared with regulators to detail Valley Water's intent to bottle advanced purified demonstration water, describe the operation of the AOP system, and to illustrate that water produced from AOP system complies with AB 2022 and Title 22 requirements.

Implementation Plan

This Implementation Plan was developed to outline Valley Water's efforts to enhance the operation and reliability of the exiting AOP system at the SVAWPCs and to describe the process by which Valley Water intends to bottle advanced purified demonstration water. This plan will be presented to Valley Water's management for review and approval.

Quality Assurance Project Plan (QAPP) for the Bottling of Advanced Purified Demonstration Water

Valley Water will develop a QAPP to detail the sampling and analysis to be performed on the enhanced AOP system. The QAPP will identify quality assurance and quality control (QA/QC) objectives for the projects, sampling locations and frequencies, analytes to be sampled and acceptable analytical methods, acceptable reporting limits, and applicable regulatory objectives. The QAPP will cover sampling and analysis necessary for the AOP challenge testing to evaluate 1,4-dioxane removal, as well as long-term sampling to ensure Final Product Water meets all State and Federal drinking water standards. A draft of the QAPP will be shared with DDW for feedback prior to implementation.

AOP Challenge Test Technical Memorandum

The results of the AOP challenge testing to evaluate spiked 1,4-dioxane removal under a variety of water flowrates, lamp power, and oxidant dose will be summarized in the AOP Challenge Test Technical Memorandum (AOP Challenge Testing TM). The AOP Challenge Testing TM will make recommendations for acceptable thresholds for operational parameters, such as flowrate, pH, UV dose, oxidant dose, and surrogates suitable for real-time monitoring. The recommendations will be used for the normal operation of the UV/AOP system. The AOP Challenge Testing TM will be shared with DDW to demonstrate that the UV/AOP system is achieving sufficient oxidation processes pursuant to section 60320.201(d).

Long-Term Monitoring Technical Memorandum

The UV/AOP system will be operated for a minimum of 12 months under the normal operation conditions recommended in the AOP Challenge Testing TM. During this time, operational parameters and surrogates will be monitored to ensure oxidation is consistently achieved. Additionally, the final product water will be sampled for regulated contaminants. The results of the

long-term monitoring will be summarized in the Long-Term Monitoring Technical Memorandum (Long-Term Monitoring TM). Within 60-days of completing a minimum of 12 months of operation, the Long-Term Monitoring TM will be shared with DDW to demonstrate the efficacy of the online surrogates, and to demonstrate that the final product water meets all state and federal drinking water requirements.

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Bottling Purified Water

In addition to establishing requirements for the production of advanced purified demonstration water, AB 2022 also establishes requirements for the bottling of the produced water.

Requirements include:

- Advanced purified demonstration water must be transported, bottled, labeled, and handled in accordance with Article 12 of Chapter 5 Part 5 of Division 104 of the California Health and Safety Code, “Bottled, Vended, Hauled, and Processed Water.”
 - Article 12, beginning with Section 111070, details reporting requirements, sanitation and operational standards, and fees for water bottling operations.
 - Bottling must be done by an appropriately certified commercial bottling facility
- Conduct a full sanitation of the bottling and filling equipment immediately after bottling advanced purified demonstration water (Health and Safety Code Section 111070.5.b.3).
- Limitation of advanced purified demonstration water bottle volume to eight ounces.
- Bottles will be nonreturnable (one-way) bottles.

OCWD Bottling Experience – Lessons Learned

Valley Water staff met with OCWD staff in July 2018 to discuss their experiences and lessons learned with bottling advanced purified demonstration water. OCWD described their practical experience with bottling as follows:

- OCWD evaluated several materials for bottles before selection plastic due to its clear appearance, ease of shipping, and low unit cost.
 - Glass bottles were found to be not practical for shipping, recycled plastic containers were not clear (obstructed water from view), aluminum cans were expensive.
- Staff had difficulty securing a certified commercial bottling operation due to the relatively small volume of bottled water needed.
- Purified demonstration water is produced and placed in a tanker for transport to the bottling facility.
 - Water is collected and analyzed for the full list of drinking water standards. Results are sent to the Department of Public Health.
- The demonstration water is bottled and returned to OCWD where it is held until clearance is received.
- OCWD reported that bottling cost between \$0.61 and \$0.99 per bottle (tanker truck for transportation, bottling vendor producing 16,000 bottles), or between \$9,760 and \$15,840 per year.

Update Outreach and Communication Plan

Valley Water conducts multi-year outreach and communications activities to educate the public on the need for and benefits of recycled/purified water for potable reuse. Upon the completion of the infrastructure upgrades at the Silicon Valley Advanced Water Purification Center, Valley Water will resume taste tests and promotion and distribution of bottled purified water will be included as an education and marketing strategy in the broader ongoing recycled/purified water communications plan, as outlined below.

Bottled Purified Water

- **Marketing** – Valley Water will develop a label design for the bottled purified water that meets the branding and design guidelines for Valley Water and the Silicon Valley Advanced Water Purification Center; and is reviewed and approved by the California Department of Drinking Water. The labels are required to include the following statements:
 - “Advanced purified water sourced from wastewater” (must be prominent)
 - “sample water - not for sale”
 - Number of ounces
 - Expiration date
 - Produced by
 - Contact information

The label will be printed and applied to the bottles by the bottling company selected by Valley Water.

- **Storage** – Valley Water will store the bottled purified water at the Winfield Warehouse. The bottled purified water inventory will be controlled and only accessible to permitted Valley Water staff. Shelf life is two years.
- **Distribution** – Valley Water will distribute the bottled purified water at the Silicon Valley Advanced Water Purification Center during tours and share it at off-site meetings and community events, festivals and for other educational and outreach purposes. Individuals who voluntarily receive the bottled purified water will sign the standard waiver currently used at the purification center tours.

Distribution of bottled purified water will comply with the serving limits established in AB 2022, including not serving more than 25 people the water on a tour or with a bottle of water for more than 60 days in a calendar year

- **Tracking and reporting** – Valley Water will track the bottle distribution to comply with the Taste Test Water Reporting Plan requirements (Water Code 13570.n.1-4), which include:
 - Daily tracking by number of individuals – “Maintain a daily record of the number of individuals to whom advanced purified demonstration water is distributed, served, made available, or otherwise provided, including, but not limited to, from a bottle”
 - Develop and submit an annual distribution report – “Compile a report of all daily records described in paragraph (1) for each year” and “Provide the report within

45 days of the end of the calendar year for which the report was made to the deputy director of the Division of Drinking Water of the State Water Resources Control Board”

Continuous Stream Station

As part of the infrastructure upgrades, a new tasting tap and stainless-steel sink area will be installed by the Bottling Work Group or Operations Unit next to the UV/AOP pilot unit.

- **Signage** – Valley Water will develop signage for the tasting tap and sink area that meets the branding and design guidelines for Valley Water and the Silicon Valley Advanced Water Purification Center.
- **New tour stops** – Valley Water will add the tasting tap and sink area as the last stop of the purification center tour. Visitors will be able to view the purified water running from a tap and into the SS sink. This will accompany the current water sample beakers, which show the water after each stage of the advanced treatment process.

Bottling Key Messages

Valley Water will develop a list of “frequently asked questions” about the bottling effort and taste tests for staff to use as talking points to ensure a consistent message is communicated to the public. The FAQ will be updated as needed to reflect the changes and progress of the bottling implementation plan.

Schedule and Resource Requirements

Producing bottled advanced purified demonstration water will require the coordination and efforts of a number Valley Water staff. With the completion of the Implementation Plan for Bottling Recycled Water, staff has established a framework for successfully delivering bottled advanced purified demonstration water. The anticipated project schedule can be found in Table 4.

Table 4. Schedule for Bottling Advanced Purified Demonstration Water

Project Phase	2018	2019				2020				2021			
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Implementation Plan													
Meetings with Regulators (as needed)													
Procurement & Installation													
Startup & Challenge Testing													
Continuous Operation & Ongoing Monitoring													
Submit Long-Term Monitoring Report													
Bottle Demonstration Water													
Bottler/ Trucking/ Labels/ Recycling/ Outreach													

A brief description of the various project phases includes:

- Implementation Plan
 - Purified Demonstration Water Workgroup develops Implementation Plan for Bottling Project and initial resource estimates.
- Meetings with Regulators
 - Present initial implementation plan, receive feedback.
 - Present test plans and preliminary results.
 - Present final long-term monitoring results and report, receive approval to bottle advanced purified demonstration water.
- Procurement & Installation
 - Procure sensors, valves, new sample sink, and calcite contactor.
 - Contract with external laboratory for water quality analysis.
 - Modify existing AOP system to add calcite contactor and sample sink.
 - Install new sensors and valves, integrate system into SVAWPC SCADA.
- Startup & Challenge Testing
 - Develop Challenge Testing Test Plan.
 - Perform 1,4-Dioxane challenge testing to verify AOP performance.
- Continuous Operation and Ongoing Monitoring
 - Run AOP system 24/7 (as feed water allows).
 - Conduct monthly water quality tests.

- Perform sensor calibration and preventative maintenance as needed.
- Submit Long-Term Monitoring Report
 - Prepare Long-Term Monitoring Report summarizing 12-months of continuous operation of the AOP system.
 - Submit report to DDW.
- Bottle Demonstration Water
 - Send batch of Advanced Purified Demonstration Water to FDA certified water bottling facility.
 - Take water quality samples from batch and have them tested for all state drinking water requirements.
 - Receive 16,000 sample bottles, hold bottles until all water quality results from batch indicate that the sample water meets all drinking water requirements. Once results are in, release bottles for distribution.
- Bottler/Trucking/ Labels/ Recycling/ Outreach
 - Contract with local FDA certified water bottling facility to bottle Advanced Purified Demonstration Water once DDW requirements are satisfied.
 - Contract with local water hauling company to transport Purified Demonstration Water to bottling facility.
 - Design labels for bottles and other new outreach material.
 - Develop bottled water tracking system.

To ensure planning, construction, and testing are carried out in an expedient and compliant manner, Valley Water staff intends to procure in parallel a consultant for design-build services and a consultant for technical support services. Staff will develop plans and specifications for the design-build consultant, who will be responsible for procuring materials and equipment, making the system modifications, and verifying the correct operation of the system. The technical services consultant will develop challenge and long-term testing protocols, along with providing regulatory support while Valley Water staff engage with regulators.

An estimate of the project costs and anticipated staff needs are presented in Table 5, Table 6, and Table 7 below.

Table 5. Estimated Cost of UV/AOP Pilot Unit Improvements

Item	Description	Price
Chemical injection pump	Hydrogen peroxide, low dose rate, NSF approved	\$2,000.00
Modulated control valve	Before inlet flow meter	\$1,500.00
Modulated control valve	Pre-sample sink	\$1,500.00
Hand valve	At the end of drain for back-pressure regulation	\$100.00
Calcite contactor design/ built		\$100,000.00
Limestone	Media for contactor	\$1,000.00
Calibration column	Low flowrate, chemical dosing	\$100.00
Secondary containment		\$200.00
Sample sink	Stainless steel, multiple outlets	\$3,000.00
UV transmittance analyzer		\$3,500.00
Total chlorine analyzer (x2)		\$8,000.00
Hach high purity pH sensor (x2)		\$54,000.00
TOC analyzer (x2)		\$50,000.00
Peroxide analyzer (x2)		\$7,000.00
Level sensor	Install on hydrogen peroxide tank	\$2,000.00
Reconfigure injection location	Inject hydrogen peroxide pre-flush mixer	\$500.00
SCADA Integration		\$30,000.00
Signage	New interpretive signs at sample sink	\$5,000.00
Other labor work	ex. control tech, maintenance, electrician, KBL, etc.	\$25,000.00
Construction Subtotal:		\$294,400.00
Contingency	25% of subtotal	\$73,600.00
Overhead and Profit	15% of subtotal	\$44,160.00
Design-build Services Construction Total:		\$412,160.00
Consultant Services	Technical support services	\$100,000.00
External Laboratory Services	Analytes not analyzed by Valley Water Lab	\$125,000.00
Project Total:		\$637,160.00

Table 6. Monthly O&M Costs

Category	Description	\$/month
Power	Lamps (4 x 330W)	\$70
	Sensors, Chemical Dosing Pump	\$50
Chemical	Hydrogen Peroxide stock	\$370
	Calcite Replacement	\$60
	Calibration Standards, others as needed	\$50
Services	Equipment Service Contracts	\$800
Sub-total:		\$1,400
Contingency (25%)		\$350
Total:		\$1,750

Table 7. Anticipated Staffing Needs

Unit	Unit Name	Task Description	Hours/ Month
153	Office of Civic Engagement	<ul style="list-style-type: none"> • Develop new messaging and key visuals • Track bottle distribution and prepare annual report • Review deliverables during development of continuous flow station • Participate in Purified Demonstration Water Workgroup 	10
410	Recycled and Purified Water (Project Manager)	<ul style="list-style-type: none"> • Procure and manage technical services consultant • Coordinate and oversee monthly water quality monitoring, including external laboratory services • Manage EQUiS water quality database for project • Develop technical memorandums • Meet with regulators • Participate in Purified Demonstration Water Workgroup 	90
525	Water Quality	<ul style="list-style-type: none"> • Provide process engineering support for operation of UV/AOP pilot system • Coordinate engagement with DDW and County Department of Public Health • Participate in Purified Demonstration Water Workgroup 	15
535	Laboratory Services	<ul style="list-style-type: none"> • Prepare sample bottles and analyze monthly water quality samples • Manage Valley Water LIMS database • Participate in Purified Demonstration Water Workgroup 	65
565	North Water Treatment Operations	<ul style="list-style-type: none"> • Conduct daily rounds; verify and ensure correct operations of UV/AOP pilot system; respond to system alarms and process adjustments; • Perform preventative maintenance on sensors, UV reactor, and pumps; perform corrective maintenance and repairs as needed; • Participate in Purified Demonstration Water Workgroup 	100

Next Steps

Following finalization of the Implementation Plan, Valley Water staff, with Unit 410 Recycled and Purified Water staff serving as Project Manager, will finalize plans and specifications for the UV/AOP pilot skid modifications and begin the process of procuring the two consultant contracts, with the objective of having the system up and running by the end of January 2020. Once the system is online, challenge and long-term testing can begin.

In conjunction with making modifications to the system, staff will meet with regulators to discuss the scope and schedule of challenge and long-term testing.

The Purified Demonstration Water Workgroup will continue to meet on a regular basis to oversee the development and implementation of bottling efforts.



Santa Clara Valley Water District

File No.: 19-0597

Agenda Date: 7/10/2019

Item No.: 3.4.

COMMITTEE AGENDA MEMORANDUM

Recycled Water Committee

SUBJECT:

Update on the 5th Independent Advisory Panel Meeting.

RECOMMENDATION:

Receive information on the 5th meeting of the Independent Advisory Panel for evaluation of Santa Clara Valley Water District's Potable Reuse program and efforts.

SUMMARY:

The National Water Research Institute (NWRI) established the Independent Advisory Panel Program to provide objective, third-party scientific review of projects or programs within the water and wastewater communities. NWRI Panels are used by public agencies, state agencies, and companies when a project involves challenging issues that would benefit from having an independent third-party scientific and technical review by national experts.

In 2012, Valley Water contracted with NWRI to establish an Independent Advisory Panel (IAP) of water reuse academics, industry leaders, regulatory experts to review and provide feedback on Santa Clara Valley Water District's (Valley Water) developing water reuse program. Since 2012, the IAP has met five (5) times to review technical materials and provide recommendations on program developments.

On May 17, 2019 Valley Water staff presented to the IAP on efforts undertaken since their last meeting, including:

- Valley Water Potable Reuse Efforts;
- Countywide Water Reuse Master Planning (CWRMP);
- Reverse Osmosis (RO) Concentrate Management; and
- Recycled and Purified Water Outreach Efforts

The IAP will be preparing a report containing their comments and recommendations on the following projects and programs:

1. Advanced Oxidation Process Study
2. Log Removal Values for RO using Electro-Conductivity and Total Organic Carbon Monitoring

3. Hydrodynamic Modeling of the South Bay
4. Engineered Treatment Cell Pilot
5. Prospective RO Concentrate Treatment Studies (e.g., Electro-Coagulation)
6. Toxicity Analysis for RO Concentrate
7. Countywide Water Reuse Master Plan
8. Recycled Water Outreach Activities

The final IAP report will be provided in Fall 2019.

ATTACHMENTS:

Attachment 1: PowerPoint Presentation

UNCLASSIFIED MANAGER:

Jerry De La Piedra, 408-630-2257

Update on the 5th Independent Advisory Panel Meeting



Valley Water

Clean Water • Healthy Environment • Flood Protection

National Water Research Institute (NWRI) Independent Advisory Panel (IAP)

2

- Valley Water hosted the 5th IAP meeting on May 17, 2019
- Partner agencies and stakeholder organizations attended and added to discussion



Attachment 1
Page 2 of 4

Independent Advisory Panel Meeting #5 for Valley Water Potable Reuse Program

3

- Valley Water Staff presented the following topics:
 - Countywide Water Reuse Master plan
 - Reverse Osmosis (RO) Concentrate Management
 - Recycled and Purified Water Outreach Efforts

Independent Advisory Panel Meeting #5 for Valley Water Potable Reuse Program

4

- IAP report will include comments and recommendations on the following:
 - Advanced Oxidation Process Study
 - Log Removal Values for RO using Electro-Conductivity and Total Organic Carbon Monitoring
 - Hydrodynamic Modeling of the South Bay
 - Engineered Treatment Cell Pilot
 - Prospective RO Concentrate Treatment Studies (e.g., Electro-Coagulation)
 - Toxicity Analysis for RO Concentrate
 - Countywide Water Reuse Master Plan
 - Recycled Water Outreach Activities
- Report expected in Fall 2019.



Santa Clara Valley Water District

File No.: 19-0569

Agenda Date: 7/10/2019

Item No.: 3.5.

COMMITTEE AGENDA MEMORANDUM

Recycled Water Committee

SUBJECT:

Review Recycled Water Committee Work Plan.

RECOMMENDATION:

Review and make necessary adjustments to the Committee Work Plan, and confirm next meeting time, date, and discussion subjects.

SUMMARY:

Under direction of the Clerk, Work Plans are used by all Board Committees to increase Committee efficiency, provide increased public notice of intended Committee discussions, and enable improved follow-up by staff. Work Plans are dynamic documents managed by Committee Chairs, and are subject to change. Committee Work Plans also serve as Annual Committee Accomplishments Reports.

The 2019 Recycled Water Committee Work Plan is contained in Attachment 1. Information on this document was populated by staff as follows:

Schedule for Presentation of Materials:

Discussion topics have been populated on the proposed 2018 Work Plan from the following sources:

- Items referred to the Committee by the Board;
- Items requested by the Committee to be brought back by staff;
- Items scheduled for presentation to the full Board of Directors; and
- Items identified by staff.

ATTACHMENTS:

Attachment 1: 2019 RWC Work Plan

UNCLASSIFIED MANAGER:

Michele King, 408-630-2711

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RWC 2019 WORKPLAN

Task	Agenda Item	Staff/Lead	01/09/19	02/13/19	03/13/19	04/10/19	05/20/19	06/12/19	07/10/19	08/14/19	09/11/19	10/09/19	11/13/19	12/11/19
1	Updates on Expedited Purified Water Program	K. Oven	Meeting Cancelled	Meeting Cancelled	Meeting Cancelled	Meeting Cancelled		Meeting Cancelled						
2	Countywide Water Reuse Master Plan	J. De La Piedra					X							
3	Joint Mtg Prep/Debrief: TPAC	J. De La Piedra					X							
4	Joint Mtg Prep/Debrief: Cities of Palo Alto/Mtn View	J. De La Piedra												
5	Joint Mtg Prep/Debrief: City of Sunnyvale	J. De La Piedra												
6	Update on SFPUC/BAWSCA Collaboration Efforts	J. De La Piedra												
7	Conceptual Recycled Water Exchange with Contra Costa Water District and Central Contra Costa Sanitary District	J. De La Piedra							X					
8	Update on Reverse Osmosis Concentrate Management	J. De La Piedra					X							
9	IRS Letter	C. Sun												
10	Evaluate and propose policy options related to centralized and decentralized reuse for Committee's consideration	J. De La Piedra							X					
11	Regional discussions on options to meeting the Board's 10% recycled water goal using either desalination and brackish water	J. De La Piedra								X				

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Santa Clara Valley Water District

File No.: 19-0529

Agenda Date: 7/10/2019

Item No.: 4.1.

COMMITTEE AGENDA MEMORANDUM

Recycled Water Committee

SUBJECT:

Update on the Recycled and Purified Water Outreach Activities.

RECOMMENDATION:

Receive information on the recycled and purified water outreach activities in Fiscal Year 2019 (FY19).

SUMMARY:

Valley Water continually promotes its Recycled and Purified Water Program through public engagement strategies aimed at building community and stakeholder support for the program, and increasing the public's understanding of the benefits of highly recycled (purified) water, including its potential as a future drinking water source. Since 2011, staff has implemented ongoing, public engagement strategies based on past public opinion surveys that revealed overall support for potable reuse using purified water. However, certain groups were less accepting of the concept, such as mothers with young children, and Latino and Asian communities. Subsequently, a Strategic Communications & Outreach Plan was developed based the research findings to target key demographic groups and refine targeted messaging, which is periodically updated.

To reach the general public as well as the key target groups, staff continues to build on the previous outreach efforts, including public tours of the Silicon Valley Advanced Water Purification Center (SVAWPC), including targeted open house events for key target audiences, social media, Valley Water blog posts, community events/open houses, stakeholder presentations and informational materials in multiple languages.

Fiscal Year 2019 (FY19) Outreach Activities

In FY19, the outreach efforts for the Recycled and Purified Water Program included:

- **Public tours** - Hosted 51 tours for 1,650 visitors (as of April 2019). The public tours held during the campaign time periods were completely booked and staff added five additional public tours to the schedule. Future months have already started to receive sign-ups. Collected post-tour surveys after all public tours, which consistently shows more than 90% support for indirect potable reuse and more than 85% support for direct potable reuse.
- **Social marketing campaigns** - Developed two social marketing campaigns informed by the results of the past public opinion surveys, which incorporate key messaging points vetted in past surveys. The purified water social marketing campaigns invite people to take a tour of the

SVAWPC and support potable reuse using video, online ads and social media assets. The testimonial campaign featured 15 community leaders from a diverse group of various industries, including healthcare and environment, tasting the purified water and communicating water reuse messages in their own words.

- **Tracking poll** - In June 2019, staff plans to conduct the annual recycled and purified water tracking poll in four languages after the conclusion of the community leader testimonial campaign to analyze public perception toward water reuse. This year's poll will include questions to collect additional data on the effectiveness of the social marketing campaigns. The results will be available in late summer/fall 2019.
- **Blog posts** - Staff wrote 6 articles to communicate water reuse messages on the Valley Water News blog:
 - Purification center hosts Brazilian delegation (July 2018)
 - 7 reasons to support advanced purified water (July 2018)
 - Purified water: The next frontier in recycled wastewater (Sept. 2018)
 - Innovative study could transform wastewater treatment (Sept. 2018)
 - Savvy seniors in Silicon Valley: Senior Day water tours 2018 (Oct. 2018)
 - That's what s(he) said: Purified water is good for all (March 2019)
 - Paving the way for a new water reuse future (March 2019)
- **Informational materials, social media and website** - Continued to update the print and digital informational materials with the current program messages, and translate all materials into multiple languages including adding a translation mechanism for the website, purewater4u.org. Consistently posted recycled and purified water related information on Valley Water's Facebook, Twitter, Instagram and Nextdoor social media sites throughout the year.
- **Supporter cards, testimonial videos and letters of support** - Collected 27 video testimonials, 230 supporter cards and 20 letters of support from tour attendees, community leaders and stakeholder groups.
- **Stakeholder outreach** - Established collaborative relationships with partner agencies throughout Santa Clara County by hosting private group tours and following up with ongoing promotion of the public tour program.
 - South Bay Public Information Officers
 - Yu Ai Kai Senior Center
 - Mission College
 - De Anza College
 - The Tech Museum
 - Valley Water's Youth Commission
 - Water Solutions Network

- City of San Jose
 - Shin Shin Education Foundation
 - Santa Clara University
 - Stanford
 - Valley Water's Water Ambassadors
 - Dartmouth Middle School
 - Water Education for Latino Leaders
 - Basis Independent
 - NextFlex/Flex Factor and Leland High School
- **Diverse and Multi-ethnic outreach** - Conducted specific outreach to multi-ethnic and special populations, including translating the social media campaigns into multiple languages and hosting a Senior Day tour event for 256 attendees and 9 student group tours and educational activities (as of April 2019).
- **Valley Water employee outreach** - Hosted interactive booth activities at two employee events and a brown bag event to share and explain the community leader testimonial campaign. Held private group tours for Valley Water's new employees and student interns.

Next Steps for Fiscal Year 2020 (FY20)

In the coming year, staff plans to build on the recycled and purified water outreach efforts from FY19 to include:

- **Tracking poll** - Receive and analyze the results of the tracking poll to gauge trends in public perception of water reuse.
- **Social marketing campaigns** - To build upon this year's campaigns, staff plan to develop two additional social marketing campaigns in the coming year.
- **Long-term strategic communications & outreach plan** - The communications plan was developed in 2011 and updated in 2015 to reflect the results from the research at the time as well as the direction from the Board to move towards potable reuse. Staff will be updating the plan over the next fiscal year to include an appendix for the Countywide Water Reuse Master Plan.
- **Taste tests and bottling** - Staff will continue to work with the internal, cross-functional Bottling Work Group to explore the installation of a continuous stream station at the SVAWPC and bottling the purified water for outreach and demonstration purposes.
- **Outreach events** - Staff is planning a series of events and special tour days for specific stakeholder groups, such as Board meet and greets, the LGBTQ community, mothers with young children, and expanded youth/student educational activities.

File No.: 19-0529

Agenda Date: 7/10/2019
Item No.: 4.1.

ATTACHMENTS:

Attachment 1: PowerPoint

UNCLASSIFIED MANAGER:

Rick Callender, 408-630-2017



Valley Water

Clean Water • Healthy Environment • Flood Protection

Recycled Water Outreach Update

Marta Lugo

Acting Civic Engagement Manager
Office of Civic Engagement



Roadmap to increase public engagement 3

- Tours
- Social marketing campaigns
- Tracking poll
- Blog posts
- Informational materials, social media and website
- Supporter cards, testimonial videos and letters of support
- Stakeholder outreach
- Multi-ethnic outreach
- Valley Water employee outreach

Tours

4



valleywater.org

Tour Promotion



Let's take a tour!

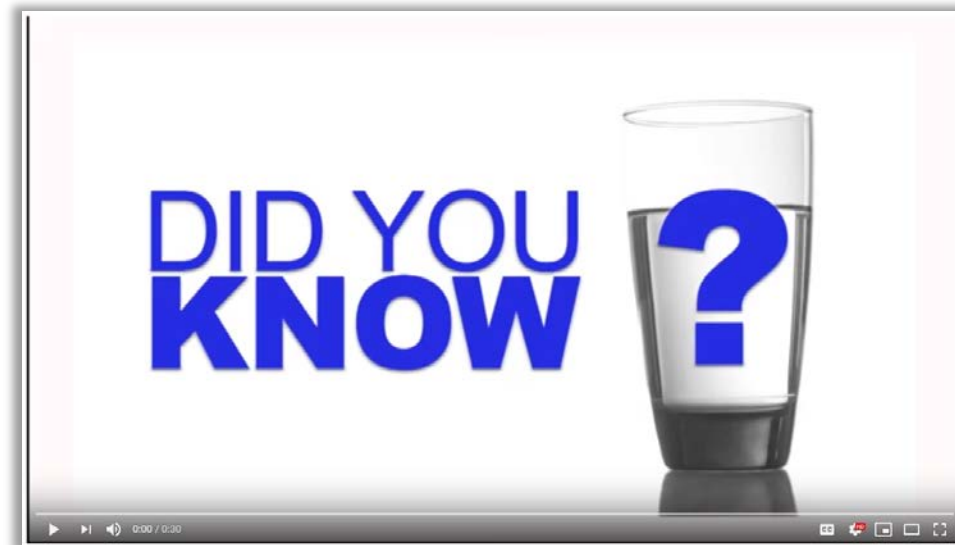
The Santa Clara Valley Water District provides public tours of the Silicon Valley Advanced Water Purification Center, the largest purified recycled water plant of its kind in northern California, allowing members of the community to witness the state-of-the-art technology in operation.

To register for a tour visit purewater4u.org. For more details email info@purewater4u.org or call (408) 630-3533.



Campaigns

Tour promotion



[Click to play video](#)

Campaigns

Community leader testimonials

7



[Click to play videos](#)

valleywater.org

Blog Posts

8

valleywater.org

SANTA CLARA VALLEY
WATER NEWS

ARTICLES ▾ ABOUT SANTA CLARA VALLEY WATER DISTRICT

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POSTED ON MARCH 5, 2019 BY VALLEY WATER NEWS

PAVING THE WAY FOR A NEW WATER REUSE FUTURE

⌵

All water on the planet is reused, with the same amount of fresh water existing on Earth since the age of the dinosaurs. However, maintaining an available drinking supply of this precious resource is the new challenge we face today.


Valley Water recognizes the need to plan for a future sustainable water supply to prepare for the impacts of climate change – such as drought and reduced imported water supply from melted snow packs – and population growth.

SIGN UP FOR MONTHLY ENEWS

 Sign up for monthly eNews

FOLLOW VALLEYWATER ON TWITTER

Tweets by @valleywater

 valleywater @valleywater  Follow ***



Attachment 1
Page 8 of 17

Informational Materials

9

Recycled And Purified Water 2018 Outreach Accomplishments

Valley Water is making smart investments in new and innovative technologies to make sure our water supply meets future needs. Since opening the Silicon Valley Advanced Water Purification Center (SVAWPC) in 2014, we continue to build support for expanding the use of recycled and purified water in Santa Clara County.

500+ TASTE TESTS

70+ TOURS

1,650+ VISITORS

2018 Silicon Valley Water Conservation Award In Education

Public Opinion

93.4% of tour visitors support advanced purified water being used to replenish groundwater basins to supplement our drinking water supply.

85.5% of tour visitors support advanced purified water being sent directly to a water treatment plant before being delivered to their taps.

IN VISITORS' OWN WORDS...

"I have to admit, I didn't know that much about purified water and now I'm sold that this is the way we've got to go." — Cheryl Allmen, SVAWPC

"This was the most fascinating explaining all the procedure through to get clean water, impressive." — Arlene Lapidus

Looking Ahead

Launch info campaign in...

Expand public...

Host community youth and...

Tour Promotion

Developed social media campaigns in **English, Spanish, Vietnamese and Chinese.**

Monthly tour flyers distributed at **community events** and through **partner agencies.**

Free water technology tours!

International Visitors

3 tours **60 visitors**

Hosted three delegation tours from Singapore, South Korea and Brazil. *

Senior Day | Sept. 7, 2018

11 tours **256 visitors**

Hosted all-day event for seniors and older adults to educate and build public support for efforts on expanding the use of recycled water.



Purified Water Quick Facts

Water: Now and in the Future

55%
of Silicon Valley's water supply is imported from the Sierra Nevada mountains in an average year.

\$
Cost for imported water increases every year.

All water is reused. We drink the same water today that the dinosaurs did!

Around the world, purified water replenishes groundwater and supplements drinking water supplies.

THE CHALLENGE

- We need water to cover future growth and sustain a thriving economy
- We need to develop more local supplies to reduce our reliance on imported sources

THE SOLUTION: Purified Water!

- Highly treated recycled wastewater after advanced treatment
- Purified water to replenish our groundwater basins
- Proposed purified water projects in Santa Clara County would produce more than **74,000** households
- That's enough water to serve

WORKS

produce up to 8 billion gallons of water for groundwater basins in the near future using technologies:

- Ultrafiltration
- Reverse osmosis
- Ultraviolet light disinfection
- Advanced oxidation

is regulated by the Division of Water under the State Water Resources Control Board.

WHAT OUR RESIDENTS GET

- Reliable and locally controlled supply
- Drought proof supply
- Clean and safe to use
- Cost effective
- Sustainable for environment

"Judged by its history, but by its quality." Dr. Lucas van Vuuren, National Institute of Research, South Africa

PURIFIED WATER

Recycling water is good for the environment.

- The more recycled water we use, the less we have to take out of rivers, streams and groundwater basins.
- We all recycle paper, aluminum cans, glass, even yard clippings, so why not water. Recycling is an obvious choice because it's sustainable.

Provides a reliable and locally controlled water supply.

Provides a drought-proof supply and resilient to climate change.

Uses state-of-the-art multi-stage technologies to produce pure water.

- It cleans water to a very high standard, and ensures that drinking water produced is safe and free of harmful chemicals and toxins.

All water on the planet is reused.

- There exists the same amount of water on the planet as there always has been. Water is too precious a resource to use only once!

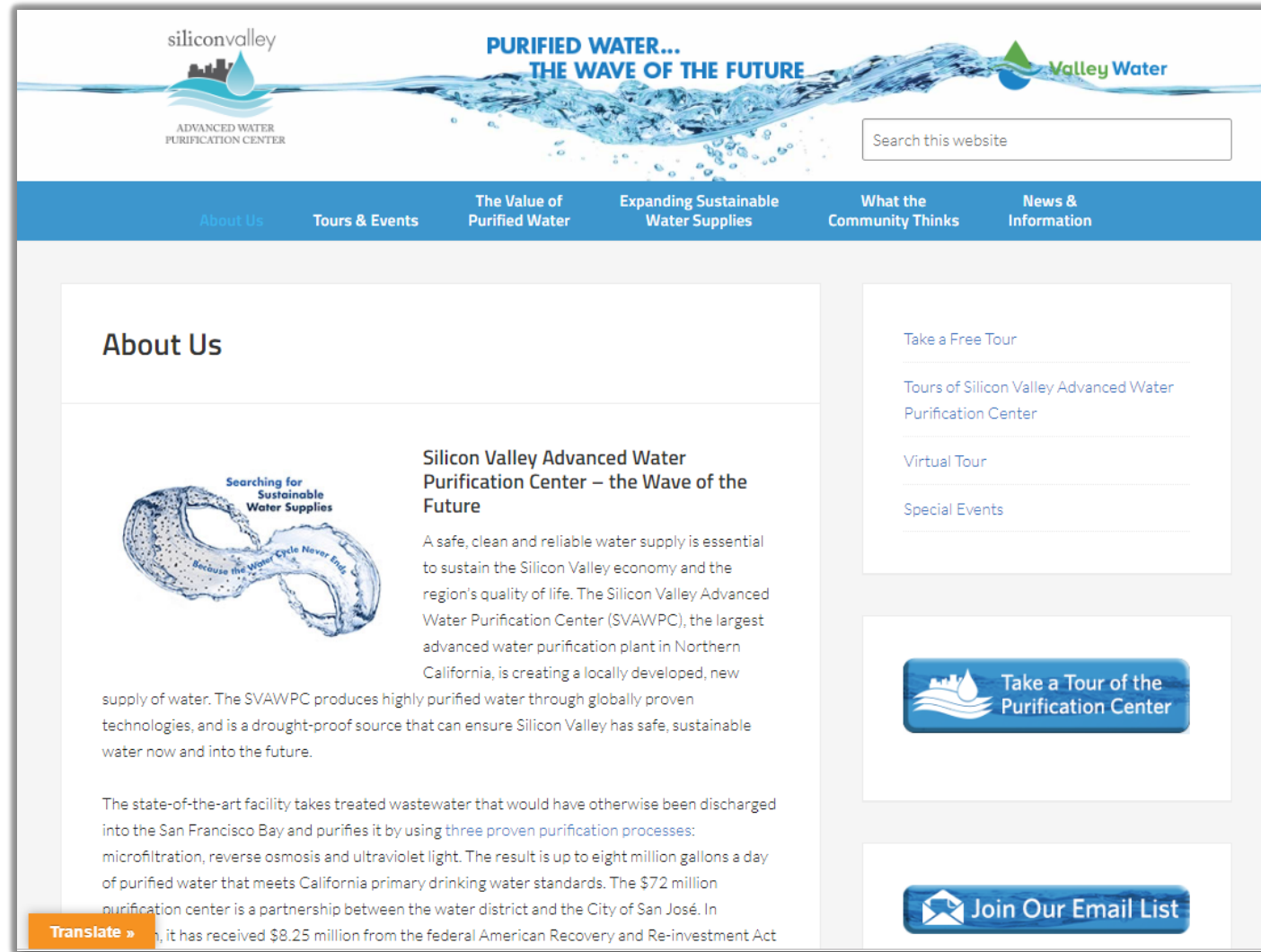
Social Media



Website

purewater4u.org

11





valleywater.org

Demonstrating Public Support

12

- 230 supporter cards
- 27 testimonial videos
- 20 letters of support



I support the expansion of purified water in Santa Clara County!

Reusing water is good for the environment. I support Valley Water's potable reuse plans to use purified water to augment our drinking water supplies.

☐ I would like to **receive email updates** from Valley Water about the expansion of purified water.

☐ Valley Water can **publish my name** on materials and the website as a supporter.

Full name: _____

Organization (optional): _____

Email: _____

City: _____ ZIP code: _____



Savvy Seniors in Silicon Valley tour the Advanced Water Purification Center

Stakeholder Outreach

13



valleywater.org

Multi-ethnic Outreach

14



256 visitors for Senior Day
in September 2018



Multilingual outreach
and campaigns

Valley Water Employee Outreach

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Looking Ahead

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Annual tracking poll



Subsequent social marketing campaigns



Expand tours and events



Update long-term strategic communications plan



Taste tests and bottling

Questions?

purewater4u.org



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