

RECYCLED WATER PROVIDERS

26. RECYCLED WATER

Recycled water is produced at four wastewater treatment plants—one in the South County and three in the North County. Wastewater from Gilroy and Morgan Hill is treated at the South County Regional Wastewater Authority facility in Gilroy. In northern Santa Clara County, recycled water is produced at the Palo Alto Regional Water Quality Control Plant, the San Jose/Santa Clara Water Pollution Control Plant (South Bay Water Recycling program) and the Sunnyvale Water Pollution Control Plant.

REGULATORY FRAMEWORK

With the adoption of the Porter-Cologne Act in 1969, the Legislature declared its intent to "undertake all possible steps to encourage development of water recycling facilities." Although water recycling and reuse projects operated successfully before that time, laws enacted in 1969 set forward a basic structure for water reuse projects that has been in place for nearly 30 years. The California Water Code articulates a clearly-defined strategy favoring the beneficial reuse of water to the maximum extent practical. Under this structure of laws and administrative regulations, the California Department of Public Health (DPH) is responsible for the adoption of regulations for the use of recycled water.

DPH establishes water quality standards and treatment reliability criteria for water recycling under Title 22, Division 4, Chapter 3, of the California Code of Regulations. Requirements for the use of recycled water not addressed by the uniform statewide criteria are established by DPH on a case-by-case basis. Uses of recycled water illustrate the wide variety of successful reuse applications and the level of treatment required.

Title 22 sets bacteriological water quality standards on the basis of the expected degree of public contact with recycled water. For water reuse applications with a high potential for the public to come into contact with the reclaimed water, Title 22 requires disinfected tertiary treatment. For applications with a lower potential for public contact, Title 22 requires three levels of secondary treatment, basically differing by the amount of disinfectant required.

In addition to establishing recycled water quality standards, Title 22 specifies the reliability and redundancy for each recycled water treatment and use operation. Treatment plant design must allow for efficiency and convenience in operation and maintenance and provide the highest possible degree of treatment under varying circumstances. For recycled water piping, DPH has requirements for preventing backflow of recycled water into the public water system and for avoiding cross-connection between the recycled and potable water systems.

Other regulations include the Uniform Plumbing Code which contains requirements for the installation, construction, alteration, and repair of reclaimed water systems intended to supply toilets, urinals, and trap primers for floor drains and floor sinks. Use of recycled

water for these applications is limited to non-residential buildings. The California-Nevada Section of the American Water Works Association has issued guidelines for planning, designing, constructing, and operating recycled water systems. These guidelines provide design criteria and specifications for the construction of transmission, storage, pumping, and other facilities. Also included is a description of system operation and maintenance requirements pursuant to applicable state regulations.

SANTA CLARA VALLEY WATER DISTRICT

To ensure an adequate and reliable supply of high-quality water, Santa Clara Valley Water District (SCVWD) has partnered with cities and water retailers in the County to develop recycled water supplies. About four percent of the County's total water use currently consists of recycled water, limited primarily to landscaping and industrial uses.

Recycled water use is expected to expand in the coming years. The SCVWD Board of Directors recently approved two agreements with the City of San Jose to build an advanced water treatment facility (to be completed in early 2012), which will produce up to ten million gallons per day of highly purified recycled water. This near distilled-quality water will be blended into existing recycled water provided by the Santa Clara/San Jose Water Pollution Control Plant, which will improve overall recycled water quality so that the water can be used for a wider variety of irrigation and industrial purposes.

In the longer term, SCVWD is investigating the possibility of using highly purified recycled water for replenishment of groundwater basins, similar to the highly successful groundwater replenishment system that has been operated by the Orange County Water District for over 30 years. However, a feasibility study, including pilot research studies, will be conducted before a decision is made regarding whether to use highly purified recycled water as a water supply option. The feasibility study and pilot research studies will likely be completed by 2016; if groundwater replenishment with recycled water is selected as a water supply option, operation of such a system would likely commence ten to 15 years from now.

SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

Overview

South County Regional Wastewater Authority (SCRWA) is a joint powers authority of the Cities of Gilroy and Morgan Hill. Formed in 1992, the Authority serves both cities, treating approximately 2.6 billion gallons of wastewater and producing 700 million gallons of recycled wastewater each year for use in landscaping and other applications. In 2010 the SCRWA delivered 2,040 acre feet of recycled water.

Type and Extent of Services

All wastewater from Morgan Hill and Gilroy flows to and is treated at the SCRWA facility. The SCRWA plant was built in 1990 and is a modern wastewater treatment plant.

The SCRWA plant is also called a publicly owned treatment works (POTW). The SCRWA plant treats the water and then disposes of the treated water to ponds. The ponds allow the water to soak into the soil and eventually add water to the underground aquifer. This is different from many other POTWs in the Bay Area that discharge the treated water to the Bay. Discharge to ponds requires a more stringent level of treatment than is required for Bay discharge.

The existing SCRWA recycled water treatment facility's capacity was expanded in 2005 to produce six million gallons per day of tertiary treated recycled water. Recycled water has been used for landscape irrigation at Christmas Hill Park Ranch Addition, Christmas Hill Park, and the Eagle Ridge Development and Golf Course. Recycled water is used for agricultural irrigation on local farmland, including Obata Farms. The Calpine-Gilroy Energy Center Peaker Plant began utilization of recycled water for cooling in May 2004. Morgan Hill does not presently receive recycled water from the facility.

SCRWA conducts a pretreatment program via collaboration and educational programs with large non-domestic connections. The program's intent is to control pollutants discharged to a POTW from non-domestic sources. The Chemical Control Division of the City of Gilroy Community Development Department is responsible for the implementation of the program.

Accountability and Governance

SCRWA is governed by a five-member Board of Directors representing the cities of Gilroy and Morgan Hill. The board meets on the second Tuesday of every month at 7:30 in the morning at 1500 Southside Drive, Gilroy. Board member names, positions, and cities they represent are shown in Figure 26-1.

Figure 26-1: 2008-2009 SCRWA Governing Body

Member Name	Position	City
Marby Lee	Chairman	Morgan Hill
Bob Dillon	Vice Chairman	Gilroy
Al Pinheiro	Member	Gilroy
Larry Carr	Member	Morgan Hill
Dion Bracco	Member	Gilroy

Management and Staffing

The City of Gilroy provides administrative oversight and staffing services to SCRWA with the Gilroy City Administrator serving as the SCRWA General Manager. General administrative oversight includes contract negotiation and administration, financial management, public works services, capital project management, budget preparation, insurance administration, and chemical control services amongst others. SCRWA's daily operations are provided under a third party contract with CH2M HILL OMI.

The SCRWA is an award winning plant that was honored with back to back Plant of the Year awards for the Monterey Region by the California Water Environment Association in 2007 and 2008. Also, in 2007, SCRWA received the Plant Safety Award (1 to 25 employees) for the State of California.

Financing

Ratepayers in both cities pay for the operation of the sewage treatment plant and for the maintenance of the sewage collection system.

The budget is comprised of two primary divisions, Administration/Operations and Chemical Control-Pretreatment. Each division highlights specific objectives to be completed over the biennial budget term. The administration budget is comprised of four cost centers including debt service, construction, administration, and operations.

The SCRWA budget reflects the debt service associated with the cost of each individual member's share of the treatment plant's previous expansions, as the Authority issued the debt to cover the cost of expansion. There are separate installment purchase agreements between each of the cities and SCRWA. The members, Morgan Hill and Gilroy, separately administer the debt service for the debt related to each of their individual infrastructure costs. Consistent with the debt service cost center, the construction budget identifies the individual cost to both Morgan Hill and Gilroy for construction undertaken over the budget term. The Administration budget consists of various services provided to SCRWA, including liability insurance, professional support for training and travel, annual audit services and legal service.

Revenue in the operations budget is primarily derived from reimbursements according to user share by the member agencies. In FYs 09-10 and 10-11, Gilroy provided user fee reimbursements totaling \$4.3 and \$4.6 million, respectively, and Morgan Hill provided reimbursements of approximately \$3.3 million in each fiscal year. Other user fees come from charges to private septic dischargers at the plant. In FYs 09-10 and 10-11, SCRWA noticed a reduction in revenues from these fees primarily due to lower use of the service by private septic haulers.

In FY 10-11, the cost of services for CH2M HILL OMI was approximately \$4.9 million. The Chemical Control-Pretreatment division conducts inspections and permitting operations for both member agencies with staffing services provided by the City of Gilroy. Morgan Hill reimburses Gilroy for its share of the cost of these services. The division budgets for both FY 09-10 and 10-11 reflect lower cost of services primarily due to staffing reductions within the City of Gilroy.

Capital Improvement Projects

The capital budget has a five-year planning horizon. In FY 09-10, SCRWA began a two year generator replacement project by replacing the first of two existing 1995 generators with a new, contemporary generator capable of maintaining plant operations during power failure. The second phase of this project will replace the remaining generator. This new system will replace an aging system that has reached its useful life and does not meet reliability criteria for a plant of SCRWA's capacity and scope of operations.

In FY 09-10, SCRWA was to complete the design for a new influent pump station and complete approximately 25 percent of the design for the overall sewer treatment plant expansion, expending approximately \$1.8 million. These projects are necessary to accommodate future growth in both cities over the next 20 years. It is anticipated that the estimated \$85 million construction of the plant capacity expansion will begin in FY 12-13.

Other SCRWA projects currently in the planning and design phase include:

- ❖ River Discharge (South Pipeline Project);
- ❖ 12.75 mgd plant capacity expansion;
- ❖ Utility water pipeline;
- ❖ UV disinfection system;
- ❖ Pond valves and spillways;
- ❖ Clarifier dewatering wells; and
- ❖ Septage receiving station.

SOUTH BAY WATER RECYCLING

Overview

The San Jose/Santa Clara Water Pollution Control Plant is one of the largest advanced wastewater treatment facilities in California. The plant was originally constructed in 1956 by the City of San Jose. In 1959, the City of Santa Clara helped to fund upgrades and became a 20 percent owner of the facility. The plant is presently co-owned by the Cities of San Jose and Santa Clara. In the 1960s and 1970s, the City of Milpitas, Cupertino Sanitary District, and the West Valley Sanitation District began sending wastewater to the plant. The Plant presently treats and cleans the wastewater of over 1.5 million people that live and work in the 300-square mile area encompassing San Jose, Santa Clara, Milpitas, Campbell, Cupertino, Los Gatos, Saratoga, and Monte Sereno.

In 1998, the South Bay Water Recycling (SBWR) facility and pipeline was constructed to provide recycled water to wholesale water providers for irrigation, landscape and industrial uses. SBWR is a joint powers authority that consists of the Cities of San Jose, Milpitas and Santa Clara, West Valley Sanitation District, and Cupertino Sanitation District. SBWR also collaborates with the Environmental Protection Agency, California Department of Water Resources, Department of Public Health, the Regional Water Quality Control Board, Santa Clara County Health Department, and Santa Clara Valley Water District.

In 2010, the SBWR delivered 8,650 acre feet of recycled water.

Type and Extent of Services

Wastewater treatment is provided by the San Jose/Santa Clara Water Pollution Control Plant, while recycled water delivery is provided by SBWR. The City of San Jose manages and administers SBWR.

The Water Pollution Control Plant has the capacity to treat 167 million gallons of wastewater per day. It is located in Alviso, at the southernmost tip of the San Francisco Bay. Originally constructed in 1956, the plant had the capacity to treat 36 million gallons of water per day and only provided primary treatment. In 1964, a secondary treatment process was added to the plant's system. In 1979, the plant's wastewater treatment process was upgraded to tertiary treatment.

A majority of the final treated water from the San Jose/Santa Clara Water Pollution Control Plant is discharged as fresh water through Artesian Slough and into South San Francisco Bay. Each day, the plant discharges approximately 110 million gallons of treated fresh water into the South San Francisco Bay. About ten percent of the plant's total water produced is recycled through South Bay Water Recycling pipelines for landscaping, agricultural irrigation, and industrial needs by 600 customers around the South Bay in the Cities of San Jose, Santa Clara, and Milpitas. The Metcalf Energy center is the largest recycled water consumer, using the water to cool the power generation facility. Other customers that receive recycled water from the facility include the San Francisco 49ers

training facility in Santa Clara, the Villages Golf and Country Club in San Jose, the McCarthy Ranch shopping center in Milpitas and four major power plants in the County. The SBWR system consists of over 120 miles of pipeline, five pump stations and 10 million gallons of storage in reservoirs.

The laboratory at the San Jose/Santa Clara Water Pollution Control Plant ensures that the water delivered to parks, golf courses and industrial users is of high quality and safe for reuse. Three significant functions of the laboratory include: 1) Monitoring water at the source of discharge (such as wastewater from an industrial facility); 2) Analyzing wastewater for treatment processes and high-quality effluent (discharge from the plant); and 3) analyzing recycled water. The lab, which has 26 employees, works closely with the treatment plant to optimize treatment plant processes. Samples of effluent discharge are collected and analyzed daily. These samples are run through a series of tests in the four process labs and strict quality control is maintained.

Prior to receiving recycled water, the site must be approved by South Bay Water Recycling. The current system's water retailers include City of San Jose, San Jose Water Company, City of Milpitas, City of Santa Clara, and SCVWD. South Bay Water Recycling provides a short course for site supervisors. The workshop includes information to assist in the effective operation and management of a recycled water irrigation system. Property owners and facility managers whose sites are served with recycled water are responsible for their on-site recycled water systems. Each site must have a certified site supervisor. Site supervisors become certified by attending one of these quarterly workshops to fulfill their recycled water permit requirements.

Financing

In 1959, the City of San Jose and the City of Santa Clara entered into an agreement to jointly own and operate the plant. Under the agreement, the City of San Jose serves as the administering agency and is responsible for operating and maintaining the plant. The cities share in the capital and operating costs on a pro rata basis determined by the ratio of each city's assessed valuation to the sum of both cities' assessed valuations. Annually, these percentages are determined and applied to the capital and operating costs on an accrual basis. For the fiscal year ended June 30, 2010, the City of San Jose's portion of the capital and operating costs was approximately 81.0 percent and, based on operations through the fiscal year ended June 30, 2010, the City's interest in the net assets of the plant was approximately 82.8 percent.

SBWR operations are funded through treatment plant sewer service and use charges and offset by revenue sources. All revenue received by SBWR offsets costs associated with operations and capital projects. In FY 10-11, approximately \$2.6 million was received as retail sales and \$1 million was received from the SCVWD for capital programs.

SBWR capital projects are financed through the treatment plant and through grants and developer funded extensions. Approximately \$70 million has thus far has been awarded through state and federal grants, with approximately \$50 million having been appropriated

and received by the City of San Jose. Federal and State granting and loan agencies include the U.S. Bureau of Reclamation, California State Department of Water Resources, and the Santa Clara Valley Water District.

Capital Improvement Projects

The contributing agencies to the plant are in the process of developing a plant master plan, which includes designing and planning the rebuilding of the aging plant with new treatment technologies. Costs for the operational improvements have been identified and the plant's co-owners and tributary agencies are evaluating financing options. The new facility includes plans for several improvements and upgrades to the treatment process, as well as enhanced use of renewable energy sources, and habitat and open space areas. The plant upgrades and improvements are anticipated to cost approximately \$1 billion to \$1.5 billion. Land uses will be funded separately from plant rebuilding costs. The plant master plan will include a funding plan as sewer fees can only be used for the sewer system. A collaboration between public, corporate, developer, and philanthropic entities could possibly result in funding for new land uses. A map of the proposed facilities is shown in Figure 26-2.

Figure 26-2: Proposed Improvements to the San Jose/Santa Clara Plant



SBWR's current capital improvement projects include:

- ❖ Zone 3 Reservoir: SBWR is designing two reservoirs with a total capacity of 5.5 million gallons in the Evergreen area off Murrillo Avenue. Construction began in 2005.
- ❖ SJ 13 San Jose Connector & Coleman/I 880 Interchange Recycled Water Line: SBWR will be constructing the connection to the Santa Clara SC 5 pipeline from the San Jose/Santa Clara City Limit to Hedding Street along Coleman avenue.
- ❖ Guadalupe Community Garden: This recycled water line will provide recycled water service to the proposed Guadalupe Community Garden located at the intersection of Walnut and Asbury. The new recycled water line will begin at the

intersection of Spring and Asbury and proceed along Asbury, terminating at Coleman Avenue. Construction began in 2005.

In May 2010, San José received \$6.3 million of American Recovery and Reinvestment Act funds for recycled water expansion following a nationwide competition. The U.S. Bureau of Reclamation signed a cooperative agreement with the City of San Jose to provide the stimulus funds towards the SBWR pipeline expansion project. The project will add approximately nine miles of pipe to the SBWR system and provide up to 2 million gallons per day of additional recycled water to irrigation and industrial customers.

PALO ALTO REGIONAL WATER QUALITY CONTROL PLANT

Overview

The Palo Alto Regional Water Quality Control Plant (RWQCP) treats wastewater from the East Palo Alto Sanitary District, Los Altos, Los Altos Hills, Mountain View, Palo Alto, and Stanford University. Palo Alto's RWQCP has been in operation since 1934 and is owned and operated by the City of Palo Alto for the communities of Los Altos, Los Altos Hills, Mountain View, Palo Alto, Stanford University and the East Palo Alto Sanitary District.

In 1992, the City and the other RWQCP partners completed a water reclamation master plan. This Master plan identified a five-year, three-stage implementation for recycled water development in the service area of the RWQCP.

Recycled water is distributed by the City of Palo Alto and the City of Mountain View. Recycled water is generally available east of Highway 101 in Palo Alto and Mountain View at parks, golf course and businesses sites for landscape irrigation—specifically in Mountain View north of Bayshore Highway, the Palo Alto Golf Course and Baylands Athletic Center, and Greer Park along West Bayshore Road in Palo Alto.

Type and Extent of Services

The plant is an advanced treatment facility that uses gravity settling, biological treatment with microorganisms and dual media filtration to remove unwanted organic materials and toxins from the approximately 22 million gallons a day of wastewater generated by the service area's 220,000 residents. The plant's treated effluent meets all of the requirements for discharge to the South San Francisco Bay.

The RWQCP water reuse program has historically brought a reliable, sustainable and drought-proof supply of water to the South Bay and Santa Clara County. The treated water is suitable for landscape irrigation, commercial and industrial use and habitat restoration. The plant has the capability to recycle all wastewater flow for restricted and unrestricted uses. To date, over 10 billion gallons have been reused since 1980, which equals the amount of water used by approximately 2,500 families of five per year for the past 23 years. In 2010, the plant produced 2,450 acre feet of recycled water. Recycled water from the plant is presently being used for the following purposes:

- ❖ Irrigation water for Greer Park in Palo Alto,
- ❖ Irrigation water for the Palo Alto Municipal Golf Course,
- ❖ Various uses at the Palo Alto Municipal Service Center, including use in street sweepers, dust control at construction sites, vehicle washing, and for irrigating road median strips,
- ❖ Various uses at Shoreline Park and other customers in Mountain View,
- ❖ Water for enhancements at the Emily Renzel Marsh in Palo Alto,
- ❖ Water for the duck pond in Palo Alto,
- ❖ Water for irrigation in and around the RWQCP and in processes at the plant itself,
- ❖ Water can be collected by trucks at the plant to be used for dust control at construction projects, for irrigation, and in street sweepers, and
- ❖ Irrigation water for CALTRANS for irrigating (by truck) the median strips on local highways.

The Environmental Compliance Division of the plant maintains a pretreatment program for control of industrial dischargers and also regulates many commercial dischargers. The pollution prevention program, which was initiated in response to the RWQCP's strict bay discharge permit conditions, addresses the sewer and stormwater discharges of about 100 major industrial facilities, more than 1,000 commercial businesses, about 200,000 area residents. In addition, over the past few years, the City of Palo Alto staff has created effective pollution prevention programs for mercury, pesticides, copper and trash. In 2011, the pollution prevention priorities for the RWQCP continue to include the same pollutants. Pollution prevention information and programs are supplied to residents as well as businesses within the service area. Public outreach information is included as part of the programs.

Financing

The Cities of Palo Alto, Mountain View and Los Altos participate jointly in the cost of maintaining and operating the City of Palo Alto Regional Water Quality Control Plant and related system. Palo Alto is the owner and administrator of the plant, which provides the transmission, treatment and disposal of sewage for the partners. The Cities of Mountain View and Los Altos are entitled to use a portion of the capacity of the plant for a specified period of time. Each partner has the right to rent unused capacity from/to the other partners. The expenses of operations and maintenance are paid quarterly by each partner based on its pro rata share of treatment costs. Additionally, joint system revenues are shared by the partners in the same ratio as expenses are paid. The amended agreement has a term of fifty years beginning from the original signing in October 1968, but may be terminated by any partner upon ten years' notice to the other partners.

Capital Improvement Projects

Construction was recently completed on a recycled water pipeline to reconnect Mountain View Shoreline Golf Course and expand to the North Bayshore area in Mountain View in June 2009 with formal operations beginning in January 2010. The upgraded pipeline will ensure a sustainable water supply for landscape irrigation.

The pipeline replacement helps fulfill RWQCP permit requirements. To mitigate the discharge of treated wastewater to San Francisco Bay, the RWQCP is required to operate and maintain the Water Reuse Program. Service to Shoreline Golf Course was interrupted due to a leaking pipeline. Therefore, in order to fulfill permit obligations, the RWQCP must restore the golf course connection.

The City is in the EIR process to extend services to customers in the the Stanford Research Park area and potentially offset the need to import approximately 900 AFY of potable water.

The RWQCP staff is working with an engineering firm to develop a conceptual design and environmental analysis for the renovation of landscaping within and around the periphery of the 25-acre wastewater treatment plant. The goals of this project are to improve deteriorated landscape screening around the periphery of the plant, improve the habitat corridor linking the Baylands and Renzel Marsh and provide demonstration landscaping within the RWQCP.

Another project considered by the City is the energy/compost facility. In June 2011, city staff and a contract engineering firm presented the draft feasibility study for a potential energy/compost facility adjacent to the City's wastewater treatment plant to convert organic materials to energy and compost.

The plant has been in operation since 1934 and now serves six communities. Aging equipment, new regulatory requirements, and the movement to full sustainability will require rehabilitation, replacement and new processes. Future activities will focus on biosolids treatment and disposal, waste-to-energy technologies, energy use, major pipeline repairs, recycled water treatment, carbon footprint impacts, and the best alternatives for rehabilitation, replacement or improvement.

SUNNYVALE WATER POLLUTION CONTROL PLANT

Overview

During the 1940s, the City of Sunnyvale became an important industrial and residential community. Because of the population boom, studies were undertaken to assess the need for a citywide sewage treatment system. The resulting sewage treatment plant, constructed in 1956, was a primary, or one-step plant that could process 7.5 million gallons of wastewater a day. However, it soon became overloaded due to an increased number of residents, canneries, and other industries located in Sunnyvale.

By 1960, the population had grown to over 50,000 residents, plus many more non-residents working in the new industries that continued to sprout up. The increase in wastewater flows from this growth created the need to expand the plant.

Construction to increase the treatment capacity to 15 million gallons per day was completed in 1962. However, even with this plant expansion, it became apparent that special consideration to treatment processes would have to be made because of the high cannery flows. Cannery waste, which depletes great quantities of the oxygen available in the water as the waste decays, was identified as being a serious problem for the shallow and fragile South Bay environment. It became necessary to provide additional treatment. Subsequent upgrades include the addition of two evaporation ponds to improve the treatment process.

New developments in chemistry and environmental studies during the technology explosion of the 70's led to further understanding about the processes needed to protect waters from pollutants. With the enactment of the Clean Water Act in 1972, new concepts were incorporated into wastewater treatment, resulting in expansion of the Sunnyvale Water Pollution Control Plant. When a third process, called tertiary treatment, was added to the Plant in 1978, total capacity increased to 22.5 million gallons of treated wastewater each day. The final upgrade to increase the Plant to its present capacity of 29.5 mgd was completed in 1984.

Type and Extent of Services

The Donald M. Somers Water Pollution Control Plant is an advanced wastewater treatment facility serving residents, businesses and industries in the City of Sunnyvale.

Wastewater draining from indoor sources in Sunnyvale flows through sewer pipes that direct the wastewater to the water pollution control plant for treatment before being discharged to the San Francisco Bay or to recycled water users. If left untreated before discharge, residential, commercial and industrial wastewater would upset the ecosystem of southern San Francisco Bay.

In addition to wastewater treatment, services include regulatory permitting and inspections of pretreatment facilities, storm water management for business and industry in Sunnyvale, information on water pollution prevention and environmental education services to schools and youth.

Funded by user fees, the mission of the Water Pollution Control Plant is to conduct a cost-effective wastewater management program that is environmentally sound and regulated to protect public health, safety, property, and the quality of the Bay.

The plant is designed to combine physical, chemical, and natural biological processes. This combination allows the Plant to consistently produce a high-quality effluent from which more than 85 percent of the pollutants have been removed from the influent. The plant utilizes primary, secondary and tertiary treatment processes to treat the wastewater.

While conducting wastewater management program, the plant reuses many byproducts of the treatment process. These include producing electricity and mechanical power from waste gases, recovering heat from engines, producing an alternative to soil for daily landfill cover or a soil amendment for agricultural and pasture land, and supplementing the City water supply by producing recycled water distributed through a separate system for non-potable uses.

Electrical power production offsets the purchase of utility power and produces enough excess power to sell electricity to the California power grid. The fuel to run the engines and generators that produce this power comes from the decomposition of solid waste and liquid waste. Solids removed in the first stage of the wastewater treatment process are sent to an anaerobic digester. Dried solids are used for beneficial reuse as an alternative to soil for daily cover materials on landfills or used as fertilizer for agricultural and pasture land.

Recycled water is produced by diverting a portion of the flow and providing additional treatment. This additionally treated water meets all non-potable Title 22 standards established by the State. It is distributed through a separate underground piping system to provide irrigation for industrial parks, the Sunnyvale Municipal Golf Course, Baylands Park, and sports complexes.

The City converted its traditional sewer treatment plant in the mid 1990's to allow for the production of recycled water and began using recycled water in 1999, supplementing the overall water supply. Approximately 10 percent of the plant flow is treated to a higher level to meet the necessary recycled water quality, and is delivered to customers for non-potable uses, primarily irrigation. In 2010, the plant produced 1,330 acre feet of recycled water. The City has experienced an increase in demand for recycled water; between 2005 and 2010, recycled water landscape irrigation connections increased from 31 to 112. The City anticipates continued growth in the use of recycled water through 2030. Recycled water supplies are expected to drop slightly by 2015 due to an expected reduction in the production of recycled water by the City's Water Pollution Control Plant (WPCP) due to outages during capital improvements. The increase projected thereafter is largely due to aggressive efforts by the City to encourage the use of recycled water for nonpotable uses.

The long-term goal of the City is to reuse 100 percent of all wastewater (15 mgd) generated from the Plant to reduce all flows to the bay, as stated in the 2000 Recycled Water Master Plan. This goal, if attained, would involve the export of water to a location or agency outside the city limits. SCVWD is considering use of the City's recycled water for groundwater recharge purposes.

The recycled water distribution system currently consists of approximately 43,000 feet of 12-inch through 36-inch transmission mains (possible future extensions) and over 34,000 feet of 8-inch distribution lines. There is also a two-million gallon recycled water storage reservoir.

Management and Staffing

More than 60 city staff are employed in operations, maintenance, pretreatment, laboratory, and administration functions of the plant. Plant operators keep the processes flowing and are on duty 24 hours a day. Maintenance mechanics ensure that the equipment is dependable and implement changes as needed to assist the overall efficiency of the plant. Pretreatment Inspectors work closely with industries and businesses to aid in their compliance with City requirements on the quality of industrial wastewater they discharge into sewers. Laboratory Chemists analyze industrial waste pretreatment samples as well as samples taken throughout the treatment process. Support Services staff the front office, assist the general public, vendors, and other City staff, provide administrative support to plant personnel, and prepare a variety of reports to meet regulatory requirements. Environmental Outreach staff provides education on water pollution prevention, conservation, and watershed stewardship to schools and youth, businesses and industries, and the community.

The plant received multiple awards and honors for outstanding compliance, BMP implementation and outreach.

Financing

The plant is operated as a separate enterprise fund within the City. This means that it must support itself through sewer service fees without any tax dollars being used. Bond issues and government grants, along with service fees, provide funding for operation, maintenance, and future development.

Costs for wastewater treatment continue to rise with new permit requirements, labor and product cost increases, development of new technologies, and maintenance of the plant's aging infrastructure. In addition, current state and federally mandated requirements compel the City to earmark funds to cover large future expenditures.

From 1993 to 2008, the SCVWD provided financial assistance and support by underwriting some of the operational costs for the City's recycled water system. This assistance was provided in acknowledgement of the savings to the SCVWD by avoiding the need to purchase new sources of water that might otherwise be necessary without the benefit of recycled water to substitute for potable water for non-potable uses.

The City promotes the use of recycled water through its price structure. Recycled water is priced at 90 percent of the prevailing, first-tier potable water rate. The City intends to continue this financial incentive in the foreseeable future, as possible. With few exceptions, the pricing policy has been successful in encouraging prospective users to convert to the limited use of recycled water in those areas where it is available.

Capital Improvement Projects

The City has completed Phases I and II of the 2000 Recycled Water Master Plan, which now serves Baylands Park, Lockheed/Martin Area, the Sunnyvale Municipal Golf Course,

and other parks and industrial areas in the northern part of the City. A storage tank was built in 2000 to allow for more recycled water to be developed and stored in order to keep up with demand on the system once the area is built out. The City has plans to further extend mains as part of the Phase IIc and II d projects. Possible extensions to serve the south end of the City and also Cupertino and Los Altos may be evaluated in the future.