
2010 South Bay Action Plan Activity Update

Reporting Period:

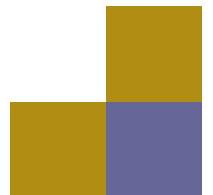
January 1 – December 31, 2010

Prepared By:

City of San José
Environmental Services

San Jose/Santa Clara Water Pollution Control Plant

Administered by City of San José, Environmental Services Department

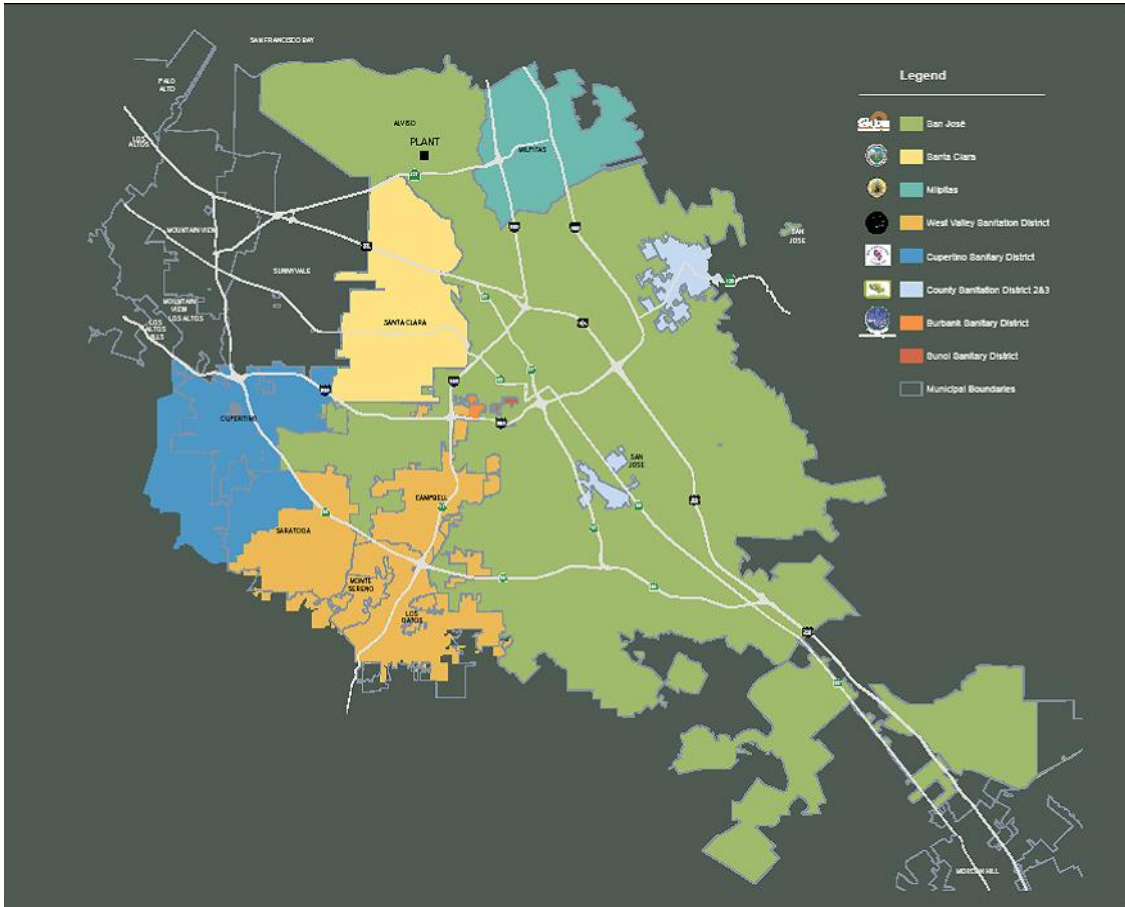


THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

BACKGROUND	1
1. WATER CONSERVATION	2
Water Conservation - 2010 Activities Update	3
2. WATER RECYCLING	4
Water Recycling - 2010 Activities Update	6
3. SOUTH BAY ACTION PLAN CONTINGENCY PLAN	8
4. EFFECTIVENESS MEASURES.....	9
Plant Dry-Weather Discharge	9
ATTACHMENT 1: SBAP Chronology Table.....	10

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 1.43 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 and wastewater flow reduction 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.

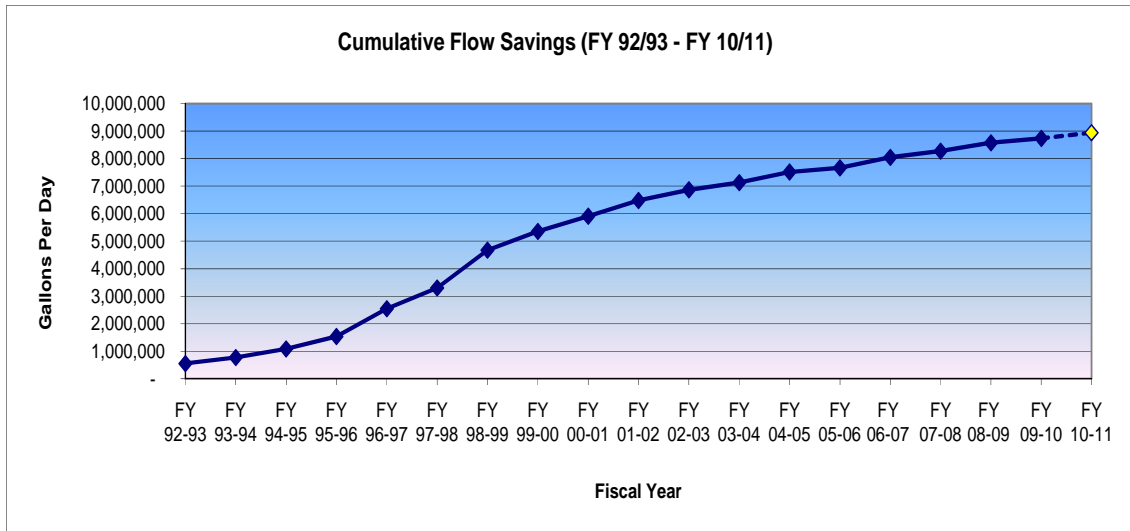
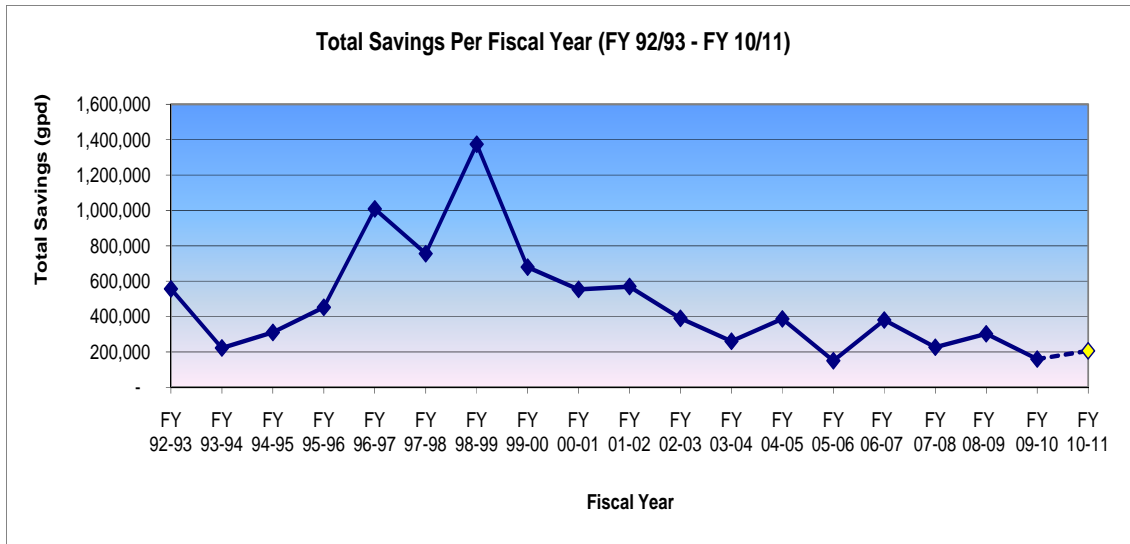
Water Recycling

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 2010, it now delivers an average of 14 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 8.7 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>

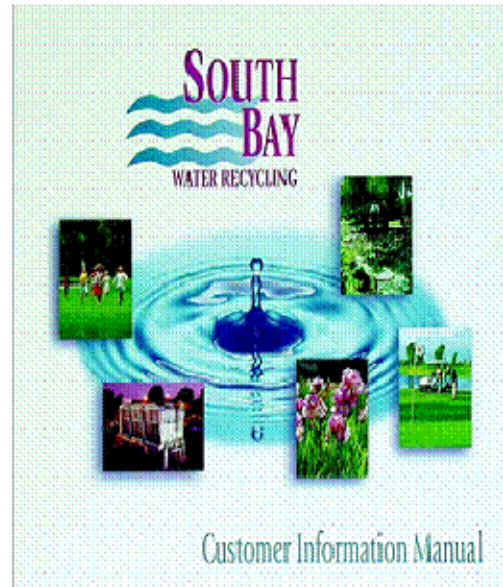


Water Conservation - 2010 Activities Update

WATER CONSERVATION - PERMIT PROVISION: VI.C.6.a. EFFECTIVENESS MEASURE: Influent flow reduction.	
FY 2009-2010 Accomplishments	Future Activities - 2011
<ul style="list-style-type: none"> ➤ Achieved approximately 0.16 mgd of flow reduction. Funded \$365,055 towards flow reduction programs implemented by the Water District, and \$11,963.28 towards programs implemented by the City. ➤ Provided Water Efficient Technologies (WET) rebates to commercial, industrial and institutional customers for one project that resulted in wastewater flow reduction. These rebates resulted in a total flow savings of 7,026 gallons per day. ➤ Continued cost sharing agreement with Santa Clara Valley Water District. Flow reduction programs included toilet and urinal retrofits and rebates, high efficiency washing machine rebates, water audits, submeter rebates for multi-family residential development 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 	<ul style="list-style-type: none"> • Continue cost sharing agreement with the Water District to conduct flow reduction activities for the Plant service area. Provide high-efficiency toilet (HET) and urinal (HEU) 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, industrial and institutional businesses. • Flow reduction goal: 0.2 MGD • Complete WET rebates for at least 3 applicants and initiate new applications for 3 more. • Continue to provide technical information and outreach on flow reduction technologies to residential, commercial and institutional customers.

2. WATER RECYCLING

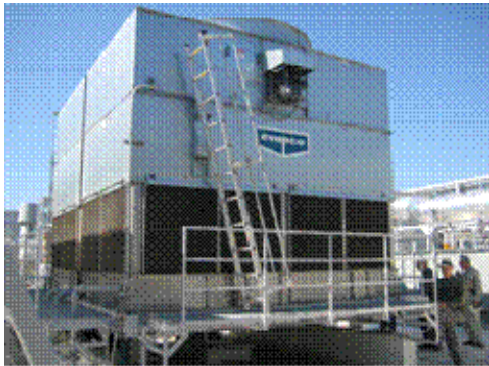
South Bay Water Recycling (SBWR), the regional nonpotable reuse program managed by the City of San Jose as lead agency for the San Jose/Santa Clara Water Pollution Control Plant, delivered an average 14 million gallons per day (mgd) during the dry weather season (ADWEF), occurring between July and September of 2010. The City connected 24 additional services to the recycled water distribution system, bringing the total number to 615 connections. One service changed connections, and 10 previous connections did not use recycled water this year. 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 2010, and maintains a web site describing various aspects, rules and regulations concerning South Bay Water Recycling at: <http://www.sanjoseca.gov/sbwr/>.



Multi-year discussions between the City and the Santa Clara Valley Water District (District) last year culminated in the execution of a 40-year Recycled Water Integration Agreement (Integration Agreement), and a Ground Lease Agreement. Key features of these agreements include joint funding of an 8-mgd Advanced Recycled Water Treatment Facility to reduce the salinity of recycled water, and provisions to share the cost of operating the recycled water system. In conformance with these Agreements, the District and City convened the first meeting of the Recycled Water Policy Advisory Committee meeting on September 23, 2010. This Committee discusses recycled water issues and provides recommendations to their full City Councils (San Jose and Santa Clara) and to the District Board. The Committee is comprised of City of San José Council members Kansan Chu and Pierluigi Oliverio, Santa Clara Mayor Patricia Mahan, and Santa Clara Valley Water District Board members Tony Estremera, Patrick Kwok and Rosemary Kamei. (Following the 2010 Board elections newly-elected Director Don Gage replaced former Director Kamei.) The next Recycled Water Policy Advisory meeting, scheduled for April 21, 2011, will cover topics on SBWR operation and maintenance budget, and the potential for joint participation in various capital projects.

The City received \$6.46 million from the US Bureau of Reclamation to expand recycled water service to industrial customers and others through a grant from the American Recovery and Reinvestment Act (ARRA). The funding will contribute to construction of nine miles of recycled water pipe and appurtenances to increase recycled water use by up to 2000 acre-feet per year, mostly for industrial purposes. Projects recently completed or now under construction will provide additional recycled water service to

Santa Clara Central Park and the Mineta-San José International Airport, as well as San Jose High Academy, Milpitas parks and schools, and four data centers in Santa Clara. The City is also developing demand for recycled water through the Cooling Tower Initiative that markets recycled water for cooling use to industrial facilities. The Cooling Tower Initiative marketing effort has also received significant support from private and public entities, including nonprofit organizations like Sustainable Silicon Valley, the key organizer of the EcoCloud™ sustainable water use program. In conjunction with this marketing program, the City recently applied for a \$2 million grant from the US Bureau of Reclamation to construct a one-mile pipeline extension in the City of Santa Clara. In addition, in collaboration with the Bay Area Clean Water Agency (BACWA), the City is seeking additional funding through the State Proposition 84 grant program for construction of backup water systems to enhance the reliability of recycled water.



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

Major efforts in 2010 to expand demand focused on use of recycled water for cooling. The SBWR Cooling Tower Initiative, which encourages commercial and industrial facilities to use recycled water for cooling, identified over 80 potential customers located adjacent to the recycled water pipeline, and an additional hundred within less than one-quarter mile. By connecting customers located near the SBWR pipeline, the City has been able to increase the use of recycled water without significantly adding to the length of the recycled water pipeline. Potential customers have been approached

individually to resolve technical and institutional issues necessary to convert cooling tower water to recycled water.

The Cooling Tower Initiative received significant support during 2010 with the development of the EcoCloud™ — a forum supported by social networking tools where companies can encourage each other to adopt sustainable practices. Inspired by the model of industrial ecology, the EcoCloud™ was developed by Sustainable Silicon Valley, a non-profit organization dedicated to a sustainable future. They convened a meeting of utilities and high-tech industries to be a “virtual industrial ecosystem” where Silicon Valley industry, government, and educational institutions work together to share information about all aspects of sustainability. Still under development, the EcoCloud™ will ultimately address all the major intersections of industry and environment, including energy, air, water, land use, and material resources. Currently, EcoCloud™ members are paying particular attention to the urban water cycle. From the perspective of SBWR, the EcoCloud has enhanced their ability to market recycled water by providing information to groups of customers directly, in EcoCloud meetings, and online through the EcoCloud’s social networking site. This collaborative has already improved the success of the Cooling Tower Initiative by making the business community aware of the use of recycled water for cooling, to the extent that SBWR staff now routinely receive calls from potential customers asking to be connected to the recycled water system.

Water Recycling - 2010 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 2009-2010 Accomplishments	Future Activities - 2011
<ul style="list-style-type: none"> ➤ Current dry weather maximum average reuse was approximately 14 mgd. ➤ Executed a 40-year agreement between San José City Council and Santa Clara Valley Water District to develop recycled water and jointly fund the Advanced Recycled Water Treatment Facility (ARWTF). ➤ Executed agreement US Bureau of Reclamation to receive \$6.46 million in grant funds from the 2009 American Recovery and Reinvestment Act (ARRA) towards construction of nine miles of recycled water pipeline and appurtenances with a total project cost of \$14.78 million. ➤ Applied for \$2 million grant from US Bureau of Reclamation to extend up to 500 AFY recycled water service to data centers in Santa Clara (Industrial 3B pipeline). ➤ Draft study prepared with recommendations for new sewer connection fee to help extend the recycled water pipeline. ➤ Received input from local developers and other stakeholders to revise a proposed ordinance to require the use of recycled water in facilities located near the SBWR pipeline for toilet flushing and cooling towers. ➤ Created Cooling Tower Initiative to promote use of recycled water for industrial cooling. 	<ul style="list-style-type: none"> • Continue to connect additional customers to increase seasonal and annual water use. • Create framework for joint City-District review of all expenses related to the development and implementation of recycled water use. • Complete construction of \$14.78 million ARRA projects in conformance within grant funding guidelines and connect adjacent customers to new pipelines to increase usage by 1000-2000 acre-feet per year (0.7-1.4 mgd). • Complete Industrial 3B pipeline and distribute up to an additional 500 AFY to industrial customers in Santa Clara. • Adopt appropriate developer connection fee to help extend the recycled water pipeline and appropriate ordinance to promote indoor recycled water use. • Convert additional cooling towers adjacent to the SBWR pipeline to recycled water use and connect new industrial and businesses in the vicinity of the SBWR pipeline to use recycled water in cooling towers.

SOUTH BAY WATER RECYCLING - PERMIT PROVISION: VI.C.6.a.

EFFECTIVENESS MEASURE: Effluent flow reduction.

5-YEAR FLOW REDUCTION GOAL: 5 MGD

FY 2009-2010 Accomplishments

Future Activities - 2011

Outreach/Marketing

- Water Quality data updated every two months on the website.
<http://www.sanjoseca.gov/sbwr/water-quality.htm>
- Implemented updated communications strategy consistent with achievement of San José Green Vision goals (Goal #6), focusing on outreach to industrial customers.
- Produced Recycled Water Design Guidelines for Cooling Towers.
- Collaborated with Sustainable Silicon Valley and private sector companies to develop EcoCloud™ collaborative sustainable technology partnership.
- Represented Bay Area Clean Water Agencies in testimony to State Water Resources Control Board on recycled water policy and regulation of “Constituents of Emerging Concern” (CECs).
- Quarterly Site Supervisor Training to new and existing customers updated and revised to include more examples of successful recycled water use.
- Sponsored and attended community events and promoted recycled water use primarily through outreach to industrial customers.

- Update and improve SBWR website to enhance user experience, provide more useful information, and promote recycled water use.
- Create web-based “Cooling Tower Guidelines” for easier user access and navigation.
- Continue to work with Sustainable Silicon Valley to develop a community-wide platform to promote sustainable technology including water reuse.
- Update SBWR Rules and Regulations and Site Supervisor Training Manual.
- Continue to support government and professional associations that share information and promote regional water recycling in the San Francisco Bay Area.
- Publish “case studies” of local industrial and irrigation use of recycled water to support more successful recycled water applications.

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 2010, Plant effluent dry weather flow was the lowest since 1978 at 89.6 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 2010.

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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • City completed two-year feasibility study for Countywide distribution of recycled water. 1994 and 1997: design and award of Phase 1 pipeline segments.
1995	<ul style="list-style-type: none"> • Council approved \$140 million for design, engineering and construction of SBWR Phase 1 system. • SBWR groundbreaking
1996	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • SBWR Phase 1 completed.
2000	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • New Plant NPDES permit requires annual updates to the Action Plan
2004	<ul style="list-style-type: none"> • SBWR program management moved to Muni Water.
2005	<ul style="list-style-type: none"> • 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.
2006	<ul style="list-style-type: none"> • Celebrated 50th anniversary of the San Jose/Santa Clara Water Pollution Control Plant by

Table 1: South Bay Action Plan Chronology

Year	Activity
	<p>hosting a community open house with tours and information on water conservation, and water recycling.</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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
2010	<ul style="list-style-type: none"> • Executed a 40-year agreement between City of San José and Santa Clara Valley Water District to jointly develop recycled water and fund the Advanced Recycled Water Treatment Facility (AWT). • Executed agreement with US Bureau of Reclamation to receive \$6.46 million in grant funds from the 2009 American Recovery and Reinvestment Act (ARRA) towards construction of nine miles of recycled water pipeline and appurtenances with a total project cost of \$14.78 million to increase recycled water use by 2000 acre-feet per year. • Executed agreement with US Bureau of Reclamation to receive an additional \$20.7 million in reimbursement for previous SBWR construction (Phase 1B). • Applied for additional \$2 million WaterSMART grant from US Bureau of Reclamation to extend up to 500 AFY recycled water service to data centers in Santa Clara (Industrial 3B). • Launched SBWR Cooling Tower Initiative to increase use of recycled water for industrial cooling, with marketing assistance from Sustainable Silicon Valley innovative EcoCloud™ social networking site.