

**Council Meeting: March 6, 2012****SUBJECT: Initial Phase of a Project to Construct a Regional Recycled Water Intertie and Approval of Budget Modification No. 28****BACKGROUND**

Sunnyvale initiated its recycled water system in 1992. The current system functions as an alternate discharge location for Sunnyvale Water Pollution Control Plant (WPCP) effluent and provides an average of about 800,000 gallons of recycled water per day. The system consists of over 91,000 linear feet of pipeline, a two million gallon reservoir, and three pump stations. The recycled water system allows wastewater effluent to be used for irrigation purposes in the north third of the City, almost entirely between May and October.

If the City desires to significantly increase the use of recycled water, a number of issues must be addressed. Customers need reliable, high-quality water and the current system does not provide levels desired by many potential customers. The issues that need to be addressed include production, distribution, and quality.

- Production – At the Sunnyvale WPCP, recycled water cannot be produced simultaneously with Bay discharge. For Bay discharge, the effluent must be chlorinated to remove pathogens, and then dechlorinated to remove the chlorine that is harmful to Bay aquatic life. For the recycled water system, the turbidity (cloudiness) of the water has to be reduced, higher chlorine doses need to be applied, and some of the chlorine must remain in the water (to prevent regrowth of pathogens in the distribution system). Therefore, the WPCP operators have to, on nearly a daily basis, switch back and forth from Bay discharge to recycled water production, a process that is wasteful and difficult to control. This has been the one and only reason for NPDES permit violations (when dechlorination chemicals were under-dosed and chlorine was discharged into the Bay).
- Distribution – The distribution system in a properly designed water utility consists of pipeline loops with numerous shut-off valves. This allows the system to remain operational while a segment of the system (where for example a pipe break occurred or maintenance work needs to be done) is isolated by closing the valves on either side. The Sunnyvale recycled water system has few loops and consists of numerous branches

serving only irrigation customers. Branches contribute to inconsistent pressures and water quality issues.

- Quality – The recycled water produced at the Sunnyvale WPCP meets the regulatory requirements for non-potable recycled (purple pipe) water. However, the salt concentration in the recycled water is high. Typical potable water has a salt content (TDS or total dissolved solids) of 300 to 500 ppm (parts per million). The salt content of recycled water produced at the Sunnyvale WPCP ranges from 800 to 850 ppm. While this is acceptable for most irrigation, it is problematic for salt-intolerant plant species, and undesirable for most industrial uses since additional treatment is required. The sources of salt are being investigated and are likely to include infiltration of Bay water into the sanitary sewer collection system, industrial sources in the City, and residential water softener discharges.

The Sunnyvale Solution – All of these system deficiencies can be solved and staff will soon be bringing to Council a recommendation to hire a consultant to develop a Recycled Water Master Plan. A “Sunnyvale Solution” would involve reconfiguring the WPCP to produce recycled water continuously in parallel to Bay discharge, the construction of new recycled water pipes to form loops, and most likely lining the sanitary sewers near the Bay to reduce the salinity from salt water infiltration.

The Regional Solution – The difficulty with the Sunnyvale Solution is that it will be difficult to build the recycled water customer base, and especially difficult to add the more desirable “year-round” industrial customers, given unreliable, low-quality water. Therefore, City staff members have been pursuing an alternative plan for City Council to consider. The action proposed in this memo would be the first step toward implementation of this plan for a Regional Solution.

EXISTING POLICY

City Policy 3.1.1 Water Resources- Goals, Policies and Action Strategies

Policy 3.1.1 (A.2): Maximize recycled water use for all Title 22 approved purposes both within and areas adjacent to the City, where feasible.

Policy 3.1.1 (A.2c): Investigate recycled water interties and agreements to improve system reliability and to facilitate regional recycled water deliveries.

DISCUSSION

At the heart of the Regional Solution is an intertie pipeline (ultimately several pipelines) that would connect the Sunnyvale recycled water system to the South Bay Water Recycling (SBWR) system. (See Attachment A) SBWR is owned

and operated by San Jose (in a close partnership with the Santa Clara Valley Water District - SCVWD) and serves San Jose, Milpitas, and Santa Clara. The SBWR System uses water produced continuously at the San Jose-Santa Clara WPCP and serves both irrigation and industrial customers. The current salt content in the SBWR system is about 750 ppm. However, the SCVWD and SBWR are constructing a \$60 million Advanced Water Treatment Facility (AWTF) that will produce water with a salt content of 500 ppm when the AWTF is operational, currently estimated to be September 2012.

By connecting to the SBWR system, Sunnyvale could feed its recycled water distribution system partially or entirely with the reliable, higher-quality SBWR water. Hydraulic system modeling has been completed as verification. The intertie would allow Sunnyvale to add customers, both irrigation and industrial, and grow its system and revenue base of recycled water. Increased use of recycled water will offset existing potable water use resulting in reduced revenue to the City's water utility fund. Meanwhile, the redesign and reconstruction of the recycled water production facilities at the Sunnyvale WPCP could proceed with less time pressure.

A map showing the route for a northern regional connector intertie pipeline is included as Attachment B. Approximately 8,000 linear feet of pipeline would be constructed in Santa Clara and an additional 8,000 linear feet will be constructed in Sunnyvale. For Sunnyvale's current needs, a 16-inch pipe is required at a cost estimated at \$6.5 million. However, a larger pipe, up to 30 inches in diameter, costing up to \$10 million, would provide for the ultimate needs along this pipe alignment for Sunnyvale and potentially for other cities. The funding needed to upsize this pipe would be derived from sources other than Sunnyvale. (Other funding sources are discussed below.) The preliminary design and CEQA work for this alignment is currently being done by other agencies.

A second pipeline that is under consideration as part of a regional solution is a pipeline along Wolfe Road, from the existing San Lucar Recycled Water Pump Station (located at the northwest corner of Wolfe Road and the Caltrains track) to Homestead Road, a distance of approximately 13,500 linear feet. This pipeline would serve the southeast quadrant of Sunnyvale and serve as the eastern leg of a full-City loop system. In addition, this pipeline could serve the Apple Campus 2 in Cupertino, and if upsized, additional customers to the south. Apple Computer has indicated a strong desire to receive high quality recycled water and a willingness to assist with project funding. The water retailer for the Apple Campus 2 in Cupertino is California Water Service Company (Cal Water). Cal Water has also indicated their willingness to assist in funding this project. To meet Apple's timing needs, CEQA documentation needs to commence immediately followed soon thereafter by preliminary design. Staff is proposing that the City fund the initial work on this alignment

because the pipeline runs through Sunnyvale. Staff estimates the cost to prepare the environmental documents will be approximately \$25,000 and the initial design will be \$175,000. The detailed design and construction cost of this project is estimated at \$3.55 million, more with upsized pipes, and is proposed to be funded by sources other than Sunnyvale.

In order for recycled water from a combined Sunnyvale/SBWR recycled water distribution system to be delivered through the Wolfe Road pipeline, upgrades at the San Lucar Pump Station are necessary. Fortunately, the San Lucar Pump Station was originally designed to allow for future pumps to be added to deliver recycled water to the south. Upgrades, estimated to cost \$1.23 million, will also be funded by sources other than Sunnyvale.

The construction of both the Northern Intertie and the Wolfe Road Extension/San Lucar Upgrades are contingent on a series of agreements among funding parties. Ultimately, all of these agreements will be brought to Council for consideration. There are a number of options that could be constructed depending on which funding partners ultimately participate, including construction of only the Northern Intertie, and smaller diameter pipes to meet shorter term needs.

The Northern Intertie can likely proceed with nothing more than a funding partnership between Sunnyvale and SBWR, and possible grant assistance from the US Bureau of Reclamation (USBR). The potential of receiving USBR grant funding should be known in April 2012. The Wolfe Road alignment and San Lucar Pump Station upgrade would only be accomplished after reaching agreements with Cal Water and Apple on scope and funding.

FISCAL IMPACT

The fully sized plan would cost over \$20 million (including both the Northern Intertie and the Wolfe Road Extension and upsized pipes). Possible funding sources beyond Sunnyvale include SBWR (San Jose), the SCVWD, the USBR, Apple Computer, and Cal Water as well as Santa Clara, Cupertino, and the San Francisco Public Utilities Commission. The cost to Sunnyvale will not be known until further development of the plan. However, staff estimates an investment in the order of \$2 million would be appropriate, based on the value of growing our recycled water system while also avoiding upgrade costs for the existing WPCP. Based on this estimate, by investing \$2 million, the City could be leveraged into a \$20 million project, with all partners participating, which would serve the City and allow major expansion of the recycled water system. With fewer partners, many downsized alternatives are viable.

Due to the fact that there are many permutations of pipe alignments/sizes and funding partners, it is not possible to estimate the full fiscal impact of the completed project at this time. Several agreements need to be negotiated

dealing with cost and revenue sharing and other provisions. Beyond that, the sagacity of undertaking this project hinges on the future value of recycled water, which in turn depends on the cost and availability of other water sources. The intention of staff is to bring to Council a detailed business plan along with the negotiated agreements so that the Council will have the best opportunity to judge the merits of this project within the context of the range of future possibilities.

The total cost of environmental review and preliminary design, including contingency, for the Wolfe Road pipeline is estimated to be \$200,000. This is money well spent under almost any future scenario, since a recycled water line along Wolfe Avenue is a natural extension of the system. This project will provide additional water supply, as well as help to meet wastewater discharge permit goals by eliminating some discharge to the bay, and therefore benefits both the City's water and wastewater utilities. Therefore, staff recommends funding from both utilities based on the same allocable share as used in the 1992 debt that was issued to fund the original construction of Sunnyvale's recycled water system (Water 42% and Wastewater 58%). The Environmental Services Department is currently working to reprioritize its projects in both the water and wastewater utilities. Due to the complexity and long lead times of projects, staff will be able to shift projects in both the short and long term to mitigate the rate impact of this project by either applying project savings, de-funding, or deferring current and/or future projects. The full cost of the project will be incorporated and presented in the FY 2012/13 Recommended Budget and as part of the utility rate setting process.

**Budget Modification No. 28
 Fiscal Year 2011/2012**

	Current	Increase (Decrease)	Revised
Water Supply and Distribution Fund			
Expenditures:			
Project 825391 – Wolfe/Evelyn Plant Mechanical Reconstruction	\$1,147,357	(\$84,000)	\$1,063,357
 New Project – Regional Recycled Water Intertie	 \$0	 \$200,000	 \$200,000
 Wastewater Management Fund			
Expenditures:			
Project 825521 – Pond Sedimentation Removal	\$2,796,929	(\$116,000)	\$2,680,929

PUBLIC CONTACT

Public contact was made by posting the Council agenda on the City's official-notice bulletin board outside City Hall, at the Sunnyvale Senior Center, Community Center and Department of Public Safety; and by making the agenda and report available at the Sunnyvale Public Library, the Office of the City Clerk and on the City's Web site.

ALTERNATIVES

1. Pursue a Recycled Water Regional Intertie to connect Sunnyvale's system to SBWR on the north, and Cal Water service area to the south, and approve Budget Modification No 28 for \$200,000.
2. Reject the Regional Solution and focus on the Sunnyvale Solution.
3. Continue to operate as is.

RECOMMENDATION

Staff recommends Alternative No. 1: Pursue a Recycled Water Regional Intertie to connect Sunnyvale's system to SBWR on the north, and Cal Water service area to the south, and approve Budget Modification No 28 for \$200,000. As part of this action, staff will negotiate and bring back to Council for approval agreements with San Jose, Cal Water, Apple, and others as needed for the construction, operation, and maintenance of the facilities as described in this report.

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Attachments

- A: Overall Regional System
- B: Northern Regional Connector

ATTACHMENT A: Overall Regional System



ATTACHMENT B: Northern Regional Connector

