



City of Palo Alto

City Council Staff Report

(ID # 6700)

Report Type: Informational Report

Meeting Date: 4/11/2016

Summary Title: Update on Recycled Water Planning Efforts and Groundwater Studies

Title: Update on Recycled Water Planning Efforts and Groundwater Studies in partnership with Santa Clara Valley Water District

From: City Manager

Lead Department: Public Works

Recommendation:

This report is provided for information only and requires no Council action.

Executive Summary

The purpose of this report is to provide Council an overview of the advances being made to develop alternative water supplies, both regionally and in Palo Alto. Alternative water supplies include:

- Recycled Water from wastewater plants like Palo Alto's;
- Purified Water from reverse osmosis plants like San Jose's;
- Increased groundwater use coupled with groundwater recharge;
- Local rainwater/storm drain system harvesting;
- Sub-regional wastewater "scalping" plants for small communities/districts; and
- Individual building use of graywater and treated blackwater.

Palo Alto is working through a variety of groups and committees to conduct planning for alternative water supplies. Key collaborators include Palo Alto's five Partners in its Regional Water Quality Control Plant (RWQCP), the other recipients of San Francisco PUC (Hetch-Hetchy) water, and other agencies in Santa Clara and San Mateo Counties. An important next step is the execution of several contracts to explore the potential use of key alternative supplies.

The first such contract is a feasibility study on the installation of an advanced water purification system, such as reverse osmosis, at the RWQCP. The second would update the 1992 Recycled Water Master Plan by studying groundwater recharge potential for indirect potable reuse, further utilization of recycled water by more RWQCP Partners, connections with the Sunnyvale distribution system, and other potential recycled water activities. The Santa Clara Valley Water District would provide much of the funding for this work and help manage the various tasks.

Background

The RWQCP produces high quality recycled water which is a drought-proof, locally controlled, non-potable water supply. Recycled water will help reduce Palo Alto's reliance on imported water supplies. The RWQCP currently produces recycled water in excess of the current demand; therefore staff is working to expand the recycled water demand and distribution system. As such, the City of Palo Alto certified an Environmental Impact Report on September 28, 2015, to expand recycled water through South Palo Alto to Stanford Research Park ([CMR# 5962](#)). This proposed expansion project is phase III of the 1992 Recycled Water Master Plan. Additionally, the Santa Clara Valley Water District is seeking alternative water supplies from local wastewater treatment plants. There are three wastewater treatment plants that discharge into San Francisco Bay within Santa Clara County: (1) San Jose/Santa Clara Regional Wastewater Facility (San Jose RWF), (2) City of Sunnyvale and (3) the RWQCP. The Water District already has partner agreements with San Jose RWF and the City of Sunnyvale. Recently the Water District approved a partner arrangement with the City of Palo Alto to fund eighty percent of the Advanced Water Purification System Feasibility Study Contract. The Feasibility Study will evaluate alternatives including treatment to reduce improve recycled water quality.

As part of the effort to expand uses of recycled water, the City and Water District are developing a further understanding of the northwest county groundwater system to identify opportunities for enhanced groundwater recharge.

Discussion

For the past year staff have been working with the Santa Clara Valley Water District and the RWQCP partner agencies to research expanding recycled water use opportunities in Northwest Santa Clara County. The City is working on

updating the Recycled Water Master Plan to produce a strategic plan that will include the following information:

- Advanced Water Purification System Feasibility Study
- White paper on initial description of all water sources
- White paper on satellite and onsite treatment and reuse of black water, grey water, and stormwater
- Ongoing Palo Alto Potable Water Supply Resource Planning
- Mountain View Recycled Water Distribution Expansion and potential Sunnyvale Tie-In
- Palo Alto Recycled Water Phase III Expansion Project business plan development, preliminary design, and securing of outside funding
- Northwest Santa Clara County Groundwater Study for Indirect Potable Reuse (IPR) Potential
- Palo Alto RWQCP Partner Agencies Recycled Water Expansion

In addition to the upcoming Recycled Water Strategic Plan, staff has been working on the following Recycled Water planning projects.

Advanced Water Purification System Feasibility Study (contract in process)

To expand the use of recycled water to include cooling towers and the irrigation of salt-sensitive landscaping, staff is working to reduce the total dissolved solids (TDS) concentration. Consequently, the City has partnered with the City of Mountain View and the Santa Clara Valley Water District to jointly fund a feasibility study for installation of an advanced water purification system (AWPS) at the RWQCP (CMR #6458). The AWPS would produce virtually TDS-free water which could be blended with the current recycled water to achieve a TDS concentration of 450 ± 50 parts per million (ppm).

White Paper on Initial Description of all Water Sources

At the 2015 Council Meeting approving of the Environmental Impact Report (EIR) for the Phase III Recycled Water Expansion, Council requested further information on water sources as they pertain to the City of Palo Alto. Attached is an initial description of all water sources (potable and non-potable) potentially available to the City of Palo Alto (Attachment A). Potable water refers to water that meets drinking water standards and is considered safe to drink; while non-potable water refers to water that does not meet drinking water standards and is considered

unsafe to drink.

White Paper on Satellite and Onsite Treatment and Reuse

City staff has been tracking satellite and onsite treatment systems and reuse. Staff will be collecting information on similar efforts regionally and nationally, including the development of standardized design criteria and regulations. Currently, in the RWQCP service area, there are a few facilities that have reused gray water and stormwater for irrigation purposes. Stanford is currently researching an onsite treatment system.

Ongoing Palo Alto Potable Water Supply Resource Planning

City staff is currently working on the Water Integrated Resources Plan (WIRP) that will discuss the variety of potable water supply resources and planning. The WIRP will include an assessment of alternative potable water supplies including the City's current water supply source from the San Francisco Public Utilities Commission's Region Water Supply System, groundwater, and treated water from the Santa Clara Valley Water District as well as demand-side management. Recycled water will be assessed both as a tool to reduce potable water demand and as a potential potable water supply through IPR and Direct Potable Reuse (DPR). The results of the groundwater study discussed below will be an important part of this analysis. All of these resources will be evaluated based on availability, cost, water quality, environmental impact and robustness in water emergencies and with respect to potential state regulations.

Mountain View Recycled Water Distribution Expansion and Sunnyvale Tie-in

Mountain View currently receives the majority of the recycled water produced at the RWQCP. Mountain View has hired a consultant to research expanding the recycled water distribution system within its city limits and is working with Sunnyvale for a potential recycled water intertie. The City of Sunnyvale is rebuilding their wastewater treatment plant and plans on treating the majority of their flow to purified water for future IPR. Therefore, their existing recycled water customers will need a new source of recycled water which will potentially be provided by the RWQCP via the Mountain View—Sunnyvale intertie.

Palo Alto Recycled Water Phase III Expansion (RFP in process)

The City is seeking a consultant to develop a business plan, preliminary design, and aid in securing funding for the Phase III Expansion project. This evaluation

will help Council decide on pursuing Phase III Expansion of the recycled water pipeline. The City has drafted interim Recycled Water Guidelines to help facilitate new recycled water customers who are on the existing recycled water line near the RWQCP.

Northwest Santa Clara County Groundwater Study for Potential Indirect Potable Reuse (RFP in process)

The purpose of the groundwater study is to compile baseline information on the current condition of aquifers in northwestern Santa Clara County and adjacent areas, including sources and quantities of recharge, groundwater pumping, and water quality. This information will be used to evaluate the feasibility of IPR of advanced treated recycled water and identify opportunities for increased groundwater utilization of recycled water. This study will also evaluate impacts to groundwater resources from potential pumping or recharge projects to ensure continued sustainable groundwater management.

Palo Alto RWQCP Partner Agencies Recycled Water Expansion (RFP in process)

City staff is seeking opportunities to expand recycled water within the RWQCP service area: East Palo Alto, Los Altos, Los Altos Hills, Mountain View, Stanford, and Palo Alto. The RWQCP's NPDES permit requires the treatment plant to have a recycled water program. Current recycled water demands and distribution systems were identified in the Recycled Water Master Plan that was completed in 1992. Since 1992, prolonged drought and increased economic activity has opened up new potential demand for recycled water in partner cities, including potential groundwater recharge opportunities. Consequently, staff is pursuing a consultant to re-evaluate the current and projected recycled water demand in the RWQCP service area.

Timeline

Below is a tentative timeline for the recycled water projects:

- Cost sharing agreements with the Santa Clara Valley Water District and City of Mountain View for the Advanced Water Purification System Feasibility Study – April 2016
- Recycled waterpipeline expansion within East Palo Alto, Palo Alto and Mountain View – Construction expected to begin in 2016
- Advanced Water Purification System Feasibility Study expected to be

completed by end of 2016

- Recycled Water Strategic Planning and Groundwater Assessment contract expected to be approved in summer 2016; the following deliverables will be completed by December 2018:
 - Phase III Recycled Water Expansion Business Plan, Preliminary Design & Secured Funding Effort Report
 - IPR Feasibility Evaluation
 - Conceptual Groundwater Model
 - Northwest Santa Clara County Groundwater Study for Potential IPR Report
 - Recycled Water Strategic Plan Report
 - Funding Identification & Application(s)
 - Public Outreach

Resource Impact

The current recycled water program consists of five hard-piped City facilities and more than 60 permitted users of the recycled water truck fill station. The RWQCP is the wholesaler of recycled water within its service area. The City is currently negotiating private hard-piped recycled water customers along the existing distribution line, expanding recycled water into East Palo Alto and in South Palo Alto including Stanford Research Park.. City staff anticipate construction of the East Palo Alto recycled water expansion to commence in 2016; therefore, staff is needed to help manage future contractors. As mentioned previously the City is planning on managing larger recycled water planning contracts to improve the water quality, update recycled water strategic plan, and investigate the possibility of indirect potable reuse to recharge groundwater. The City is currently negotiating with the Santa Clara Valley Water District that they will fund eighty percent of the Advanced Water Feasibility Contract and the City is still negotiating how much the SCVWD will fund of the second contract that will update the recycled water strategic plan. The City currently does not have a dedicated staff person who works on recycled water. In order to expand the City's Recycled Water Program, a new Senior Engineer is required for future tasks including:

- Initiate and manage recycled water and water re-use consultant contracts
- Prepare a new Strategic Recycled Water Plan to complement the 1992 Recycled Water Master Plan

- Determine the need and timing for appropriate groundwater recharge and storage of purified water, based on modelling of the San Francisquito Creek cone
- Determine best method of brine disposal and management to allow for the addition of advanced recycled water treatment processes to the RWQCP's current treatment plant
- Develop RWQCP regulations and guidelines for the use and management of recycled water and purified water
- Serve as the principal point-of-contact for Partner Agencies to secure new or modified Recycled Water Service and determine amounts and timing of needs
- Serve as Public Health and Water Board Compliance Officer for water re-use programs, including inspection programs and cross-connection prevention programs
- Develop and manage Infrastructure Management System (IMS) for the Recycled Water wholesale water treatment and distribution system; track and manage system repairs and upgrades
- Develop Nutrient Credits and Offsets for Recycled Water Program
- Coordinate expanded water use and water quality reporting and monitoring with regulatory agencies, partner agencies, users, site supervisors, and customers.

Manage expanded recycled water system maintenance and utility locating services. The new Senior Engineer position would be funded partially by the partner agencies to the RWQCP, since it is a requirement in our discharge permit to have a recycled water program. Therefore Palo Alto will only fund one third of the Senior Engineer Position which costs approximately \$220,000. The projects that the Senior Engineer will manage will also be funded through cost-sharing agreements with the SCVWD, grants and state revolving funds.

Policy Implications

Continuing the exploration of expanding recycled water is consistent with Council policy. The Recycled Water Program is consistent with the Council-adopted Water Integrated Resource Plan Guideline 3: "Actively participate in development of cost effective regional recycled water plans." The project is consistent with Council direction to reduce imported water supplies and limit or reduce diversions from the Tuolumne River.

Council's Sustainability Policy supports the development of recycled water, specifically in the Policy's statement to "reduce resource use and pollution in a cost-effective manner while striving to protect and enhance the quality of the air, water, land and other natural resources."

The City's Comprehensive Plan contains Natural Environment Goal N-4: Water resources are prudently managed to sustain plant and animal life, support urban activities and protect public health and safety. Specifically, Program N-26 addresses the use of recycled water: implement incentives for the use of drought-tolerant landscaping and recycled water for landscape irrigation.

Environmental Review

Environmental Impact Report for Phase III of the recycled water pipeline project was approved in September 2015. Future Environmental Review will be required if the expanded recycled water pipeline is constructed.