2009 South Bay Action Plan Activity Update

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City of San José

Environmental Services

San Jose/Santa Clara Water Pollution Control Plant

Administered by City of San José, Environmental Services Department

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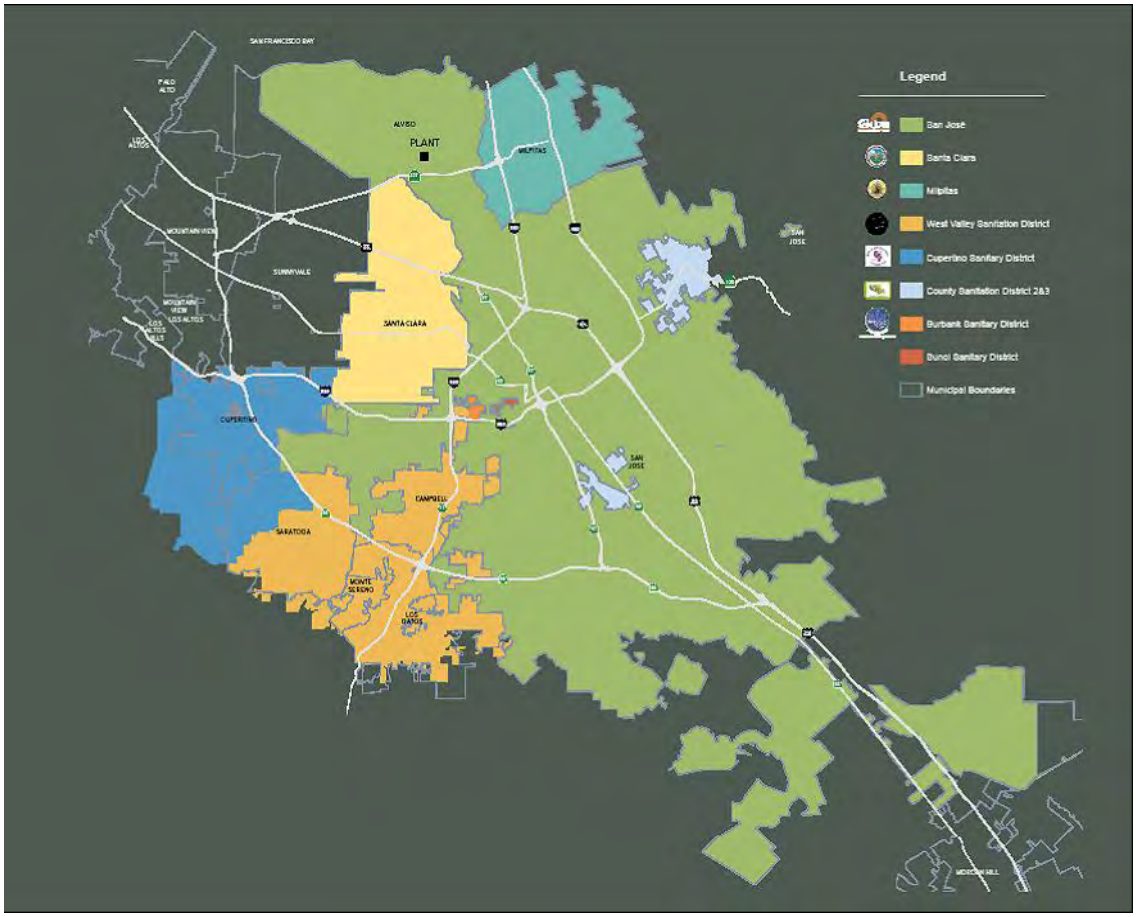
AREA TRIBUTARY TO THE SAN JOSE / SANTA CLARA WATER POLLUTION CONTROL PLANT



NPDES PERMIT CA0037842

The City of San José manages the San Jose/Santa Clara Water Pollution Control Plant (Plant) for the Cities of San José, Santa Clara, Milpitas, Cupertino Sanitary District, County Sanitation Districts 2-3, Burbank Sanitary District and West Valley Sanitation District (Campbell, Los Gatos, Monte Sereno, and Saratoga) as shown above. The Plant discharges to the southern end of the San Francisco Bay and receives wastewater from roughly 1.35 million residents and more than 16,000 commercial and industrial facilities.

Treatment Process: The wastewater treatment process consists of screening and grit removal, primary sedimentation, secondary (biological nutrient removal) treatment, secondary clarification, filtration, disinfection, and dechlorination.

Abbreviations and Units of Measure

ADWEF	Average Dry Weather Effluent Flow
BACWA	Bay Area Clean Water Agency
BAPPG	Bay Area Pollution Prevention Group
BASMAA	Bay Area Stormwater Management Agencies Association
BMP	Best Management Practice
CBS	Clean Bay Strategy
City	City of San José
ESD	Environmental Services Department
JPA	Joint Powers Authority
IWRP	Integrated Water Resources Plan
NPDES	National Pollutant Discharge Elimination System
P2	Pollution Prevention
Plant	San José/Santa Clara Water Pollution Control Plant
POTW	Publicly Owned Treatment Works
RMP	Regional Monitoring Program
SBWR	South Bay Water Recycling
South Bay	San Francisco Bay, South of Dumbarton Bridge
State Board	California State Water Resources Control Board
TMDL	Total Maximum Daily Load
ULFT	Ultra-Low Flush Toilet
Urban Runoff Program	Santa Clara Valley Urban Runoff Pollution Prevention Program
Regional Water Board	California Regional Water Quality Control Board, San Francisco Bay Region
Water District	Santa Clara Valley Water District
WEP	Water Efficiency Program
WET	Water Efficient Technologies
WMI	Santa Clara Basin Watershed Management Initiative

UNITS OF MEASURE

AF	Acre Feet 1 AF=325,851 gallons
ccf	hundred cubic feet
mgd	million gallons per day
ppb	parts per billion
ppd	pounds per day (lbs/day)
ppm	parts per million
ppt	parts per trillion

BACKGROUND

On October 4, 1990, the State Water Resources Control Board (State Water Board) adopted Order WQ 90-5, which directed the Regional Water Board to limit flows from the Plant to 120 mgd Average Dry Weather Effluent Flow or to flows that would not further impact rare and endangered species habitat. On March 6, 1991, the City submitted the first "Action Plan" as fulfillment of the State Water Board order to limit flows. In Resolution 91-152, the Regional Water Board accepted a revised three-part Action Plan from the City that included water conservation, water recycling and salt marsh mitigation. These reporting requirements, along with others related to treatment plant reliability, were continued in the Plant's current NPDES permit, Order Number R2-2009-0038. This document provides an annual report required by permit provision VI.C.6.a:

- VI.C.6.a. – an annual update of the South Bay Action Plan (SBAP) describing accomplishments and planned activities of Water Conservation and Water Recycling Programs as well as an SBAP Contingency Plan with measures that will be implemented if average dry weather flow exceeds 120 MGD.

Water Conservation

The City partners with the Santa Clara Valley Water District to promote residential and commercial water conservation by providing financial incentives and information about efficient fixtures and water wise practices. Through this partnership, the City helps fund and implement rebates and other programs that reduce wastewater flow to the Bay.

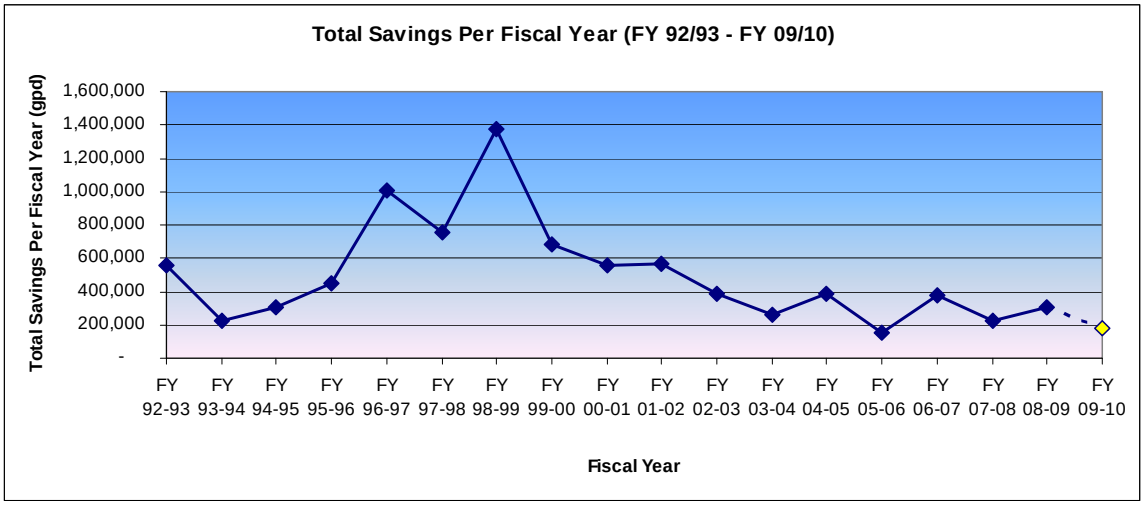
Water Recycling

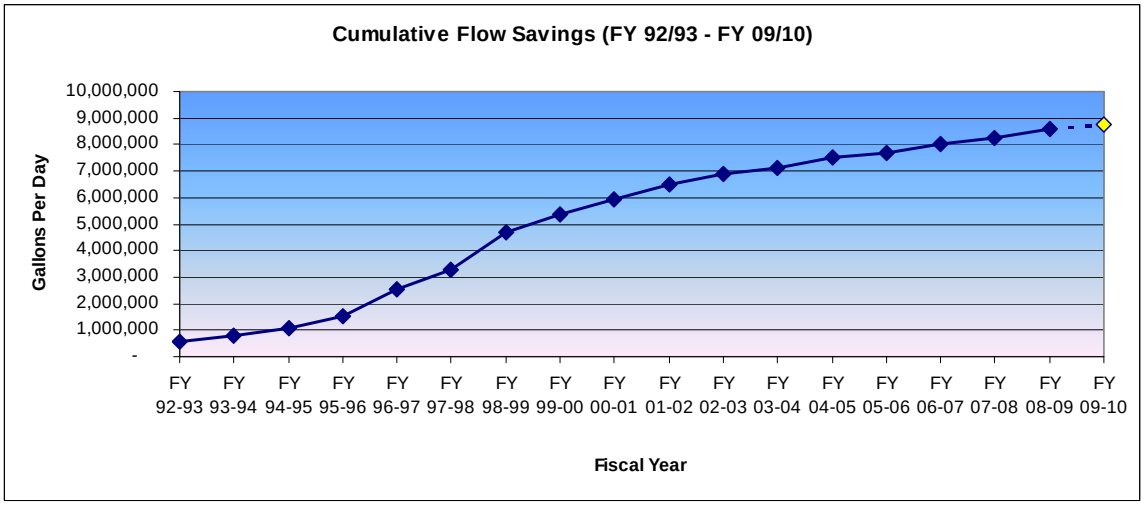
The South Bay Water Recycling system was built to recycle the high quality effluent from the Plant for use in irrigation and industrial practices. It began operation in 1997, and as of 2009, it now delivers an average of 14.3 million gallons of water per day during the dry season.

1. WATER CONSERVATION

The City of San José has undertaken aggressive water conservation outreach and rebate programs since 1986. These early efforts evolved into the current Water Efficiency Program (WEP). Since its inception in the early 1990s, the WEP has contributed to a reduction in wastewater flows to the San Jose / Santa Clara Water Pollution Control Plant of roughly 8.6 mgd.
The following graphs illustrate both annual flow reductions and cumulative flow savings estimated from water conservation efforts.

City of San José Water Conservation Program web site:
http://www.sanjoseca.gov/esd/water-conservation/default.asp



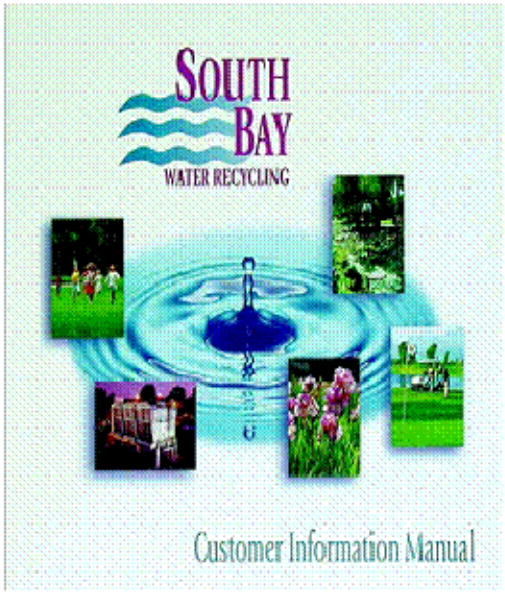


Water Conservation - 2009 Activities Update

WATER CONSERVATION - PERMIT PROVISION: VI.C.6.a. EFFECTIVENESS MEASURE: Influent flow reduction.	
FY 2008-2009 Accomplishments	**Future Activities - 2010**
➢ Achieved approximately 0.3 mgd of flow reduction. Funded $406,977towards flow reduction programs implemented by the Water District, and $21,240 towards programs implemented by the City. ➢ Provided Water Efficient Technologies (WET) rebates to commercial, industrial and institutional customers for three projects that resulted in wastewater flow reduction. These rebates resulted in a total flow savings of 13,154 gallons per day. ➢ Continued cost sharing agreement with Santa Clara Valley Water District. Flow reduction programs included Water Efficient Technologies rebates for businesses, toilet and urinal retrofits and rebates, high efficiency washing machine rebates, water audits, and pre-rinse sprayer retrofits for food service establishments. ➢ Provided technical information and outreach on flow reduction technologies to residential, commercial, industrial and institutional customers	• Continue cost sharing agreement with the Water District to conduct flow reduction activities for the Plant service area. Provide high-efficiency toilet (HET) rebates and retrofits, high efficiency clothes washer rebates, water surveys and rebates for sub-meters. • Continue to implement Water Efficient Technologies (WET) financial incentive program for commercial and institutional businesses. • Flow reduction goal: 0.18 MGD (reduced compared to FY 08-09 because the cost-sharing agreement with Santa Clara Valley Water District will cover a shorter period of time than in FY 08-09). • Complete WET rebates for at least 3 applicants and initiate new applications for 4 more. • Continue to provide technical information and outreach on flow reduction technologies to residential, commercial and institutional customers.

2. WATER RECYCLING

South Bay Water Recycling (SBWR), the regional nonpotable reuse program managed by the City of San Jose as lead agency for the San Jose/Santa Clara Water Pollution Control Plant, delivered an average 14.3 million gallons per day (mgd) during the dry weather season (ADWEF), occurring between July and September of 2009. The City connected 19 additional services to the recycled water distribution system, bringing the total number to 601 connections. In order to ensure that all site supervisors are properly trained in the management of recycled water irrigation systems and industrial applications, the City conducted four Site Supervisor Training events during 2009, and maintains a web site describing various aspects, rules and regulations concerning South Bay Water Recycling at: http://www.sanjoseca.gov/sbwr/.



The City's ongoing discussions with the Santa Clara Valley Water District (District) last year led to the development of a "framework agreement" for the integration of recycled water facilities and programs, which is scheduled to be brought before the San Jose City Council and the District Board of Directors for formal approval in early 2010. The purpose of the framework agreement is to ensure that the two agencies cooperate effectively to expand and develop recycled water use in Santa Clara County to meet the District's "Ends Policy" to have 10% of the total water demand in the Valley supplied by recycled water by 2030, and the City's "Green Vision" goal to beneficially reuse 100% of wastewater effluent by 2022. Key features of the agreement include joint funding of a 8 mgd Advanced Recycled Water Treatment Facility that will reduce the salinity of recycled water, and provisions to share the cost of operating the recycled water system into the future.

In 2009 the City also updated its Groundwater Monitoring and Mitigation Program (GMMP). The GMMP provides for regular sampling and analysis of water from twelve wells in the area served by South Bay Water Recycling in order to ensure that continued use of recycled water for irrigation in the South Bay does not significantly impact the underlying groundwater or impair its usefulness. The update involved reviewing groundwater data collected since the inception of the program and analyzing the results in a variety of ways including mass balance evaluation, geochemical evaluation and concentration trend analysis in order to determine the adequacy of the GMMP and to recommend appropriate changes that would improve its effectiveness. The final report concluded that the original GMMP has been generally effective in monitoring groundwater quality changes and that no significant changes have occurred in the water quality in deep aquifers. The report also determined that water quality changes detected

in some shallow aquifers was most likely the result of influences other than irrigation with recycled water.

Community Garden in Guadalupe River Park and Gardens, San Jose

The Guadalupe Gardens Community Garden—the first community garden in California to use recycled water—celebrated its first harvest in August 2009 with a Grand Opening event. Representatives from the City of San Jose, the Santa Clara Valley Water District and the US Bureau of Reclamation all spoke at the event, praising the City on its innovative use of recycled water and congratulating the gardeners on a bountiful harvest. In addition to completing a training session in the proper use of recycled water mandated by the California Department of Public Health, the gardeners also participated in a research study of public attitudes towards recycled water cosponsored by the City, the District and the WateReuse Foundation. Located directly across the street from the Demonstration Garden at Guadalupe River Park and Gardens, the San Jose Community Garden now provides an additional example of successful use of recycled water to local gardeners, horticulturalists, landscape managers and the general public.

The cooling tower at the new Santa Clara County Crime Lab will use recycled water.

In July 2009 the US Bureau of Reclamation notified the City of its intent to South Bay Water Recycling a grant from the 2009 American Recovery and Reinvestment Act. The SBWR grant application was selected through a competetive process that considered a number of factors including readiness to proceed, abilty to complete the project, and the value of the proposed projects to reduce reliance on water from the Sacrament-San Joaquin delta.The proposed grant will provide $6.46 million in federal funds towards the cost of designing and building an additional 9 miles of pipeline to distribute another 2000 acre-feet of recycled water to industrial and irrigation customers in San Jose, Santa Clara and Milpitas. Some of the key customers to be served by the proposed pipelines are data centers in Santa Clara that will use recycled water in their cooling towers with potable water available as a backup supply.

Water Recycling - 2009 Activities Update

SOUTH BAY WATER RECYCLING - PERMIT PROVISION: VI.C.6.a. EFFECTIVENESS MEASURE: Effluent flow reduction. 5-YEAR FLOW REDUCTION GOAL: 5 MGD	
FY 2008-2009 Accomplishments	**Future Activities - 2010**
➢ Current dry weather maximum average reuse was approximately 14.3 mgd. ➢ San José City Council and Santa Clara Valley Water District developed a framework agreement to jointly increase recycled water use as a percentage of the overall county water supply. ➢ Completed review of 60% design of the Advanced Recycled Water Treatment Facility (ARWTF) to provide 8 mgd of advanced treated recycled water to improve SBWR quality to 500 ppm TDS. ➢ Worked with local developers and other stakeholders to prepare an ordinance to require the indoor use of recycled water in facilities located near the SBWR pipeline. ➢ Drafted "Industrial Design Guidelines and Training Manual" for using recycled water in cooling towers ➢ Received notice of $6.46 million award from US Bureau of Reclamation's 2009 American Recovery and Reinvestment Act (ARRA) grant program and completed design and environmental compliance for eight pipeline projects eligible for grant funding including a 1-mile pipeline to San José International Airport for indoor and outdoor use. ➢ Received $3.4 million in federal grant funding for SBWR Phase 1A construction.	• Continue to connect additional customers to increase seasonal and annual water use. • Council, District Board approve agreement to integrate recycled water facilities and programs • Begin construction of Advanced Recycled Water Treatment Facility (ARWTF). • Convert cooling towers adjacent to the SBWR pipeline to recycled water use. • Connect new industrial and businesses in the vicinity of the SBWR pipeline to use recycled water in cooling towers. • Complete developer fee for new sewer connections to help extend the recycled water pipeline. • Complete construction of ARRA-funded projects in conformance within grant funding guidelines and connect adjacent customers to increase usage by 1000-2000 acre-feet per year (0.7-1.4 mgd).. • Complete retrofit of approximately 58 irrigation and cooling tower customers in Milpitas
Outreach/Marketing	
➢ Water Quality data updated every two months on the website http://www.sanjoseca.gov/sbwr/water-	• Upgrade quarterly Site Supervisor Training to new and existing customers to include more

SOUTH BAY WATER RECYCLING - PERMIT PROVISION: VI.C.6.a. EFFECTIVENESS MEASURE: Effluent flow reduction. 5-YEAR FLOW REDUCTION GOAL: 5 MGD	
FY 2008-2009 Accomplishments	**Future Activities - 2010**
quality.htm ➢ SBWR website updated forms for connection and inspection of recycled water sites And provided conductivity meters to assist customers in determining if additional cross-connection testing may be required ➢ In 2009, SBWR discount to irrigation customers was reduced by $20 per acre-foot to increase revenues and stabilize program subsidy from sewer ratepayers. ➢ Completed Rate Study of sewer connection fees and other related charges and determined the extent to which additional fees might support extension of the SBWR system. ➢ Updated communications strategy consistent with achievement of San José Green Vision.goals (Goal #6), ➢ Updated SBWR Rules and Regulations and Site Supervisor Training Manual. ➢ Improved outreach to regional customers regarding State Policy on Recycled Water and initiated discussions on outreach and communication strategies for water quality and indirect potable reuse in coordination with local Water Reuse Chapter. ➢ Collaborated with the Santa Clara Valley Water District on use of recycled water for redwood trees through a joint research project and on a site-specific conference at Kelley Park.	examples of successful recycled water use. • Sponsor and attend community events, promote recycled water use and distribute construction information to affected businesses and residents. • Maintain and enhance SBWR website to provide information and promote the benefits of recycled water. • Continue to support Youth Watershed Education program including specific messages about recycled water. • Support government and professional associations that share information and promote regional water recycling in the San Francisco Bay Area • Produce Department of Health (DPH) Approved Recycled Water Design Guidelines for Cooling Towers • Produce training module for industrial use of recycled water in cooling towers

3. SOUTH BAY ACTION PLAN CONTINGENCY PLAN

The NPDES permit provision **VI.C.6.a**. requires submittal of a contingency plan that describes the planning effort to identify water recycling and conservation efforts over and above current levels should Plant effluent flows increase significantly. The process to initiate additional flow reduction activities includes:

- Update the flow projection annually to establish "best projection" of effluent flows.

- Begin analysis of potential additional programs if average dry-weather effluent flows (ADWEF) reach a planning trigger of 115 mgd, which was determined using a safety factor that accounts for time to implement activities, projected growth, and City policy.
- Such analysis would include:
  1. Identifying and developing characteristics of potential future flow reduction programs/projects, including program cost, flow reduction projection, implementation schedule, and benefit characteristics as needed for benefit cost analysis.
  2. Prioritizing potential programs/projects using benefit cost analysis and policy decisions on priorities for programs at the time.
  3. Determining implementation period required for achieving the next significant increment of flow reduction.
- The analysis would be submitted to the Regional Water Board as a more detailed contingency Action Plan in the year that follows ADWEF reaching the planning trigger.

- If flows continue to rise, priority projects will be implemented.

4. EFFECTIVENESS MEASURES

The purpose of the South Bay Action Plan is to limit freshwater flows that impact rare and endangered species. The primary measure of effectiveness for the Plan is monitoring Plant effluent fresh water flow volumes.

Plant Dry-Weather Discharge

The Plant's average dry-weather effluent flow (determined to be the lowest average effluent flow for any three consecutive months between the months of May and October), has steadily decreased since 2000 with the exception of a slight increase in 2005 and 2006 due primarily to above normal rainfall. In 2009, Plant effluent dry weather flow was the lowest since 1978 at 91 million gallons per day (mgd).

Effluent since 2000 is down primarily due to three factors:

- **Water Conservation:** per capita water use has dropped since the late 1980s. That trend has kept indoor water use flat from a growing residential sector resulting in lower influent flows to the Plant;
- **Economy:** the economic slowdown post year 2000 corresponded to a loss of jobs, particularly high water-use manufacturing jobs, in the Plant service area; and
- **Recycled Water:** diversions from water reuse have doubled from 7 mgd in 2000 to 14 mgd in 2009.

The effluent flow trend, when normalized for rainfall, is projected to rise slowly at an annual rate of 1% or less. The most recent update of the City's flow model indicates that the Plant's dry-weather discharge will stay below 120 mgd through the next NPDES permit period.

ATTACHMENT 1: SBAP Chronology Table

Flow reduction and water conservation programs became part of the City's environmental programs since the mid 1980s. In the 1990s marsh mitigation became a priority for the Plant. The following tables summarize major events and milestones related to the three areas of flow reduction, marsh mitigation, and Plant reliability.

Table 1: South Bay Action Plan Chronology

Year	Activity
1986	In May, City Council adopted Flow Reduction Strategy and directed City's Office of Environmental Management (now ESD) to develop a 10-year water conservation program. These efforts resulted in 4 mgd flow reduction by 1990.
1990	• WQ90-5 ordered Plant discharge limited to 120 mgd or level that will not negatively impact salt marsh. • City completed preliminary feasibility analysis of potential non-potable and potable water reclamation in northern Santa Clara County. • Agreement with Santa Clara Valley Water District to jointly fund planning and feasibility studies related to water reclamation.
1991	• Began outreach program on ULFTs including a workshop for local plumbing and building industry. • Action Plan approved by Regional Water Board in lieu of a flow cap. The Action Plan is founded on three elements: water recycling, water conservation, and wetland mitigation.
1992	• Distributed Notice of Preparation (NOP) for EIR for water recycling program. Public meeting held on February 19, 1992. • Pilot Residential Water Audit completed and provided brochures on water saving practices to participants. • City supplemented State law requiring ULFTs in new construction by requiring ULFTs in remodels that require a plumbing permit. • Cooperative agreement with Santa Clara Valley Water District on pilot ULFT rebate program. • Began pilot rebate program for ULFTs in cooperation with San Jose Water Company with a goal of 20,000 retrofits: ULFT rebate and voucher program, Community partnership program, ULFT retrofit for schools and other public institutions, and a Financial Incentives Program • Began distribution of New Construction Guidelines for Water Conservation. • EIR certified for Recycled water system

Table 1: South Bay Action Plan Chronology	
Year	**Activity**
1994	• City completed two-year feasibility study for Countywide distribution of recycled water. 1994 and 1997: design and award of Phase 1 pipeline segments.
1995	• Council approved $140 million for design, engineering and construction of SBWR Phase 1 system. • SBWR groundbreaking
1996	• Average dry weather effluent flow at 132 mgd despite the City's efforts to implement the Action Plan. • Regional Water Board directed City to assess salt marsh conversion near Plant outfall in spring 1997 and propose Revised Action Plan by June 1997.
1997	• Submitted revised South Bay Action Plan. Stakeholder workshops held in December 1996 and January 1997. Proposed flow reduction projects were: Indoor water conservation, expanded water recycling, industrial water reuse, inflow/infiltration reduction, environmental enhancement pilots. • SBWR system operational.
1998	• Revised Action Plan is incorporated into the June 1998 NPDES permit. • Design and site selection for stream flow augmentation pilot began. • Began Slow the Flow campaign in cooperation with the Silicon Valley Manufacturing Group. • Council adopts early implementation of South Bay Action Plan elements from the Tier I Contingency plan to further flow reduction. • Flow Audit Protocol completed for industrial dischargers.
1999	• SBWR Phase 1 completed.
2000	• Completed final monitoring report for Coyote Creek stream flow augmentation project. Project not implemented due to costs. • SBWR Phase2 expansion began. Included Silver Creek pipeline extension, two reservoirs and other system reliability projects.
2003	• New Plant NPDES permit requires annual updates to the Action Plan
2004	• SBWR program management moved to Muni Water.
2005	• Joint project with Water District on the 7-mile SBWR southern extension servicing Metcalf Energy Center completed in February 2005. • In April, began construction of the Plant's wet weather reliability project. Increases the Plant's sustainable peak wet weather flow from 271 mgd to 300 mgd and short-duration flows of up to 400 mgd for 2 hours.

Table 1: South Bay Action Plan Chronology	
Year	**Activity**
2006	• Celebrated 50th anniversary of the San Jose/Santa Clara Water Pollution Control Plant by hosting a community open house with tours and information on water conservation, and water recycling. • Recycled Water Collaborative formed as a result of the Water District and City study session held in September. • ESD Environmental Management System began development. Initial focus on Municipal Water and the Plant.
2007	• SBWR distributed nearly 15 mgd (ADWEF) during the dry season and over 10,000 acre-feet of recycled water to over 500 customers through the year. • The San Jose City Council adopted the "Green Vision" establishing a goal that 100% of wastewater is recycled or beneficially reused by 2022.
2008	• City submitted a technical memorandum to the Water Board titled "Net Environmental Benefit (NEB) Evaluation for San Jose/Santa Clara WPCP Discharge." The memorandum accompanied City submission for NPDES permit renewal and documented how the San Jose/Santa Clara WPCP discharge now satisfies all concerns expressed circa 1990 that, at that time, justified original denial of a finding of NEB for the Plant. • Plant dry-weather effluent flow was 92 mgd, the lowest flow recorded since 1978.
2009	• San José celebrated grand opening event for the first community garden in California to use recycled water • US Bureau of Reclamation notified the City of intent to provide more than $6 million from the 2009 American Recovery and Reinvestment Act towards 9 miles of pipeline to provide an additional 2,000 acre-feet of recycled water