
Final Report

2005 Urban Water Management Plan – Bay Point



Golden State
Water Company

A Subsidiary of American States Water Company

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Notice of Adoption

A meeting to solicit public comments on the 2005 Urban Water Management Plan for the Golden State Water Company Bay Point System was held on November 14, 2005 at 11:00 am at the Ambrose Park and Recreation Center in Bay Point, California. Notice of this meeting was published in accordance with Section 6066 of the Government Code in the Contra Costa Times on October 28, 2005 and on November 11, 2005.

Copies of the Urban Water Management Plan were made available to the public at the Golden State Water Company Bay Point Customer Service Office in Bay Point, California two weeks prior to the public hearing.

Comments, oral and written, if received and responses to comments are documented in Appendix H of this document.

Golden State Water Company hereby adopts the 2005 Urban Water Management Plan for the Bay Point System.



Roland S. Tanner
Vice President, Customer Service
Region I
Golden State Water Company

December 31, 2005

Abbreviations

ABAG	Association of Bay Area Governments
ac-ft	acre-feet
ac-ft/yr	acre-feet per year
Act	Urban Water Management Planning Act
AMCL	alternative MCL
AWWA	American Water Works Association
BMPs	best management practices
CBO	community-based organization
CCL	contaminant candidate list
CCRs	consumer confidence reports
CDHS	California Department of Health Services
cfs	cubic feet per second
CIMIS	California Irrigation Management Information System
Council	California Urban Water Conservation Council
CPE	comprehensive performance evaluation
CPUC	California Public Utilities Commission
CSA	customer service area
CT	concentration time
CUWA	California urban water agencies
CWSs	community water systems
D/DBP	disinfectant/disinfection by-product
DMM	demand management measure
DOC	dissolved organic carbon
DOF	Department of Finance
DWR Guidebook	Guidebook to Assist Water Suppliers in the Preparation of a 2005 Urban Water Management Plan
DWR	Department of Water Resources (California)

EC	enhanced coagulation
EPA	Environmental Protection Agency
ERP	emergency response plan
ETo	evapotranspiration
gpm	U.S. gallons per minute
GSWC	Golden State Water Company
GWR	Groundwater Rule
HAA5	haloacetic acids
IESWTR	Interim Enhanced Surface Water Treatment Rule
IOCs	inorganic contaminants
IRP	Integrated Resource Plan
LACSD	Sanitation Districts of Los Angeles County
LT1ESWTR	Long Term 1 Enhanced Surface Water Treatment Rule
LT2ESWTR	Long Term 2 Enhanced Surface Water Treatment Rule
MCLGs	maximum contaminant level goals
MCLs	maximum contaminant levels
Metropolitan	Metropolitan Water District of Southern California
MG	million gallons
MMM	multimedia mitigation
MOU	memorandum of understanding (regarding urban water conservation in California)
MRDLs	maximum residual disinfectant levels
mrem	millirems
MTBE	methyl tertiary-butyl ether
MWD	Municipal Water District with reference to any of the member agencies of the Metropolitan Water District of Southern California
N/A	not available
NAICS	North American Industry Classification System
NDMA	N-nitrosodimethylamine
NPV	net present value
NTNCWS	non-transient non-community water systems

NTU	nephelometric turbidity units
O&M	operation and maintenance
OEHHA	Office of Environmental Health Hazard Assessment
pCi	picoCuries
RO	reverse osmosis
SCAG	Southern California Association of Governments
SDWA	Safe Drinking Water Act
SMCL	secondary maximum contaminant level
SOCs	synthetic organic contaminants
SUVA	source-water-specific ultraviolet absorbance
SWP	State Water Project
SWTR	Surface Water Treatment Rule
TCR	Total Coliform Rule
TDS	total dissolved solids
TOC	total organic carbon
TTHMs	Total Trihalomethanes Rule
UCM	unregulated contaminants monitoring
ULF	ultra low flush
ULFT	ultra-low-flush-toilet
UWMP	Urban Water Management Plan
VOCs	volatile organic compounds
WEWAC	Water Education Water Awareness Committee
WRCC	Western Regional Climate Center
WRP	water reclamation plant
WSDM Plan	Water Surplus and Drought Management Plan
WY	water year

Definitions

Chapter 2, Part 2.6, Division 6 of the California Water Code provides definitions for the construction of the Urban Water Management Plans. Appendix A contains the full text of the Urban Water Management Planning Act.

CHAPTER 2. DEFINITIONS

Section 10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

Section 10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

Section 10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

Section 10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

Section 10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

Section 10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, and reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

Section 10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

Section 10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

Section 10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

Chapter 1. Introduction and Overview

Background

The Urban Water Management Plan (UWMP) for the Golden State Water Company (GSWC) Bay Point System is prepared in compliance with Division 6, Part 2.6, of the California Water Code, Sections 10610 through 10657 as last amended by Senate Bill (SB) 318, the Urban Water Management Planning Act (Act). The original bill, requiring a UWMP, was initially enacted in 1983. SB 318, which became law in 2004, is the eighteenth amendment to the bill. Increased emphasis on drought contingency planning, water demand management, reclamation, and groundwater resources has been provided through the updates to the original bill.

Under the current law, urban water suppliers with more than 3,000 service connections or water use of more than 3,000 acre-feet per year (ac-ft/yr) are required to submit a UWMP every five years to the California Department of Water Resources (DWR). The reports must be submitted by December 31 of years ending in zero and five. Under the name Southern California Water Company, GSWC prepared an UWMP for the Bay Point System in 1985, 1990, 1995, and 2000. The 2005 UWMP is an update to the 2000 plan.

The law, as it is now, states and declares the following:

Section 10610.2

(a) *The Legislature finds and declares all of the following:*

- (1) *The waters of the state are a limited and renewable resource subject to ever-increasing demands.*
- (2) *The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.*
- (3) *A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.*
- (4) *As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.*
- (5) *Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.*
- (6) *Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.*
- (7) *Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.*

- (8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.*
- (9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.*
- (b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.*

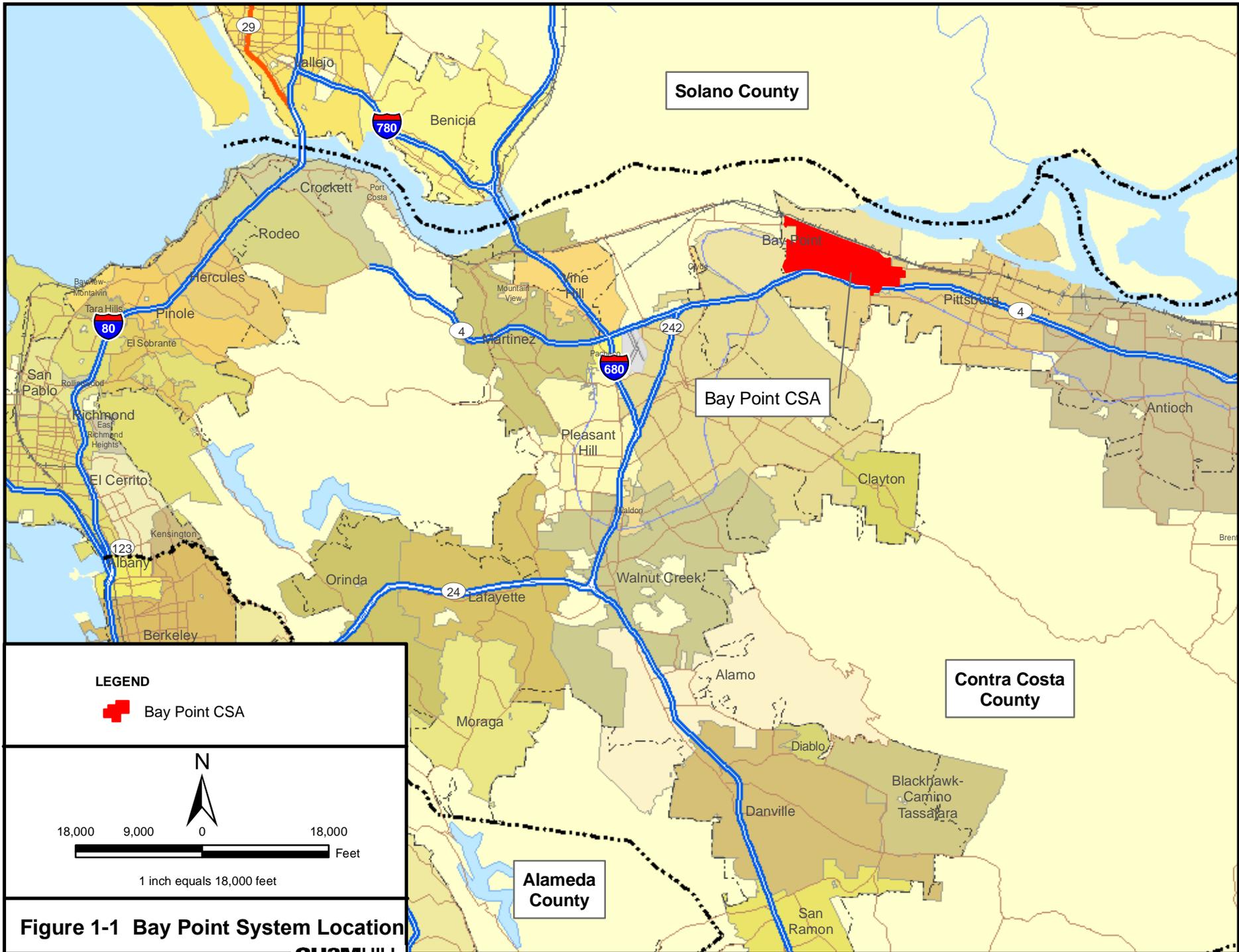
Section 10610.4. The Legislature finds and declares that it is the policy of the state as follows:

- (a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.*
- (b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.*
- (c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.*

System Overview

GSWC owns and operates the Bay Point System. GSWC is an investor-owned public utility company regulated by the California Public Utilities Commission (CPUC).

Located in Contra Costa County, the Bay Point System serves the unincorporated community of Bay Point. The service area is primarily characterized by a mixture of residential and commercial land use. Figure 1-1 illustrates the location of the Bay Point System.



California Urban Water Conservation Council

GSWC is a signatory to the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) administered by the California Urban Water Conservation Council (Council). The Council had its beginnings as an independent entity housed under California Urban Water Agencies (CUWA). Currently, the Council is a fully independent nonprofit organization.

The objective of the Council is to implement the MOU. The MOU was signed into existence in 1991 by nearly 100 urban water agencies and environmental groups. Current membership of the Council is over 300 members from various groups such as water suppliers, public advocacy organizations, and other interested groups (Council, 2004).

The MOU is a document by which the signatories obligate themselves to implement the urban water conservation practices identified in the MOU. The goal of the practices in the MOU is to reduce long-term urban water demands and to provide practices that may be implemented during occasional water supply shortages (Council, 2004). The urban water conservation practices identified in the MOU are called the Best Management Practices (BMPs) and range from water audits to toilet replacements. There are 14 practices that also coincide with the 14 demand management measures (DMMs) identified in the Act.

Each agency that is a signatory to the MOU is required to file reports on the implementation of the BMPs identified in the MOU. For the purposes of the UWMP, the reports filed with the Council on the BMPs that are implemented or under implementation can be substituted for the reporting requirements of Section 10631 (f) (1). The UWMP uses the reports filed with the Council in addition to any necessary analysis as described in Section 10631.

Public Utility Commission Policy Changes

Concurrent with the finalization of this document, the CPUC is considering the adoption of policy changes and objectives that would be applicable to GSWC and all other regulated water utilities. The CPUC's draft "Water Action Plan" (WAP) has established the following objectives:

1. Maintain highest standards of water quality;
2. Strengthen water conservation programs to a level comparable to those of energy utilities;
3. Promote water infrastructure investment;
4. Assist low income ratepayers;
5. Streamline CPUC regulatory decision-making; and
6. Set rates that balance investment, conservation, and affordability.

The WAP is a general policy document. Specific implementation policies and programs, along with necessary modifications to CPUC ratemaking policies, will be developed based

on the final WAP and other programs including conservation, long term planning, water quality and drought management programs developed in conjunction with the CPUC.

GSWC has been actively involved with the CPUC in suggesting optimal approaches to the WAP. In particular, the GSWC has suggested specific implementation measures and modifications to certain CPUC ratesetting practices so that regulated utilities are able as a practical matter to achieve the policy objectives of the WAP. The exact implementation details have not yet been determined, but if successful, are expected to have a significant impact on GSWC approaches to the planning and management of resources. These efforts may include further investment in local resource optimization, reduced reliance on imported supplies, enhanced conservation and intensification of company-wide efforts to optimize water resource mix, including planned water supply projects and programs to meet the long term water supply needs of GSWC's customers.

In another example, the Urban Water Management Planning Act requires public water suppliers to have in place predetermined actions to be undertaken during water shortage conditions. GSWC has developed actions to be undertaken in response to water supply shortages, including up to a 50 percent reduction in water supply. However, implementation of the actions is dependent upon CPUC approval, particularly where mandatory water use restrictions may be required. As an element of the WAP and related policy improvements, GSWC has requested the CPUC adopt water shortage allocation policies that will facilitate appropriate drought response activities and associated cost recovery mechanisms.

Finally, as part of the Water Action Plan process and otherwise, GSWC is seeking parity with public water agencies in key areas that will impact its long term supply planning and reliability, namely, 1) access to state bond money on behalf of its customers, and 2) full participation in integrated regional water planning mechanisms to ensure that utility customers have a voice in planning outcomes, and, equal access to available funding to implement agreed planning objectives on behalf of their customers.

This UWMP presents an assessment of GSWC's demand projections and water supply availability and reliability under currently established CPUC regulations and conditions. While GSWC has detailed approaches to providing its customers with a reliable supply of water in accordance with UWMP criteria, adoption and implementation of the WAP and other policy objectives mentioned above will likely result in changes in the resource mix described in this UWMP which will likely further improve water supply reliability.

Agency Coordination

Water Code Section 10620 details the coordination requirements of the Act and provides guidance on how the UWMP can be prepared. The text of this section states:

Section 10620

- (a) *Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).*
- (b) *Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.*

(c) *An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.*

(d)

(1) *An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.*

(2) *Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.*

GSWC initiated agency coordination with a mailing of letters to cities and counties within its service area, as well as to wholesale agencies, wastewater agencies, and agencies with which GSWC has emergency connections. The initial letters notified the agencies of GSWC intent and requested data for the preparation of the UWMPs. All identified agencies received a follow-up telephone call. Notices of public meeting and intent to adopt were mailed to each agency and a copy of the draft report was sent to Contra Costa Water District. Table 1-1 lists the agencies contacted during the preparation of this UWMP.

Table 1-1
Coordination with Agencies

Agency	Participated in UWMP Development	Commented on the Draft	Attended Public Meetings	Contacted for Assistance	Received Copy of the Draft	Sent Notice of Intent to Adopt	Not Involved/ No Information
Association of Bay Area Governments				✓			
City of Pittsburg						✓	
Contra Costa County				✓		✓	
Contra Costa Water District				✓	✓	✓	
Delta Diablo Sanitation District				✓		✓	

Notes

1. This table is based on DWR’s *Guidebook to Assist Water Suppliers in the Preparation of a 2005 Urban Water Management Plan* (DWR Guidebook) Table 1.

Public Participation and Plan Adoption

Public participation and plan adoption requirements are detailed in the following section of the Act:

Section 10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

For this update of the Bay Point System UWMP, a public hearing was held on November 14, 2005 at the Ambrose Park and Recreation Center in Bay Point, California. This public session was held for review and comment on the draft plan before approval by GSWC. Legal public notices for the public hearing were published in the local newspapers in accordance with Government Code Section 6066. Copies of the draft plan were available to the public at GSWC's Bay Point office. Appendix B contains a copy of the hearing notice from a local newspaper and the meeting minutes from the public pertaining to the UWMP. Appendix C contains comments received, if any, and Appendix H contains responses to public comments.

The final UWMP, as adopted by GSWC, will be submitted to the DWR within 30 days of adoption. This plan includes all information necessary to meet the requirements of California Water Code Division 6, Part 2.6 (Urban Water Management Planning). Adopted copies of this plan are available to the public at GSWC's Bay Point Customer Service Office.

UWMP Preparation

GSWC prepared this UWMP with the assistance of its consultant, CH2M HILL, as permitted by the following section of the Act.

Section 10620

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

During the preparation of the UWMP, documents that have been prepared over the years by GSWC and other entities were reviewed and results of those documents incorporated, as applicable, into this UWMP. The list of the documents is provided in Chapter 11.

The adopted plans are available for public review at GSWC's Bay Point Office. Copies of the plan were submitted to DWR, cities and counties within the service area, the State Library, and other applicable institutions within 30 days of adoption as required by Section 10644 and 10645.

UWMP Implementation

GSWC is committed to the implementation of this UWMP as required by Section 10643 of the Act. Each region of GSWC has a conservation coordinator that oversees the implementation of DMM via GSWC participation in the Council's MOU.

Content of the UWMP

This UWMP addresses all subjects required by Section 10631 of the Act as defined by Section 10630, which permits “levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.” All applicable sections of the Act are discussed in this UWMP, with chapters of the UWMP cross-referenced against the corresponding provision of the Act in Table 1-2.

Table 1-2
Summary of UWMP Chapters and Corresponding Provisions of the California Water Code

Chapter	Corresponding Provisions of the Water Code	
Chapter 1. Introduction and Overview	10642	Public participation
	10643	Plan implementation
	10644	Plan filing
	10645	Public review availability
	10620 (a)–(e)	Coordination with other agencies; document preparation
	10621 (a)–(c)	City and county notification; due date; review
	10620 (f)	Resource optimization
	10630	Level of planning
	10641	Coordination
Chapter 2. Service Area	10631 (a)	Demographics and climate
Chapter 3. Water Supply	10631 (b)–(d), (h), (k)	Water sources, reliability of supply, transfers and exchanges, supply projects, data sharing
Chapter 4. Water Use	10631 (e), (k)	Water use, data sharing
Chapter 5. Demand Management Measures	10631 (f)–(g), (j)	DMM
	10631.5	DMM implementation status
Chapter 6. Desalination	10631 (i)	Desalination
Chapter 7. Water Shortage Contingency Plan	10632	Water shortage contingency plan
Chapter 8. Recycled Water Plan	10633	Recycled water
Chapter 9. Water Quality	10634	Water quality impacts on reliability
Chapter 10. Water Service Reliability	10635	Water service reliability

Resource Optimization

Section 10620 (f) of the Act asks urban water suppliers to evaluate water management tools and options to maximize water resources and minimize the need for imported water from other regions.

GSWC is committed to optimizing its available water resources and implements water conservation programs for each of its districts or customer service areas. In an effort to expand the breadth of offered programs, GSWC partners with wholesale suppliers, energy utilities, and other agencies that support water conservation programs

Chapter 2. Service Area

Service area requirements are detailed in the following section of the Act:

Section 10631

- (a) *Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.*

Chapter Two summarizes the Bay Point System's Customer Service Area (CSA) and presents an analysis of available demographics, population growth projections, and climate data to provide the basis for estimating future water requirements.

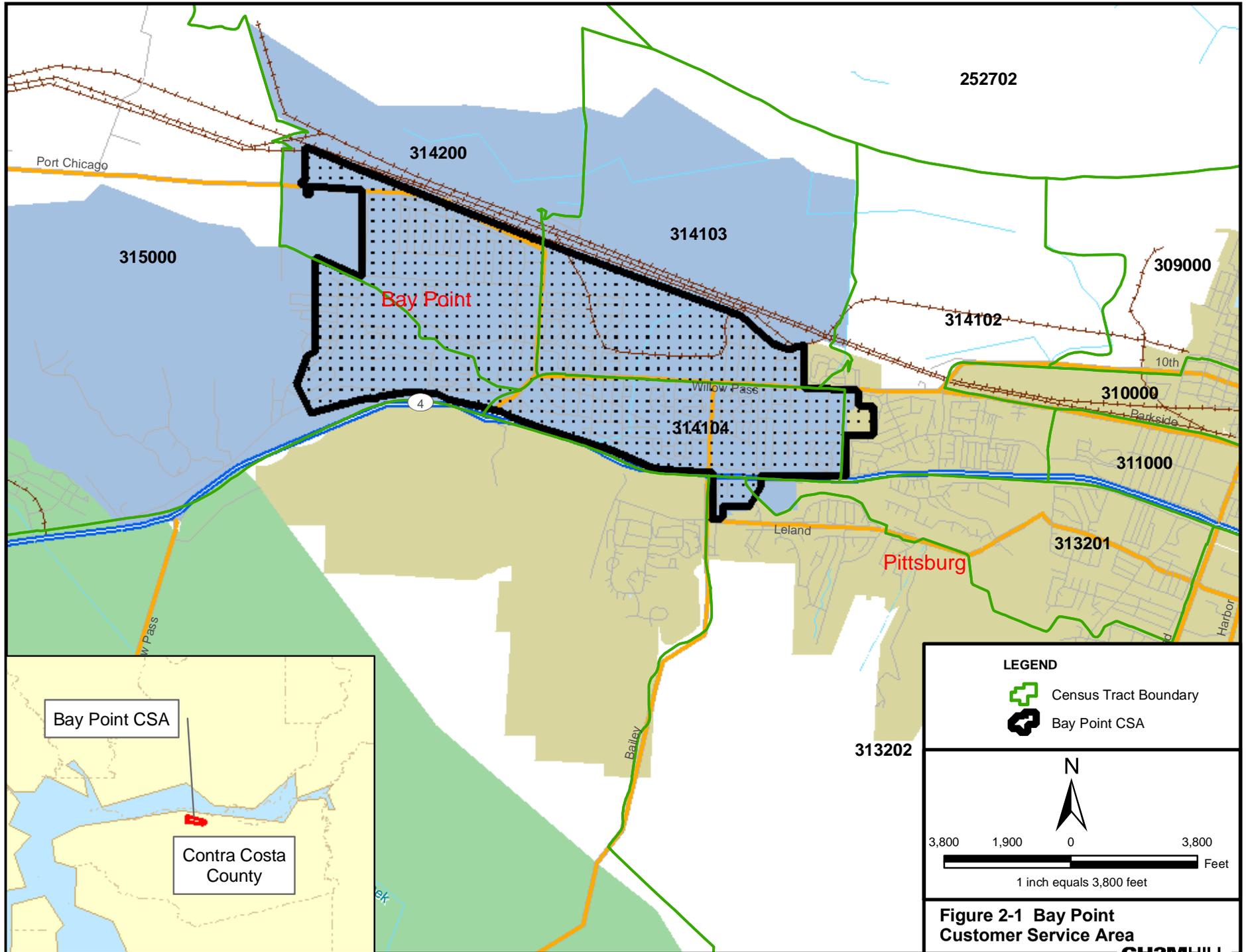
Area

The Bay Point CSA is located in Contra Costa County. The CSA is bounded by Nichols Avenue in the west, Route 4 Freeway in the south, Driftwood Drive in the east, and Southern Pacific Railroad in the north. Figure 2-1 illustrates the customer service area of the Bay Point System. The CSA used for the current population analysis includes proposed service area annexations on the east and western boundaries of Bay Point. The service area is primarily characterized by a mixture of residential and commercial land use.

Demographics

The Bay Point Census Designated Place (CDP) was chosen as demographically representative of the Bay Point CSA. According to 2000 U.S. census data, the median age of Bay Point's residents is 29.8 years. Bay Point has average household size of 3.25 and a median household income of approximately \$44,951.

The General Plan for Bay Point CDP was not available at the time of this study. The Bay Point CSA service map indicates that there is potential land area available for new development. The preliminary general plan information provided by the Contra Costa County Planning Department staff indicated that in the future, new development projects and redevelopment projects, including affordable multi-family housing units, may potentially be implemented within Bay Point's existing service area.



LEGEND

-  Census Tract Boundary
-  Bay Point CSA

N

3,800 1,900 0 3,800

Feet

1 inch equals 3,800 feet

Figure 2-1 Bay Point Customer Service Area

Population, Housing and Employment

Population, housing, and employment projections were developed for the Bay Point System using the Association of Bay Area Governments (ABAG) population, housing and employment data. ABAG recently updated its projections for population, household, and employment growth through the year 2030 using 2000 U.S. Census data. ABAG's methodology is described below, followed by the derivation of population projections for the Bay Point System. The current population projections differ from previous projections developed in 2000 primarily by the use of 2000 U.S. Census data. Previous projections utilized 1990 U.S. Census data.

ABAG Population Projection Development Methodology

The Association of Bay Area Governments (ABAG) is a regional planning agency that provides demographic and economic data analysis for Contra Costa County. ABAG's population projections are driven by economic and demographic mathematical models and constrained by examining local government's plans, policies, and regulations affecting land development.

The forecasts and projections are grouped into many geographical categories, including regional, county, city, and census tract. To evaluate the Bay Point System, ABAG data was used in census tract form, the smallest geographic division of data that ABAG provides.

Population, household and employment projections are based on the data collected on availability of vacant land, timing of expected future development, type of future development, density of development, transportation availability, land use policy constraints on development, and other land use-related factors that could affect development.

ABAG applies a statistical cohort-survival model and the household size to the 2000 U.S. Census data for regional, county, and household demographic projections. The cohort model projects population by adding increases in population (births and relocation into the region) and subtracting decreases in population (deaths and relocation out of the region). The cohort model uses a group quartered population, meaning it is broken down by sex, age, and ethnicity.

Projected household size is calculated for each city and county based upon observed trends as well as on assumptions about household formation, housing costs, the cost of travel for work and other activities, education, which is highly correlated with income, changing ethnic composition, and births. ABAG uses household size to project regional and county households by dividing the projected resident population by projected household size.

Employment is predicted using data from several governmental agencies, including the U. S. Census Bureau and two State of California departments: the Employment Development Department and the Franchise Tax Board. The U. S. Census Bureau data are taken from the Census Transportation Planning Package and the County Business Patterns database. Population and income data are derived from the State of California Department of Finance.

The detailed explanation of the population, household and employment projection process employed by ABAG is provided in the report: *Forecasts for San Francisco Bay Area to the Year 2030* (ABAG Projections, 2005).

Bay Point CSA Population Projections

ABAG-derived census-tract projections were used to determine population from 2000 to 2030. The Bay Point System service area boundary contains multiple census tracts, many of which have boundaries that do not coincide exactly with the service area boundaries. The population projection analysis consisted of superimposing the service area boundary over census tract boundaries, identifying the applicable overlapping census tracts, and developing a percentage estimate for each overlapping area. For a census tract 100 percent within the service area boundary, it was assumed that 100 percent of the associated census tract population data was applicable to the Bay Point System. For areas where the overlap was not exact, the area of overlap as a percentage was applied to the data to develop an estimate of applicable population. Appendix J, Table J-1 lists the census tracts with a corresponding estimate of what percent of each tract lies within the Bay Point System. It was typically assumed that the various types of housing and employment distributed within a census tract are distributed uniformly within all parts of that census tract, unless maps indicated non-uniform concentrations. In these cases, population estimates were either increased or decreased as applicable to match the existing land use. Appendix J, Table J-2 contains all of ABAG's historic and projected demographic data for each census tract from 2000 through 2030. Figure 2-1 details the census tracts within the Bay Point CSA.

As concluded from analysis of ABAG demographic data, the Bay Point System has an estimated population of 23,923 people in 2005. This population is expected to reach 33,184 by 2030. A summary of historic and projected population, households, and employment within the Bay Point System (based on ABAG data) is presented in Table 2-1 and illustrated in Figure 2-2.

In summary, from 2000 to 2005 the Bay Point population increased 7 percent, which is a growth rate¹ of approximately 1.3 percent per year. By 2030, the population is expected to increase by a total of 39 percent, from 23,923 in 2005 to 33,184 in 2030, which is a 1.3 percent growth rate per year. The number of households is expected to grow 42 percent during the same period, which equates to an annual household growth rate of 1.4 percent. Employment is expected to grow 128 percent during the same period, which equates to an annual employment growth rate of 3.35 percent. Areas with the highest projected growth increases are also the areas that will see the largest increase in water use. ABAG's demographic analysis does not project "build-out" year, i.e. the year at which the planning area has reached its maximum population. As discussed in the demographic section, land area is available for future potential growth.

¹ Growth rate: The number of persons added to (or subtracted from) a population in a year due to natural increase or net migration; expressed as percentage of population at the beginning of the time period. (Source: <http://www.prb.org>)

Table 2-1.
Bay Point CSA Historical and Projected Population

Year	Service Area Population	Service Area Household	Service Area Employment
2000 ²	22,394	6,791	601
2005	23,923	7,233	646
2010	25,142	7,632	680
2015	28,087	8,556	746
2020	30,069	9,212	900
2025	31,502	9,745	1,156
2030	33,184	10,271	1,473

Notes

1. This table is based on the DWR Guidebook Table 2.
2. Based on fiscal year.
3. Dashed line represents division between historic and projected data

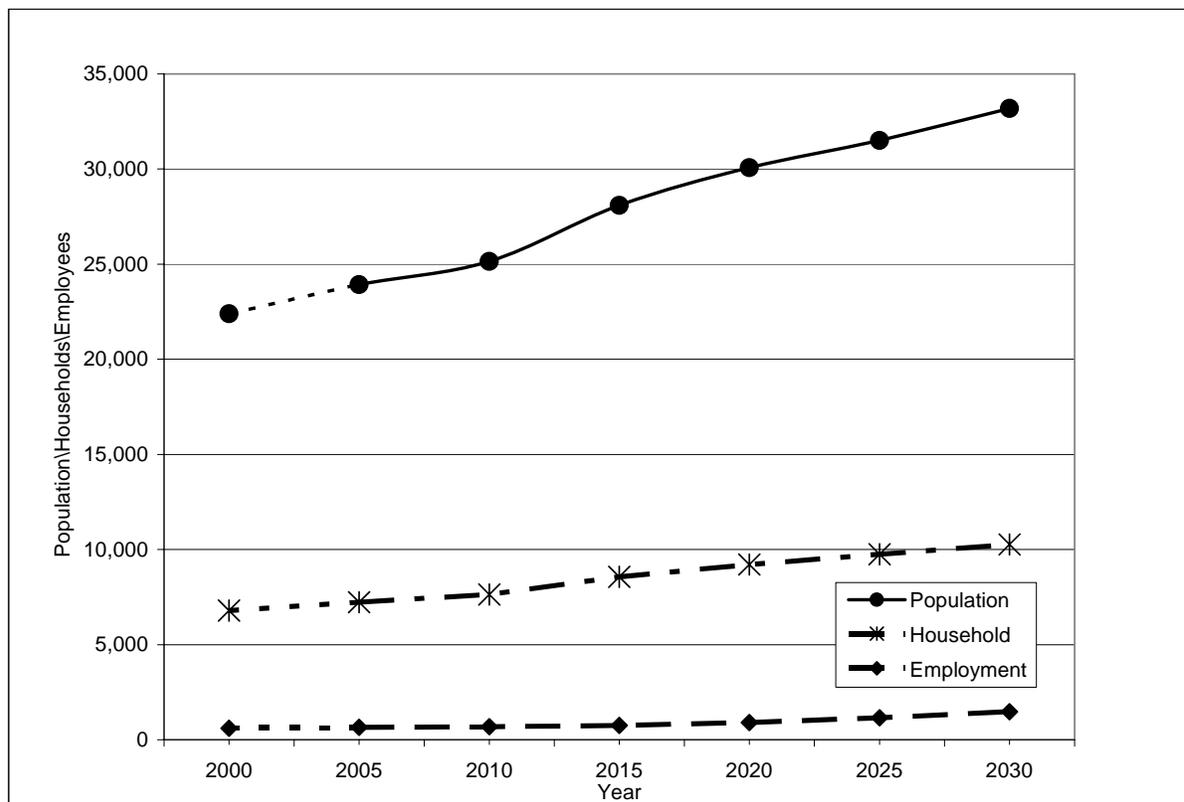


Figure 2-2. Historical and Projected Population, Household and Employment Growth within the Bay Point CSA.

Climate

Bay Point CSA has cool, humid winters and hot, dry summers. The Western Regional Climate Center (WRCC) has maintained 30 years of historic climate data for select cities only. WRCC does not have a station at Bay Point and therefore the Antioch station, 8 miles from Bay Point, is utilized for the climate data analysis.

The Western Regional Climate Center web site (www.wrcc.dri.edu) has maintained historical climate records for the past 30 years for Antioch. Table 2-2 presents the monthly average climate summary based on 30 year historical data for the Bay Point System. In winter, the lowest average monthly temperature is approximately 37 degrees Fahrenheit, while the highest average monthly temperature reaches approximately 91 degrees Fahrenheit in the summer. Figure 2-3 presents the monthly average precipitation based on 30 year historical data. The rainy season is from November to March. Monthly precipitation during the winter months ranges from 2 to 3 inches. Low humidity occurs in the summer months from May to September. The combination of hot and dry weather during the summer months typically results in moderately high water demand.

Similar to the Western Regional Climate Center, the California Irrigation Management Information System (CIMIS) web site (<http://www.cimis.water.ca.gov>) tracks and maintains records of evapotranspiration (ETo) for select cities only. ETo statistics used for this system come from the Concord station, which is 10 miles from the Bay Point CSA. ETo is a standard measurement of environmental parameters that affect the water use of plants. ETo is given in inches per day, month, or year and is an estimate of the evapotranspiration of a large field of well-watered, cool-season grass that is four- to seven-inches tall. The monthly average ETo is presented in inches in Table 2-2. As the table indicates, a greater quantity of water evaporated during July and August in correlation to high temperatures and low humidity, which may result in high water demand.

Table 2-2
Monthly Average Climate Data Summary for Bay Point CSA

Month	Standard Monthly Average ETo ⁽²⁾ (inches)	Average Total Rainfall (inches)	Average Temperature (degrees Fahrenheit)	
			Max	Min
January	1.1	2.8	53.6	37.0
February	1.4	2.43	60.2	40.9
March	2.4	1.93	65.4	43.4
April	4.0	0.88	71.4	46.2
May	5.5	0.38	78.5	51.2
June	5.9	0.1	86.1	56.0
July	7.0	0.02	91.0	57.2
August	6.0	0.05	90.0	56.7
September	4.8	0.21	86.3	55.1
October	3.2	0.7	77.6	50.1

Table 2-2
Monthly Average Climate Data Summary for Bay Point CSA

Month	Standard Monthly Average ETo ⁽²⁾ (inches)	Average Total Rainfall (inches)	Average Temperature (degrees Fahrenheit) Max Min	
November	1.3	1.66	64.2	42.7
December	0.7	2.12	54.6	37.2

Notes

1. This table is based on the DWR Guidebook Table 3.
2. Evapotranspiration (ETo) from <http://www.cimis.water.ca.gov/cimis/welcom.jsp>

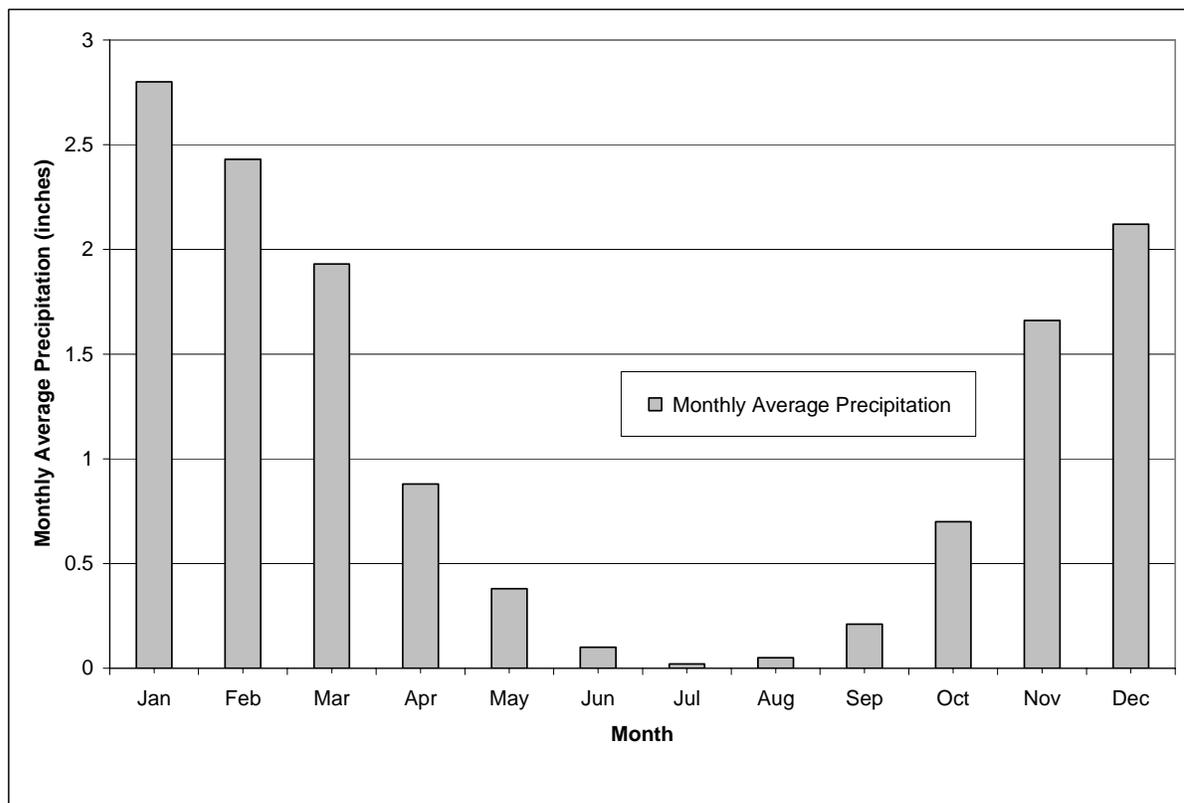


Figure 2-3. Monthly Average Precipitation in Bay Point CSA based on 30 Year Historical Data

Chapter 3. Water Supply

A detailed evaluation of water supplies is requested by the Act. Sections 10631 (a) through (d) and (h) require the following:

- (b) *Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:*
- (1) *A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.*
 - (2) *A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.
For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.*
 - (3) *A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*
 - (4) *A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*
- (c) *Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:*
- (1) *An average water year.*
 - (2) *A single dry water year.*
 - (3) *Multiple dry water years.*
- For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.*
- (d) *Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.*
- (h) *Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established*

pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single dry, and multiple dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

This chapter addresses the water supply sources of the Bay Point System. The following sections provide details in response to those requirements of this portion of the Act.

Water Sources

The Golden State Water Company (GSWC) currently obtains its water supply for the Bay Point System from local groundwater and purchased water from the Contra Costa Water District (CCWD). CCWD obtains its water supply for the Bay Point System from the Contra Costa Canal. The Contra Costa Canal is owned by the U. S. Bureau of Reclamation (USBR) and is operated by CCWD. CCWD's primary source is the USBR's Central Valley Project (CVP). Other sources of water for the CCWD include the San Joaquin River, Mallard Slough, recycled water, a minor amount of local well water, and water transfers.

Groundwater currently is pumped from a total of three wells in the Pittsburg Plain Groundwater Basin. These wells have a total active capacity of 190 gallons per minute (gpm) (306 ac-ft/yr) and between 2000 and 2004, the actual production averaged 238 ac-ft/yr.

GSWC is entitled to purchase both raw and treated water from CCWD. The Bay Point System has the following two delivery points from CCWD:

- Contra Costa Canal, a raw water connection
- Port Chicago, a treated water connection.

Water delivered to GSWC by CCWD through the Contra Costa Canal is treated by GSWC at GSWC's Hill Street Water Treatment Plant, which has a capacity of up to 2,880 gpm (4,648 ac-ft/yr). The Port Chicago treated water connection has an ultimate capacity of 1,980 gpm (3,195 ac-ft/yr). In addition, the Bay Point System has an emergency connection with the City of Pittsburg.

Table 3-1 summarizes the current and planned water supplies available to GSWC for the Bay Point System that will meet their projected water demands under normal years. This water supply summary is based on groundwater analysis and data provided by CCWD. Purchased water from CCWD makes up between 92 and 94 percent of the available supply, whereas the remainder is supplied by groundwater. There is no recycled water supply for the Bay Point System (see Chapter 8 for details).

Table 3-1
Current and Planned Water Supplies for the Bay Point System in ac-ft/yr

Source	2005	2010	2015	2020	2025	2030
Purchased water from CCWD	2,688	2,846	3,215	3,474	3,679	3,889
Groundwater ⁽¹⁾	230	230	230	230	230	230
Recycled water	0	0	0	0	0	0
Total	2,918	3,076	3,445	3,704	3,909	4,119

Notes

1. Based on projected use in the Pittsburg Plain Groundwater Basin
2. Table format based on DWR Guidance Document Table 4

GSWC's water supply is projected to increase by about 41 percent from 2005 to 2030 to meet the associated projected water demands, with most of this demand being met by purchased water from CCWD. Water demand projections are documented in Chapter 4. Details of the groundwater supply are presented in the following section followed by a discussion of the reliability of both sources of water supply.

Groundwater

The Bay Point System is supplied by three wells located in the Pittsburg Plain Groundwater Basin.

Pittsburg Plain Basin

The Pittsburg Plain Groundwater Basin has a surface area of approximately 11,600 ac (18 square miles). It is bounded by Suisun Bay on the north, the Tracy Basin on the east, the Clayton Basin on the west, and the Los Medanos Hills on the south. Kirker Creek and Willow Creek overlay the basin, and drain from the Los Medanos Hills northward into Suisun Bay (DWR, 2003).

The water-bearing units in the basin are Pleistocene to Recent age alluvium deposits consisting of highly lenticular beds of gray and brown sand, sand and gravel, and blue and yellow clay. The Pleistocene deposits consist of consolidated and unconsolidated sediments that occur throughout the basin. The modern alluvial sediments consist of soft, water saturated mud, peat, and loose sands that occur along the Suisun Bay shoreline (DWR, 2003).

The amount of groundwater storage within the basin is unknown. Seawater intrusion has been found to occur within the basin, as it is adjacent to Suisun Bay. Historically groundwater levels have remained stable except during the two drought periods for the basin, which were 1976 - 1977 and 1987 - 1992 (DWR, 2003).

Basin Adjudication

The Pittsburg Plain Groundwater Basin is not managed or adjudicated. GSWC generally pumps between 8 and 10 percent of its total water supply from the Pittsburg Plain Groundwater Basin. Historically, GSWC has pumped an annual maximum of 550 ac-ft.

Table 3-2 lists the wells along with the well capacity for the Bay Point System. The total current active well capacity for GSWC’s Bay Point System is 190 gpm (306 ac-ft/yr).

Table 3-2
Wells and Well Capacity in the Bay Point System in ac-ft/yr

Well Name	Design Well Capacity (gpm)	Design Well Capacity (ac-ft/yr)	Normal Year Well Capacity (gpm)	Normal Year Well Capacity (ac-ft/yr)	Status
Hill Street No. 1	310	500	100	161	Active
Hill Street No. 2	88	142	60	97	Active
Chadwick No. 3	45	73	30	48	Active
Total Capacity	443	715	190	306	
Active Capacity	443	715	190	306	

Notes

1 Active well status indicates the well is available for the current water supply

The pumping history for the Bay Point System is shown in Table 3-3 for calendar years (January 1 – December 31) 2000 to 2004. Pumping amounts have generally been consistent over the last 5 years, providing 8 percent to 10 percent of the water supply for the Bay Point System.

Table 3-3
Groundwater Pumping History by Bay Point System (2000 to 2004) in ac-ft

Basin Name	2000	2001	2002	2003	2004
Pittsburg Plain	268	245	227	233	218
Percent of Total Water Supply	10	9	8	8	8

Notes

1. Table format based on DWR Guidance Document Table 6

2. Years are reported in calendar years (January 1 – December 31)

Table 3-4 shows the projected groundwater pumping amounts by the Bay Point System. The pumping amounts are based on recent historical groundwater pumping amounts. Groundwater comprises a small portion of the total water supply for the Bay Point System. In addition, there is generally little pumping from other users within the basin. As a result, the projected pumping for the Bay Point System (230 ac-ft/yr) should not create any negative impacts on the basin.

Table 3-4
Projected Groundwater Pumping Amounts by Bay Point System to 2030 in ac/ft

Basin Name	2005	2010	2015	2020	2025	2030
Pittsburg Plain	230	230	230	230	230	230
Percent of Total Water Supply	8	7	7	6	6	6

Notes

1. Table format based on DWR Guidance Document Table 7
2. Years are reported in calendar years (January 1 – December 31)

Reliability of Supply

The Bay Point System gets its water supply from two sources, purchased water from CCWD and groundwater. Therefore, conditions in local and distant areas can impact the reliability of supplies. In general, GSWC's supply is expected to be 100 percent reliable through 2030 in normal years. This reliability is a result of, 1) the projected reliability of CCWD, which expects to be 100 percent reliable, and, 2) reliable groundwater supply from the Pittsburg Plain Groundwater Basin. The following is a summary of the basis of this reliability.

CCWD's Water Supply Reliability

The CCWD has taken steps to identify improvements that will support the reliability of their water source. These efforts are described in the Future Water Supply Study (FWSS) as adopted by the CCWD Board of Directors. The FWSS was updated in 2002. The FWSS includes a Preferred Alternative that provides drought reliability and operational flexibility in the short-term while maintaining long-term supply targets to meet projected demands. This preferred alternative includes, a) Re-negotiation of the CCWD's existing Central Valley Project (CVP) Amendatory contract (I75r-3401), b) implementation of expanded District wide conservation program, which would achieve a target of at least 5 percent District-wide savings by the year 2040, and c) potentially two or more water transfers that would strengthen the reliability of supplies and provide drought protection for existing customers and bridge the gap between water supplies and projected demands. The water supply reliability goal adopted as part of the FWSS under CVP is to provide 100 percent of demand in normal years and minimum of 85 percent of demand in the second and third years of a multiple dry-year period. Up to 15 percent of demand during an extended drought may be met with short-term water transfers and demand management (CCWD 2005).

Water transfers are identified in the FWSS as a preferred means of strengthening drought protection for existing customers and meeting supply shortfalls. The purchase of water transfers would follow an incrementally stepped approach, triggered by increases in demand as a result of approved growth within the Contra Costa County and cities within CCWD. Long and short-term transfers and exchange opportunities are available to CCWD.

Long-term Water Transfers

The February 2000 Agreement with East Contra Costa Irrigation District (ECCID) to transfer surplus irrigation water was the first long-term water transfer for CCWD. Currently, up to

9,700 ac-ft/yr (5,700 ac-ft in normal years and 9,700 ac-ft in CVP shortage years) is available under the agreement. In the future, this agreement will provide up to 12,200 ac-ft/yr (8,200 ac-ft in normal years and up to 12,200 ac-ft in CVP shortage years). The following water transfer opportunities are being evaluated by CCWD:

Conjunctive use with long-term contract: CCWD would partner with an agricultural district holding pre-1914 surface water rights and co-invest in conjunctive use facilities, such as new groundwater wells. The new wells would allow the agricultural district to shift use from surface water to groundwater supplies in dry years and exchange its surface water supplies to the CCWD to meet dry-year demand.

Groundwater banking: CCWD would extend the reliability of its existing CVP supplies by banking, through groundwater storage, surplus CVP entitlement or other available wet year supplies such as CVP Section 215 water. CCWD would draw upon the banked water supplies to meet demand when needed.

Lease/purchase water rights and remarket surplus supplies: CCWD would enter into a long-term water supply lease or purchase an existing water right. The lease or sale would be for a fixed amount of annual supplies. All surplus water supplies would be remarketed through a long-term contract with a third-party buyer or the spot market.

Co-investment in agricultural conservation: This option would involve forming a long-term relationship with agricultural partner holding pre-1914 water rights. CCWD would invest in agricultural conservation infrastructure, such as canal lining and weed abatement projects. A fixed amount of conserved supplies would be made available to CCWD annually and any surplus supplies could be banked through groundwater storage or remarketed.

Fallowing or crop shifting option contract: This option includes a long-term option contract with an agricultural district. When called upon by CCWD through exercise of the option, the agricultural district would fallow or shift crops to make water supplies available.

Short-term Water Transfers

CCWD also has experience in implementing short-term water transfers. CCWD purchased water from various agencies in 2000, 2003 and 2004. The goal of the short-term transfer program was to establish relationships with sellers, work through the various institutional issues associated with transfers before a serious water shortage occurs, and to develop water transfer agreements that would allow CCWD to purchase water in shortage years. In addition, if required CCWD would pursue additional short-term water transfers directly from agricultural districts (in Northern California), who participate in the spot market each year.

In addition to the water transfers and purchases, water recycling is a component of CCWD's long-term sustainable water supply strategy. The recycled water would be used for various purposes including urban landscaping and golf course irrigation and for industrial uses. CCWD will continue to work with local wastewater agencies to implement recycled water projects that are financially viable, provide beneficial use and are consistent with appropriate legal, public health and environmental requirements (CCWD, 2005).

GSWC's Groundwater Supply Reliability

The California Department of Water Resources has reported that no data relating to groundwater storage capacity or groundwater in storage in the Pittsburg Plain Basin has been published (DWR, 2005). Historically, GSWC's Bay Point System has reliably produced approximately 220 ac-ft/yr to 550 ac-ft/yr. Based on the Basin's reliability, GSWC's groundwater supply for the Bay Point System is expected to continue to be 100 percent reliable

Bay Point System's Water Supply Reliability

Supply reliability for the Bay Point System depends on the reliability of purchased water from CCWD and local groundwater supplies, as discussed above.

Table 3-5 presents water supply projections for purchased water and groundwater sources during a normal year, a single-dry year, and multiple-dry years for the Bay Point System for the year 2030. The normal-year supply represents the expected supply under average hydrologic conditions, the dry-year supply represents the expected supply under the single driest hydrologic year, and the multiple-dry year supply represents the expected supply during a period of three consecutive dry years.

CCWD expects to be 100 percent reliable during normal years for the next twenty-five years. However, CCWD anticipates shortages in supply during multiple-dry years. CCWD estimates that at least 85 percent of demand will be met by CVP and other sources in a second or third dry year during multiple dry-years. The remaining 15 percent would be met by short-term water purchases and a voluntary short-term conservation program.

Table 3-5
Supply Reliability for the Bay Point System for Year 2030 in ac-ft/yr

Source	Normal Water Year	Single-Dry Water Year	Multiple-Dry Water Years		
			Year 1	Year 2	Year 3
Purchased water from CCWD	3,889	3,889	3,889	3,306	3,306
Groundwater	230	230	230	230	230
Total	4,119	4,119	4,119	3,536	3,536
Percent of Normal		100	100	86	86
Notes					
1. Table format based on DWR Guidance Document Table 8					

Table 3-6 lists single-dry year and multiple-dry year periods for both groundwater and purchased water supplies. For purchased water supplies, the CVP conditions (those were used in the CCWD's UWMP for supply projections) are as follows: (i) a normal year is adjusted historical use; (ii) a single dry-year is 85 percent of historical use, and (iii) a multiple dry-year is 85 percent, 75 percent and 65 percent of historical use for year 1, 2 and 3, respectively. The water supply reliability goal adopted by the CCWD is to meet at least 85 percent of demand in a second or third dry year and 100 percent of demand in other years. As it has been stated earlier, a short-term water purchases along with voluntary short term

conservation (with a request for up to 5 and 15 percent in the second and third years of a multiple dry-year period, respectively) would be considered to meet demands during the second and third years of a multiple dry-year periods (CCWD, 2005).

The reliability of groundwater is dependent on local hydrologic conditions and availability of other water for augmented recharge. For the groundwater reliability analysis, precipitation data from 1949 through 2004 were reviewed. Western Regional Climate Center (WRCC) obtained the water year basis data at Port Chicago, CA. Precipitation data was evaluated from Water Year (WY) 1948-49 through WY 2003-04. WY 1971-72 (October 1, 1971 - September 30, 1972) was the single driest year with 7.89 inches of precipitation. The normal water year was based on DWR's description of the median water year over the period of record. The median annual precipitation between WY 1949 and WY 2004 at Port Chicago was 13.56 inches. Based on the median precipitation, the normal water year was 1978. The multiple dry year period of WY 1988 through WY 1990 recorded the lowest 3-year total of precipitation. Through the period of record for the precipitation data, the groundwater supply in the Pittsburg Plain Groundwater Basin has been reliable. Based on historic conditions in the Basin, the groundwater supply in the Basin should be reliable in the future, including during drought conditions.

In the past, GSWC's groundwater supply for the Bay Point System has been 100 percent reliable. Based on projected water demands and water use through 2030, the groundwater supply for the Bay Point System is expected to be 100 percent reliable in the future.

The Bay Point System has historically pumped 218 ac-ft/yr to 268 ac-ft/yr for the past five years. It is projected the Bay Point System will pump annual amounts of approximately 230 ac-ft/yr between 2005 and 2030.

Table 3-6
Basis of Water Year Data

Water Year Type	Base Year(s)	Historical Sequence
-Purchased Water⁽¹⁾		
Normal Water Year	N/A	
Single-Dry Water Year	N/A	
Multiple-Dry Water Years	N/A	
Groundwater⁽²⁾		
Normal Water Year ⁽³⁾	1978	1949 – 2004
Single-Dry Water Year	1972	1949 – 2004
Multiple-Dry Water Years	1988 – 1990	1949 – 2004

Notes

1. The CVP conditions used for supply projections are as follows: (i) a normal year is adjusted historical use; (ii) a single dry-year is 85 percent of historical use, and (iii) a multiple dry-year is 85 percent, 75 percent and 65 percent of historical use for year 1, 2 and 3, respectively.
2. Data used was from Western Regional Climate Center record of precipitation at Port Chicago on water year basis
3. Normal Water Year calculated from median precipitation from WY 1949 – WY 2004
4. Table format based on DWR Guidance Document Table 9

Factors Resulting in Inconsistency of Supply

Table 3-7 presents factors that could potentially result in inconsistency of supply for the Bay Point System.

The Pittsburgh Plain Groundwater Basin is not currently adjudicated. There is little groundwater production within the basin and there are no anticipated future legal restrictions on the basin.

Table 3-7
Factors Resulting in Inconsistency of Supply

Name of Supply	Legal	Environmental	Water Quality	Climatic
CCWD	N/A	N/A	N/A	N/A
Groundwater, Pittsburg Plain Groundwater Basin	N/A	N/A	N/A	N/A

Notes

1. Table format based on DWR Guidance Document Table 10
2. N/A – Not Applicable

Regulatory restrictions could occur as a result of hydrology or environmental requirements. The environmental requirements could result in diversion restrictions due to water releases for fish and wildlife uses. CCWD reserves the right to allocate the water supply to its customers in the event of water shortages.

Transfers and Exchanges

There are no planned transfer and/or exchange opportunities in the Bay Point System at this time; therefore, Table 3-8 has been left blank.

Table 3-8
Transfer and Exchange Opportunities

Source Transfer Agency	Transfer or Exchange	Short Term	Proposed Quantities	Long term	Proposed Quantities
GSWC	N/A	N/A	N/A	N/A	N/A

Notes

1. Table format based on DWR Guidance Document Table 11

Planned Water Supply Projects and Programs

As part of its normal maintenance and operations, GSWC will construct new wells, pipelines, and treatment systems as needed as a part of its ongoing Capital Improvement Program to maintain its supply and meet distribution system requirements. CCWD's planned projects include renewal of water service contract for CVP water, implementation of an expanded conservation program, additional recycled water supplies, future

desalination water supplies, groundwater and water transfers. The Preferred Alternative identified in the FWSS included renewal of CCWD’s water service contract for CVP water, which has been completed; implementation of an expanded conservation program; and water transfers to bridge the gap between projected demand and supplies (CCWD, 2005).

There are no planned water supply projects and programs in the Bay Point System at this time therefore, Table 3-9 was left blank.

Table 3-9
Future Water Supply Projects in ac-ft

Project Name	Normal Year	Single Dry Year	Multiple Dry Years		
			Year 1	Year 2	Year 3
N/A	N/A	N/A	N/A	N/A	N/A

Notes
1. This table is based on the DWR Guidebook Table 17

Wholesale Agency Supply Data

Table 3-10 provides CCWD’s existing and planned water sources available to the Bay Point System under normal years. These supplies are expected to meet the projected imported water demands. The primary source of CCWD’s water supply is CVP water. Other sources include the San Joaquin River, Mallard Slough, recycled water, a minor amount of local well water, and water transfers.

Table 3-10
Existing and Planned Water Sources Available to the Bay Point System as Identified by CCWD in ac-ft/yr

Wholesaler Sources	2010		2015		2020		2025		2030	
	Existing	Planned								
CCWD	2,846	N/A	3,215	N/A	3,474	N/A	3,679	N/A	3,889	N/A

Notes
1. Table format based on DWR Guidance Document Table 20

Table 3-11 demonstrates the reliability of wholesale water supply to meet annual water demand of the Bay Point System. The table includes a single-dry year and multiple-dry year supplies for the year 2030.

CCWD does not anticipate any supply deficits in normal years due to CCWD’s long-term conservation program and the use of purchases from ECCID under the current agreement. CCWD estimates that at least 85 percent of demand will be met in a second or third dry year during multiple dry-years. The remaining 15 percent would be met by short-term water purchases and a voluntary short-term conservation program.

Table 3-11
Reliability of Wholesale Supply for Year 2030 in ac-ft/yr

Wholesaler	Single Dry	Multiple-Dry Water Years		
		Year 1	Year 2	Year 3
CCWD	3,889	3,889	3,306	3,306
Percent Normal	100	100	85	85

Notes

1. Table format based on DWR Guidance Document Table 21

Table 3-12 lists factors affecting wholesale supply for the Bay Point System. CCWD is implementing a comprehensive water quality strategy to protect and improve source and treated water quality for its customers. CCWD's multi-pronged approach includes seeking improved water quality sources, reducing impacts of the Sacramento-San Joaquin Delta (Delta) agricultural drainage on source water quality, participating in collaborative research on advanced water treatment of Delta water, and supporting regulatory and legislative initiatives for improving drinking water quality and source water protection (CCWD 2005).

Table 3-12
Factors Affecting Wholesale Supply

Name of Supply	Legal	Environmental	Water Quality	Climatic
CCWD	N/A	N/A	N/A	N/A

Notes

1. Table format based on DWR Guidance Document Table 22

Chapter 4. Water Use

Section 10631 (e) of the Act requires that an evaluation of water use be performed for the Bay Point System. The Act states the following:

Section 10631

(e)

- (1) *Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water- use sectors including, but not necessarily limited to, all of the following uses:*
 - (A) *Single-family residential*
 - (B) *Multifamily*
 - (C) *Commercial*
 - (D) *Industrial*
 - (E) *Institutional and governmental*
 - (F) *Landscape*
 - (G) *Sales to other agencies*
 - (H) *Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof*
 - (I) *Agricultural.*
- (2) *The water-use projections shall be in the same five-year increments described in subdivision (a).*

In addition, Section 10631 (k) directs urban water suppliers to provide existing and projected water-use information to wholesale agencies from which water deliveries are obtained. The Act states the following:

Section 10631

- (k) *Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water-use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c), including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.*

As part of the Urban Water Management Plans, California regulation requires water suppliers to quantify past and current water use and to project the total water demand for the water system. Projections of future water demand allow a water supplier to analyze if

future water supplies are adequate, as well as help the agency when sizing and staging future water facilities. Water use and production records, combined with population and employment projections, provide the basis for estimating future water requirements. This chapter presents an analysis of water use data and the resulting projections for future water needs in the Bay Point System.

Historical and Projected Water Use

Historical water use data from 1980 to 2004 was analyzed in order to estimate the future water demands for the Bay Point System. Projections for the number of service connections and future water use were calculated for the year 2005 through 2030 in five-year increments. Future water demands were estimated using two different methods, a population-based approach and a historical-trend approach, in order to present a projection range. Detailed descriptions of how the population-based and historical-trend projections were calculated are provided below.

The population-based projections resulted in estimated future water demands in excess of those calculated using historical-trend projections. This is due to the fact that ABAG's projected growth rates exceed the actual growth rates experienced within the Bay Point System's service area over the past twenty years. GSWC has opted to use the population-based projections for future water demand estimates even though it is considered unlikely that actual demand increases will reach the levels predicted. Using these more conservative numbers will ensure that a reliable water supply is available should future water demands within the Bay Point System exceed the levels anticipated based on historic water use.

The range established between these two approaches is intended as supplemental information; all recommendations are based on the population-based projections. The historical-trend projections are provided as ancillary information only.

Figure 4-1 shows the historical and projected number of metered service connections for the Bay Point System from 1980 through 2030. Figure 4-2 shows the historical and projected water use for the Bay Point System from 1985 until 2030.

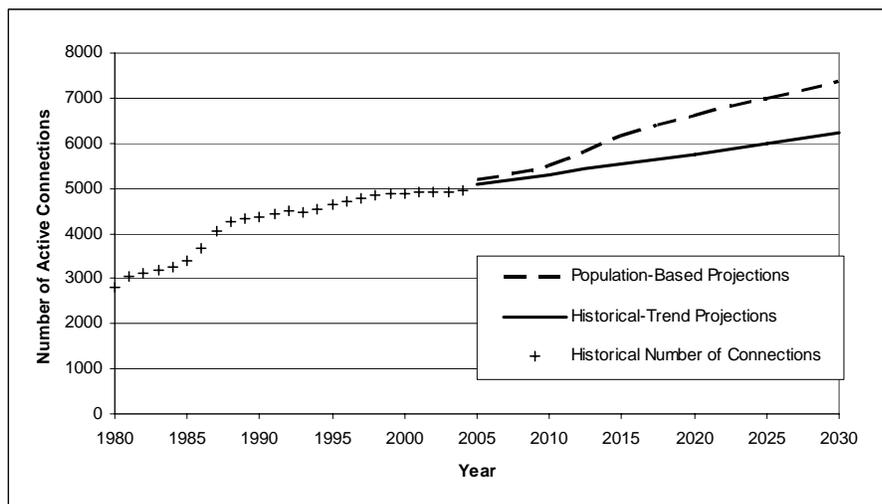


Figure 4-1. Historical and Projected Number of Metered Service Connections

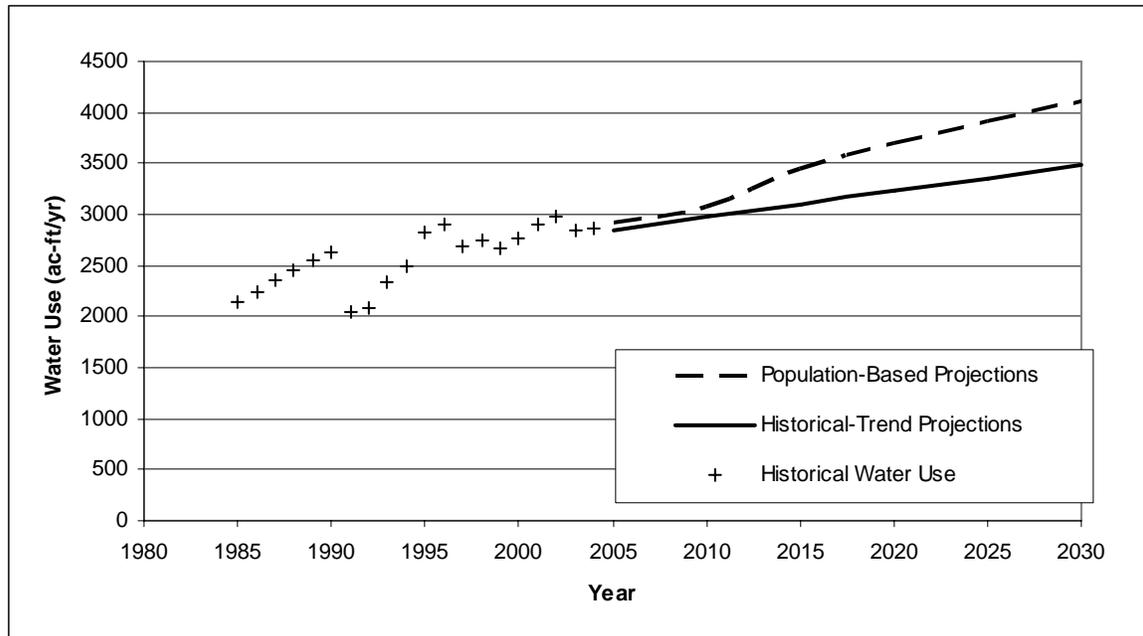


Figure 4-2. Historical Water Use and Future Water Use Projections

In order to generate estimates of future water demands, historical water use records from 1985 through 2004 were analyzed. The customer billing data for the system consists of annual water sales data. The water sales data was sorted by customer type using the assigned North American Industry Classification System (NAICS) codes. Then the sorted water sales data was further grouped into the following 8 categories: single family, multi-family, industrial, commercial, institutional/government, landscape, agriculture, and others.

For each category, a water use factor was calculated in order to quantify the average water used per metered connection. For a given customer type, the unit water use factor is calculated as the total water sales for the category divided by the number of active service connections for that category. The unit water use factors for each customer type were averaged over the data range from 1999 through 2004 in order to obtain a representative water use factor that can be used for water demand projections by customer type.

The population-based water use projections are based on the population and housing projections developed for the Bay Point System using the Association of Bay Area Governments (ABAG) data. ABAG recently updated its projections for population, household, and employment growth through the year 2030 using 2000 U.S. Census data. ABAG's methodology and the derivation of population projections for the Bay Point System are discussed in more detail in Chapter 2.

ABAG household projections were used to determine the growth in single-family and multi-family service connections for the years 2005, 2010, 2015, 2020, 2025, and 2030. For example, the ratio between the household projections for the year 2015 and the year 2000 was multiplied by the number of service connections in 2000 to obtain a projection of the number of connections in the year 2015. Similarly, total population growth projections were used to determine the growth for commercial, industrial, institutional/government, landscape, and

agriculture service connections. The population-based projected water use was then calculated by multiplying the number of projected active service connections for each customer category with the corresponding customer average water use factor calculated above.

The historical-trend water use projections are not based on ABAG projections but are instead based on a linear projection of the historical number of metered service connections. To establish the historical trend, the data from 1989 through 2004 was used because the growth rate in the number of connections decreased significantly after 1989 (refer to Figure 4-1). The average growth rate established by this historical trend was applied to the number of connections in each customer category to project the future number of service connections. The historical-trend projected water use was then calculated by multiplying the number of projected active service connections for each customer category with the corresponding customer average water use factor calculated above.

Figure 4-3 shows the average of the population-based and historical-trend water use projections by customer type, as well as the total water demand. The error bars provide the range of the total water demand projections for that year. The population-based and historical-trend projections of the number of service connections, and the resulting water demand, are provided in Table 4-1 and Table 4-2, respectively.

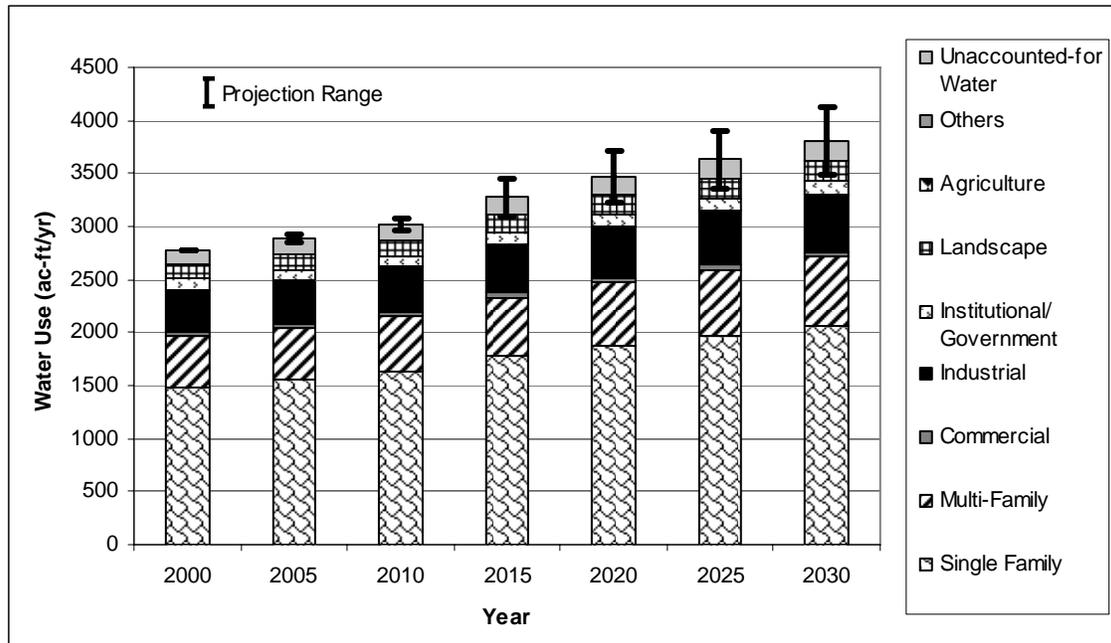


Figure 4-3. Water Use by Customer Type

Table 4-1
Population-Based and Historical-Trend Projections of the Number of Metered Service Connections for the Bay Point System

Year	Projection Type	Accounts by Type								Total
		Single Family	Multifamily	Commercial	Industrial	Institutional/ Government	Landscape	Agriculture	Other ⁽³⁾	
2000 ⁽²⁾	N/A	4,621	114	52	20	37	41	1	3	4,889
2005	<i>Population-Based</i>	4,922	121	56	21	40	44	1	3	5,208
	<i>Historical-Trend</i>	4,800	118	54	21	38	43	1	3	5,079
2010	<i>Population-Based</i>	5,193	128	58	22	42	46	1	3	5,494
	<i>Historical-Trend</i>	5,016	124	56	22	40	45	1	3	5,307
2015	<i>Population-Based</i>	5,822	144	65	25	46	51	1	4	6,159
	<i>Historical-Trend</i>	5,231	129	59	23	42	46	1	3	5,535
2020	<i>Population-Based</i>	6,268	155	70	27	50	55	1	4	6,630
	<i>Historical-Trend</i>	5,447	134	61	24	44	48	1	4	5,763
2025	<i>Population-Based</i>	6,631	164	73	28	52	58	1	4	7,011
	<i>Historical-Trend</i>	5,663	140	64	25	45	50	1	4	5,991
2030	<i>Population-Based</i>	6,989	172	77	30	55	61	1	4	7,389
	<i>Historical-Trend</i>	5,878	145	66	25	47	52	1	4	6,219

Notes

1. This table is based on the DWR Guidebook Table 12.
2. Based on calendar year.
3. Other accounts for any service connections not included in any other category, including idle or inactive connections.

Table 4-2
Population-Based and Historical-Trend Projections of Water Deliveries for Service Connections for the Bay Point System in ac-ft/yr

Year	Projection Type	Accounts by Type								Total
		Single Family	Multifamily	Commercial	Industrial	Institutional/ Government	Landscape	Agriculture	Other ⁽³⁾	
2000 ⁽²⁾	N/A	1,487	482	36	404	99	135	0	0	2,643
2005	<i>Population-Based</i>	1,582	492	41	412	100	147	0	3	2,777
	<i>Historical-Trend</i>	1,542	480	40	401	97	143	0	3	2,707
2010	<i>Population-Based</i>	1,669	520	43	433	105	154	0	3	2,927
	<i>Historical-Trend</i>	1,612	502	42	419	102	149	0	3	2,828
2015	<i>Population-Based</i>	1,871	582	48	484	117	172	0	4	3,279
	<i>Historical-Trend</i>	1,681	523	43	437	106	156	0	3	2,950
2020	<i>Population-Based</i>	2,014	627	51	518	126	185	0	4	3,525
	<i>Historical-Trend</i>	1,750	545	45	455	110	162	0	4	3,071
2025	<i>Population-Based</i>	2,131	663	54	543	132	193	0	4	3,720
	<i>Historical-Trend</i>	1,819	566	47	473	115	168	0	4	3,193
2030	<i>Population-Based</i>	2,246	699	57	572	139	204	0	4	3,920
	<i>Historical-Trend</i>	1,889	588	49	491	119	175	0	4	3,314

Notes

1. This table is based on the DWR Guidebook Table 12.
2. Based on calendar year.
3. Other accounts for any service connections not included in any other category, including idle or inactive connections.

Sales to Other Agencies

There are no sales to other agencies for the Bay Point System; therefore, Table 4-3 has intentionally been left blank.

Table 4-3
Sales to Other Agencies in ac-ft/yr

Water Distributed	2000⁽²⁾	2005	2010	2015	2020	2025	2030
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes

1. This table is based on the DWR Guidebook Table 13.
2. Based on calendar year.

Other Water Uses and Unaccounted-for Water

In order to accurately predict total water demand, other water uses, as well as any water lost during conveyance, must be added to the customer demand. California regulation requires water suppliers to quantify any additional water uses not included as a part of water use by customer type (Table 4-4). There are no other water uses in addition to those already reported in the Bay Point System.

Unaccounted-for water must be incorporated when projecting total water demand. Unaccounted-for water is defined as the difference between annual production and supply and annual sales. Included in the unaccounted-for water are system losses (due to leaks, reservoir overflows, or inaccurate meters), and water used in operations. In the Bay Point System, from 1999 through 2004, unaccounted-for water has averaged 4.83 percent of the total production. Table 4-4 provides a summary of unaccounted-for water in the Bay Point System.

Table 4-4
Additional Water Uses and Losses in ac-ft/yr

Water-Use Type	2000⁽²⁾	2005	2010	2015	2020	2025	2030
Other Water Uses	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Unaccounted-for System Losses ⁽³⁾	134	141	148	166	179	189	199
Total	134	141	148	166	179	189	199

Notes

1. This table is based on the DWR Guidebook Table 14.
2. Based on calendar year.
3. Unaccounted-for water includes system losses due to leaks, reservoir overflows, and inaccurate meters, as well as water used in operations.

Total Water Demand

As mentioned above, other water uses, as well as any water lost during conveyance, must be added to the customer demand in order to project water demand for the Bay Point System. Although there are no other water uses contributing to the total water demand in the Bay Point System, unaccounted-for water must be incorporated into the total water demand (refer to the previous section for a definition of unaccounted-for water). Table 4-5 summarizes the projections of water sales, unaccounted-for water, and total water demand through the year 2030. The projected water sales in the remainder of the analysis, including Table 4-5, are calculated using the population-based projections for water use.

The water demand projections below do not include any reduction due to future implementation of Demand Management Measures (DMM). More information regarding the status of demand reduction measures is available in Chapter 5.

Table 4-5
Projected Water Sales, Unaccounted-for System Losses, and Total Water Demand in ac-ft/yr

Year	Projected Water Sales	Unaccounted-for System Losses	Total Water Demand
2000 ⁽²⁾	2,643	134	2,777
2005	2,777	141	2,918
2010	2,927	148	3,076
2015	3,279	166	3,445
2020	3,525	179	3,704
2025	3,720	189	3,909
2030	3,920	199	4,119

Notes

1. This table is based on the DWR Guidebook Table 15.
2. Based on calendar year.

Data Provided to Wholesale Agency

GSWC provided the following projected water use data to the Contra Costa Water District, its wholesale water supplier for the Bay Point System, as summarized in Table 4-6.

Table 4-6
Summary of Bay Point System Data Provided to CCWD in ac-ft/yr

Wholesaler	2010	2015	2020	2025	2030
CCWD	2,846	3,215	3,474	3,679	3,889

Notes

1. This table is based on the DWR Guidebook Table 19.

Chapter 5. Demand Management Measures

The evaluation of Demand Management Measures (DMMs) occupies a significant portion of the Act. The Act states as follows:

Section 10631.

- (f) *Provide a description of the supplier's water demand management measures. This description shall include all of the following:*
 - (1) *A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:*
 - (A) *Water survey programs for single-family residential and multifamily residential customers.*
 - (B) *Residential plumbing retrofit.*
 - (C) *System water audits, leak detection, and repair.*
 - (D) *Metering with commodity rates for all new connections and retrofit of existing connections.*
 - (E) *Large landscape conservation programs and incentives.*
 - (F) *High-efficiency washing machine rebate programs.*
 - (G) *Public information programs.*
 - (H) *School education programs.*
 - (I) *Conservation programs for commercial, industrial, and institutional accounts.*
 - (J) *Wholesale agency programs.*
 - (K) *Conservation pricing.*
 - (L) *Water conservation coordinator.*
 - (M) *Water waste prohibition.*
 - (N) *Residential ultra-low-flush (ULF) toilet replacement programs.*
 - (2) *A schedule of implementation for all water demand management measures proposed or described in the plan.*
 - (3) *A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.*
 - (4) *An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.*
- (g) *An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:*
 - (1) *Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.*
 - (2) *Include a cost-benefit analysis, identifying total benefits and total costs.*

- (3) *Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.*
- (4) *Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.*
- (j) *Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that Council in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).*

Section 10631.5. The department shall take into consideration whether the urban water supplier is implementing or scheduled for implementation, the water demand management activities that the urban water supplier identified in its urban water management plan, pursuant to Section 10631, in evaluating applications for grants and loans made available pursuant to Section 79163. The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities.

This chapter presents a summary of Golden State Water Company's (GSWC) past, current and future water conservation activities for the Bay Point System in compliance with the above listed sections of the Act.

The water conservation practices, as defined by the Act, are comprised of 14 DMMs. The DMMs are functionally equivalent to urban water conservation best management practices (BMPs) administered by the California Urban Water Conservation Council (Council). Table 5-1 lists the BMPs.

The Council was formed as part of an effort by the Department of Water Resources (DWR) working jointly with water utilities, environmental organizations, and other interested groups to develop and administer urban best management practices (BMPs) for conserving water. In 1991 the Council issued a Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) which formalized the agreement to implement BMPs to reduce the consumption of California's water resources. As a signatory of the MOU, GSWC has agreed to implement the BMPs that are determined to be cost beneficial to its ratepayers and to complete such implementation in accordance with the schedule assigned to each BMP. GSWC files bi-annual reports with the Council on BMP implementation progress.

Table 5-1
Water Conservation Best Management Practices

(1)	Water Survey Programs for Single-Family Residential and Multifamily Residential Customers
(2)	Residential Plumbing Retrofits
(3)	System Water Audits, Leak Detection, and Repair
(4)	Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections
(5)	Large-Landscape-Conservation Programs and Incentives
(6)	High-Efficiency-Washing-Machine Rebate Programs
(7)	Public Information Programs (1)
(8)	School Education Programs (1)
(9)	Conservation Program for Commercial, Industrial, Institutional (CII) Accounts
(10)	Wholesale-Agency Assistance Programs (1)
(11)	Conservation Pricing (1)
(12)	Water Conservation Coordinator (1)
(13)	Water Waste Prohibition (1)
(14)	Residential Ultra-Low-Flush-Toilet (ULFT) Replacement Programs
Notes	
1. Economic benefits of these BMPs are considered nonquantifiable.	

BMP Implementation Status

The BMP implementation status was assessed based on information provided in BMP activity reports for the years 2001 to 2004 that were filed with the Council. Historically, the BMP forms for the Bay Point System have been 100 percent complete, including the reports filed for 2001 to 2004. In addition, the BMP coverage reports were used to assess whether the target implementation schedule, as defined by the Council, for each BMP is met. The 2004 Activity Report and Coverage Report are included in Appendix E. Based on Section 10631 (j) the Council reports meet the requirements of Water Code Section 10631 (f) and (g). A summary of these reports is presented in Table 5-2 and Table 5-3.

Table 5-2 presents a summary of the past water conservation activities in the Bay Point System. It should be noted GSWC takes credit for water conservation activities completed under programs jointly offered by GSWC and other agencies in its service area.

Table 5-3 presents a description of the offered programs and implementation status in the Bay Point System for all BMPs. GSWC is currently not meeting coverage requirements as defined by the Council for BMPs 1, 2, 5, 8, 9, and 14. In order to determine if implementation of these BMPs for the Bay Point System should continue, a benefit-cost analysis was performed on these BMPs.

Table 5-2
Summary of Past Water Conservation Activities⁽¹⁾

Year	BMP 1: Residential Surveys	BMP 2: Residential Retrofits	BMP 3: Pre- Screening System Water Audit	BMP 5: Large Landscape Surveys	BMP 6: High Efficiency Washing Machine Rebate	BMP 7: Public Information Programs	BMP 8: School Programs Students Reached	BMP 9: CII Surveys	BMP 14: Residential ULFT
Pre 2000		240	Yes			Yes	750		750
2000			Yes			Yes	138		
2001			Yes			Yes	138		
2002			Yes			Yes			
2003			Yes			Yes			
2004			Yes			Yes			
Meeting Coverage Requirements	No	No	Yes	No	Yes	Yes	No	No	No
Notes									
1. BMPs 4, 11, 12, and 13 are fully implemented. BMP 10 is not applicable as this system does not provide wholesale water to other agencies.									

Table 5-3
Summary of Best Management Practice Implementation

	BMP	Summary of Activities	Coverage Implementation ⁽²⁾ Status
1	Residential Water Surveys	Free residential water surveys are offered through the CCWD. GSWC encourages its customers to participate.	Coverage requirements are not met.
2	Residential Plumbing Retrofits	Water conservation devices are available through the CCWD. GSWC encourages its customers to participate.	Coverage requirements are not met.
3	System Water Audits, Leak Detection, and Repair	GSWC completed annual distribution system pre-screening system audits to assess water losses in the distribution system. Prior to 2004, the distribution system water losses were less than 10 percent.	Coverage requirements are being met.
4	Metering	All accounts in the Bay Point System are metered and are billed by volume.	Fully implemented.
5	Large-Landscape-Conservation Program	Free large landscape water use surveys and rebate programs are offered through the CCWD. GSWC encourages its customers to participate.	Coverage requirements are not met.
6	High-Efficiency-Washing-Machine Rebate Program	Rebates for high-efficiency washing machines are offered through the CCWD. GSWC encourages its customers to participate. The energy service provider within the CSA does not offer a rebate program.	Coverage requirements are being met.
7	Public Information Program ⁽¹⁾	Bay Point System has a public information program through the customer service area office.	Coverage requirements are being met.
8	School Education Program ⁽¹⁾	GSWC implemented school education programs in 2000 and 2001.	Coverage requirements are not met.
9	Conservation Program CII Accounts	Free commercial water use surveys and rebate programs are offered through the CCWD. GSWC encourages its customers to participate.	Coverage requirements are not met.
10	Wholesale-Agency Program ⁽¹⁾	Not applicable.	Not applicable
11	Conservation Pricing ⁽¹⁾	GSWC has adopted conservation pricing, including using water rates that are developed to recover the cost of providing service and billing customers for metered water use. GSWC has uniform water rate structure (i.e. no rate increase/decrease based on the quantity of water used).	Fully implemented.
12	Water Conservation Coordinator ⁽¹⁾	GSWC has a part time water conservation coordinator on staff for all of Region I service areas.	Coverage requirements are being met.
13	Water Waste Prohibition ⁽¹⁾	There is a water waste prohibition ordinance in effect in the Bay Point System (PUC Tariff Rule No. 14.1).	Fully implemented.
14	Residential-Ultra-Low-Flush-Toilet-Replacement Program	Rebates for residential ULFT are offered through the CCWD. GSWC encourages its customers to participate.	Coverage requirements are not met.

Notes

1. Benefits of these DMM's are considered non-quantifiable.
2. "Implementation" means achieving and maintaining the staffing, funding, and priority levels necessary to achieve the level of activity required to satisfy the target commitment as described in the MOU.

Cost Benefit Analysis

A benefit-cost economic analysis was completed for the quantifiable BMPs that are not meeting coverage requirements (BMP 1, 2, 5, 8, 9, and 14). The benefit-cost analysis was completed with the consideration of economic factors. Noneconomic factors, including environmental, social, health, customer impacts, and new technology, are not believed to be significant and were not considered in the analysis. Therefore, a benefit-cost analysis could not be conducted for BMP 8 as it is not quantifiable.

The basis and assumptions used in the economic analysis of each BMP, as well as detailed calculations are included in Appendix D. Common assumption for all BMPs is the value of conserved water. Based on information provided by GSWC, the value of water for the Bay Point System is \$1297 per ac-ft. This value was estimated based on the cost of developing new water supply and the real discount rate of 6.71 percent. The analysis assumes that BMPs 1 and 2 (Residential Water Surveys and Plumbing Retrofits) would be done concurrently. Other assumptions with supporting references are described in Table D-1 (Appendix D).

The economic analysis was performed using a spreadsheet program developed by the Council. A separate, customized worksheet for each BMP is presented in Table D-2 (Appendix D). Each BMP economic analysis spreadsheet projects on an annual basis the number of interventions and the dollar values of the benefits and costs that would result from fully implementing a particular BMP. The definition of terms and formulas that are common to all worksheets are presented in Table D-3 (Appendix D).

Table 5-4 summarizes the results of the economic analysis. The table presents the total discounted costs and benefits, the benefit-cost ratio, the simple pay-back period, the discounted cost per ac-ft of water saved, and the net present value (NPV) per ac-ft of water saved for each BMP.

The economic analysis shows that all BMPs yield benefit-cost ratios greater than one, which indicates that the conservation measures are cost effective. Based on this, GSWC should continue efforts to implement BMPs 1, 2, 5, 8, 9, and 14 which appear to be cost effective.

Based on the results of the benefit-cost analysis an implementation program was developed for the cost effective BMPs.

Table 5-4
Results of Economic Analysis for BMPs Currently Not Meeting Coverage Requirements

	BMP Description	Total Discounted Cost⁽¹⁾	Total Discounted Benefits⁽²⁾	Total Water Saved (ac-ft)⁽³⁾	Benefit/Cost Ratio⁽⁴⁾	Simple Payback Analysis (years)⁽⁵⁾	Discounted Cost/Water Saved (\$/ac-ft)⁽⁶⁾	Net Present Value/Water Saved (\$/ac-ft)⁽⁷⁾
1	Water Survey Programs for Residential Customers	\$32,523	\$82,857	71	2.5	2	\$461	\$714
2	Residential Plumbing Retrofits	\$144,907	\$292,097	365	2.0	9	\$397	\$404
5	Large Landscape Conservation Programs and Incentives	\$28,348	\$233,628	212	8.2	1	\$133	\$966
9	Conservation Program for CII Accounts	\$8,223	\$55,409	47	6.7	1	\$174	\$1,001
14	Residential ULFT Replacement Program	\$527,738	\$1,852,883	2678	3.5	7	\$197	\$495

Notes

1. Present value of the sum of financial incentives and operating expenses - using discount rate of 6.71%.
2. Present value of the sum of avoided energy and purchased water costs - using discount rate of 6.71%.
3. Achieved water savings for the implemented BMP.
4. Total discounted benefits divided by total discounted costs.
5. Time horizon in years required for benefits to pay back costs of the BMP.
6. Total discounted costs divided by total water saved.
7. Total of discounted benefits less discounted costs divided by total water saved.

Recommended Conservation Program

GSWC should continue efforts to implement BMPs that are assessed to be cost beneficial (benefit-cost ratio equal to or greater than one), and to achieve the target implementation coverage by the end of the implementation period assigned to each BMP.

BMPs 1, 2, 5, 9, and 14 were identified as cost beneficial in the Bay Point System; therefore, an implementation program was developed for these BMPs. The program is based on achieving the target coverage requirements, as per the MOU.

Table 5-5 presents the proposed implementation program, including the number of annual interventions required for each BMP to comply with defined coverage requirements; the total annual expenditures necessary to support the interventions; and the estimated annual water savings. The expenditures for BMPs take into consideration the existing programs offered by other agencies in the service area, and reflect only the incremental cost to GSWC to implement BMPs to meet the coverage requirements.

BMPs 7, 8, 10, 11, 12, and 13 were not included in the proposed implementation program because they are considered non-quantifiable. These BMPs have no specific level of effort defined in the MOU, therefore water savings and costs associated with these BMPs were not included in the analysis. The cost for BMP 12 is contained in GSWC overhead. BMPs 4 and

11 are already implemented, and, therefore, have no additional cost associated with them. BMP 13 has no associated cost unless initiated by a water shortage condition.

When implementing water conservation programs, GSWC is subject to economic and legal constraints that need to be considered as they may affect the proposed BMPs implementation schedule.

Economic Considerations

As a private utility, GSWC is subject to the rules and regulations of the California Public Utilities Commission (PUC). The PUC approve GSWC's water rate structure and the capital and operating budget, including the budget for implementation of water conservation measures. GSWC is often constrained in the funding available to implement programs. GSWC implements cost effective water conservation programs that have been approved by the PUC.

The cost of water is an important economic factor that needs to be considered when implementing conservation programs. Higher cost of water increases the attractiveness of BMPs implementation. Currently there are no water projects planned in the Bay Point System that would result in higher unit cost of water, thus increasing the feasibility of implementing water conservation measures.

Legal Considerations

GSWC has the legal authority to implement cost beneficial BMPs that were approved by the PUC in its capital/operating budget. When developing programs that advance water conservation, GSWC can offer financial incentives, information or educational programs in its service area; however, GSWC has no legal authority to enforce urban codes or plumbing codes for new or existing connections that pertain to implementation of efficient devices, or reduction of water use.

Ordinances that prohibit water waste (BMP 13) are jointly developed by PUC and GSWC. Ordinances are enacted by the PUC only during water shortage. As a water retailer, GSWC has no legal authority to enact or enforce waste water prohibition ordinances without PUC approval.

Cost Share Partners

In an effort to expand the breadth of offered programs GSWC partners with wholesale suppliers, energy utilities, and other agencies that support conservation programs. Joint participation offers opportunity for cost sharing and development of more effective conservation strategies.

Several conservation programs are available to customers within the Bay Point System through the Contra Costa Water District (CCWD). These programs include:

- Free residential water surveys (BMP 1)
- Water conservation devices such as shower and faucet heads (BMP 2)
- Free large landscape water use surveys and rebates (BMP 5)
- Rebates for high efficiency washing machines (BMP 6)
- Free commercial water use surveys and rebates (BMP 9)

- Rebates for residential ULFT (BMP 14)

GSWC participates in these programs by providing additional funding or resources to implement offered programs. The additional funding may include additional rebate offers, program advertising, or sharing of costs related to organizing events in its service area.

GSWC is committed to continue efforts to implement cost effective BMPs that are approved by the PUC, and to achieve, to the extent possible, target implementation coverage by the end of the implementation period assigned to each BMP.

Table 5-5
 Summary of Required Interventions, Implementation Cost and Estimated Water Saved for BMPs Not Meeting Coverage Requirements

Year	BMP 1: Residential Water Surveys			BMP 2: Residential Plumbing Retrofits			BMP 5: Large Landscapes		
	Interven- tions	Water Saved (ac-ft/yr)	Cost (\$/yr)	Interven- tions	Water Saved (ac-ft/yr)	Cost (\$/Yr)	Interven- tions	Water Saved (ac-ft/yr)	Cost (\$/Yr)
2006	480	9	\$16,790	305	6	\$14,638	27	26	\$15,217
2007	480	18	\$15,734	305	12	\$13,717	27	53	\$15,217
2008	0	18	\$0	305	18	\$12,855	2	53	\$339
2009	0	18	\$0	305	24	\$12,046	2	53	\$339
2010	0	9	\$0	305	24	\$11,289	1	27	\$131
2011	0	0	\$0	305	24	\$10,579	1	0	\$131
2012	0	0	\$0	305	24	\$9,914	0	0	\$0
2013	0	0	\$0	305	24	\$9,290	0	0	\$0
2014	0	0	\$0	305	24	\$8,706	0	0	\$0
2015	0	0	\$0	305	24	\$8,159	0	0	\$0
2016	0	0	\$0	305	24	\$7,646	0	0	\$0
2017	0	0	\$0	305	24	\$7,165	0	0	\$0
2018	0	0	\$0	305	24	\$6,714	0	0	\$0
2019	0	0	\$0	305	24	\$6,292	0	0	\$0
2020	0	0	\$0	305	24	\$5,897	0	0	\$0
2021	0	0	\$0	0	18	\$0	0	0	\$0
2022	0	0	\$0	0	12	\$0	0	0	\$0
2023	0	0	\$0	0	6	\$0	0	0	\$0
2024	0	0	\$0	0	0	\$0	0	0	\$0
2025	0	0	\$0	0	0	\$0	0	0	\$0
2026	0	0	\$0	0	0	\$0	0	0	\$0
2027	0	0	\$0	0	0	\$0	0	0	\$0
2028	0	0	\$0	0	0	\$0	0	0	\$0
2029	0	0	\$0	0	0	\$0	0	0	\$0
2030	0	0	\$0	0	0	\$0	0	0	\$0
Total	959	71	\$32,523	4574	365	\$144,907	60	212	\$31,374

Table 5-5 (continued)
 Summary of Required Interventions, Implementation Cost and Estimated Water Saved for BMPs Not Meeting Coverage Requirements

Year	BMP 9: CII Conservation			BMP 14: Residential ULFT			Total		
	Interven- tions	Water Saved (ac-ft/yr)	Cost (\$/Yr)	Interven- tions	Water Saved (ac-ft/yr)	Cost (\$/Yr)	Interven- tions	Water Saved (ac-ft/yr)	Cost (\$/Yr)
2006	6	6	\$4,245	1133	45	\$151,755	1671	92	\$202,644
2007	6	12	\$4,245	1133	76	\$151,755	1671	170	\$200,668
2008	0	12	\$0	0	106	\$0	5	206	\$13,194
2009	0	12	\$0	0	106	\$0	5	213	\$12,386
2010	0	6	\$0	0	106	\$0	2	172	\$11,419
2011	0	0	\$0	0	106	\$0	2	131	\$10,709
2012	0	0	\$0	0	106	\$0	0	131	\$9,914
2013	0	0	\$0	0	106	\$0	0	130	\$9,290
2014	0	0	\$0	0	106	\$0	0	130	\$8,706
2015	0	0	\$0	0	106	\$0	0	130	\$8,159
2016	0	0	\$0	0	106	\$0	0	130	\$7,646
2017	0	0	\$0	0	106	\$0	0	130	\$7,165
2018	0	0	\$0	0	106	\$0	0	130	\$6,714
2019	0	0	\$0	0	106	\$0	0	130	\$6,292
2020	0	0	\$0	0	106	\$0	0	130	\$5,897
2021	0	0	\$0	0	106	\$0	0	124	\$0
2022	0	0	\$0	0	106	\$0	0	118	\$0
2023	0	0	\$0	0	106	\$0	0	112	\$0
2024	0	0	\$0	0	106	\$0	0	106	\$0
2025	0	0	\$0	0	106	\$0	0	106	\$0
2026	0	0	\$0	0	106	\$0	0	106	\$0
2027	0	0	\$0	0	106	\$0	0	106	\$0
2028	0	0	\$0	0	106	\$0	0	106	\$0
2029	0	0	\$0	0	106	\$0	0	106	\$0
2030	0	0	\$0	0	106	\$0	0	106	\$0
Total	12	47	\$8,490	2,265	2,557	\$303,510	3,355	3,252	\$520,804

Chapter 6. Desalination

The Act requires that desalination opportunities be discussed in the UWMP. The Act states the following:

Section 10631

- (i) *Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.*

Per requirements of California Water Code section 10631(i), this chapter presents opportunities to use desalinated water as a future water supply source for the Bay Point System.

CCWD along with East Bay Municipal Utility District, San Francisco Public Utilities Commission, and Santa Clara Valley Water District are jointly exploring the development of regional desalination facilities that could augment total water supplies. The Bay Area Regional Desalination Project (RDP) may consist of one or more desalination facilities, with an ultimate total capacity of up to 80 million gallons per day. By pooling resources under the umbrella of a single project, the RDP will maximize benefits and efficiencies and minimize potential environmental impacts associated with pursuing independent desalination projects within a small geographic area along the California coastline. An RDP would serve as a new, safe, and reliable water supply source that would: 1) provide additional sources of water during extended drought periods and during emergencies such as earthquakes or levee failures, 2) provide a supplemental supply source during extended droughts, 3) allow other major facilities such as treatment plants, transmission mains, and pump stations to be taken out of service for an extended period of time for maintenance or repairs, and 4) provide a full time supplemental water supply to increase the diversity of the CCWD's water supply portfolio, which would increase reliability (CCWD 2005).

The Delta Diablo Sanitation District completed a feasibility level desalination facility cost study in 2005 that considered the viability of using brackish water typical of the water available in the lower San Joaquin River and Suisun Bay delta areas. A detailed feasibility study for the RDP will be conducted during 2005-2006 as the next step (CCWD 2005).

Table 6-1 provides a summary of opportunities for water desalination. As was mentioned earlier, the future desalination projects of CCWD will increase the reliability of water supply for the region and the system. However, the exact quantity of supply that will be allotted for the GSWC's Bay Point system is not known.

Table 6-1
 Summary of Opportunities for Water Desalination

Source of Water	Yield (ac-ft/yr)	Start Date	Type of Use	Other
Seawater	89,600	N/A	N/A	N/A

Notes

1. Table format based on DWR Guidance Document Table 18

Chapter 7. Water Shortage Contingency Plan

Section 10632 of the Act details the requirements of the water-shortage contingency analysis. The Act states the following:

Section 10632. The plan shall provide an urban water-shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:

- (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions, which are applicable to each stage.*
- (b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.*
- (c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.*
- (d) Additional, mandatory prohibitions against specific water-use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.*
- (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water-use reduction consistent with up to a 50 percent reduction in water supply.*
- (f) Penalties or charges for excessive use, where applicable.*
- (g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.*
- (h) A draft water shortage contingency resolution or ordinance.*
- (i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.*

This chapter documents GSWC's Water Shortage Contingency Plan for the Bay Point System per requirements of Section 10632 of the Act. The Water Shortage Contingency Plan is based on Rule No. 14.1 Mandatory Water Conservation, Restrictions and Ratings Program adopted by GSWC. Appendix F contains the full text of the rule.

The purpose of the Water Shortage Contingency Plan is to provide a plan of action to be followed during the various stages of a water shortage. The plan includes the following elements: action stages, estimate of minimum supply available, actions to be implemented during a catastrophic interruption of water supplies, prohibitions, penalties and consumption reduction methods, revenue impacts of reduced sales, and water use monitoring procedures.

Action Stages

The Act requires documentation of actions to be undertaken during a water shortage. GSWC has developed actions to be undertaken in response to water supply shortages, including up to a 50 percent reduction in water supply. Implementation of the actions is dependent upon approval of the California Public Utilities Commission (CPUC), especially for implementing mandatory water use restriction. CPUC has jurisdiction over GSWC because GSWC is an investor-owned water utility. Section 357 of the California Water Code requires that suppliers that are subject to regulation by the CPUC secure its approval before imposing water consumption regulations and restrictions required by water supply shortage emergencies.

GSWC has grouped the actions to be taken during a water shortage into four stages, I through IV, that are based on the water supply conditions. Table 7-1 describes the water supply shortage stages and conditions. The stages will be implemented during water supply shortages according to shortage level, ranging from 5 percent shortage in Stage I to 50 percent shortage in Stage IV. The stage determination and declaration during a water supply shortage will be made by the Regional Vice President Customer Service.

Table 7-1
Water Supply Shortage Stages and Conditions

Stage No.	Water Shortage Supply Conditions	Shortage Percent
I	Minimum	5 -10
II	Moderate	10 - 20
III	Severe	20 – 35
IV	Critical	35 - 50

Notes

1. This table is based on the DWR Guidebook Table 23.

The actions to be undertaken during each stage include, but are not limited to, the following:

Stage I (5 - 10 percent shortage) - Water alert conditions are declared and voluntary conservation is encouraged. The drought situation is explained to the public and governmental bodies. GSWC explains the possible subsequent water shortage stages in order to forecast possible future actions for the customer base. The activities performed by GSWC during this stage include, but are not limited to:

- Public information campaign consisting of distribution of literature, speaking engagements, bill inserts, and conversation messages printed in local newspapers
- Educational programs in area schools
- Conservation Hotline, a toll free number with trained Conservation Representatives to answer customer questions about conservation and water use efficiency

Stage II (10 - 20 percent shortage) – Stage II will include actions undertaken in Stage I. In addition, GSWC may propose voluntary conservation allotments and/or require mandatory conservation rules. The severity of actions depends upon the percent shortage. The level of voluntary or mandatory water use reduction requested from the customers is also based on the severity. It needs to be noted that prior to implementation of any mandatory reductions, GSWC must obtain approval from CPUC. If necessary, GSWC may also support passage of drought ordinances by appropriate governmental agencies.

Stage III (20 - 35 percent shortage) – Stage III is a severe shortage that entails or includes allotments and mandatory conservation rules. This phase becomes effective upon notification by the GSWC that water usage is to be reduced by a mandatory percentage. GSWC implements mandatory reductions after receiving approval from CPUC. Rate changes are implemented to penalize excess usage. Water use restrictions are put into effect, i.e. prohibited uses can include restrictions of daytime hours for watering, excessive watering resulting in gutter flooding, using a hose without a shutoff device, use of non-recycling fountains, washing down sidewalks or patios, unrepaired leaks, etc. GSWC monitors production weekly for compliance with necessary reductions. Use of flow restrictors is implemented, if abusive practices are documented.

Stage IV (35 - 50 percent shortage) – This is a critical shortage that includes all steps taken in prior stages regarding allotments and mandatory conservation. All activities are intensified and production is monitored daily by GSWC for compliance with necessary reductions.

Minimum Supply

The Act requires an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for GSWC's water supply.

Table 7-2 summarizes the minimum volume of water available from each source during the next three years based on multiple-dry water years and normal water year. The driest three-year historic sequence is provided in Chapter 3. The driest three-year historic sequence is provided in Chapter 3. It is assumed that the multiple-dry year demands are the same as the water demands projected for the normal years. The water supply quantities for 2006 to 2008 are calculated by linearly interpolating between the projected water supplies of 2005 and 2010 for normal years. The water supplies for 2005 and 2010 are presented in Chapter 3. The third year of the multiple-dry year water supply projection represents the end of each 3-year multiple-dry year period as required for the multiple-dry year analysis. The water supplies from CCWD are reduced by 15 percent from the corresponding normal year supplies in the second and third year of multiple-dry year periods. This is because CCWD anticipates that at least 85 percent of demand will be met in a second or a third dry year during multiple dry-years from the CVP supplies and other sources. The remaining 15 percent would be met by short-term water purchases and a voluntary short-term conservation program.

CCWD's planned water supply projects and programs include water transfers as a preferred means of strengthening drought protection for existing customers and meeting water shortfalls and implementation of an expanded conservation program. CCWD does not anticipate any supply deficits in normal and single-dry years.

Historically, GSWC's Bay Point System has reliably produced approximately 220 to 550 ac-ft/yr of groundwater. Based on the Pittsburg Plain Basin's reliability, GSWC's groundwater supply for the Bay Point System is expected to continue to be 100 percent reliable.

Table 7-2
Three-Year Estimated Minimum Water Supply in ac-ft/yr

Source	2006	2007	2008	2005 Average year
Purchased water from CCWD	2,720	2,338	2,365	2,688
Groundwater	230	230	230	230
Recycled water	0	0	0	0
Total	2,950	2,568	2,595	2,918

Notes

1. This table is based on the DWR Guidebook Table 24.

Catastrophic Supply Interruption Plan

The Act requires documentation of actions to be undertaken by the water supplier to prepare for, and implement during a catastrophic interruption of water supplies. A catastrophic interruption constitutes a proclamation of a water shortage and could be any event (either natural or man-made) that causes a water shortage severe enough to classify as either a Stage III or Stage IV water supply shortage condition.

In order to prepare for catastrophic events, GSWC has prepared an Emergency Response Plan (ERP) in accordance with other state and federal regulations. The purpose of this plan is to design actions necessary to minimize the impacts of supply interruptions due to catastrophic events.

The ERP coordinates overall company response to a disaster in any and all of its districts. In addition, the ERP requires each district to have a local disaster plan that coordinates emergency responses with other agencies in the area. The ERP also provides details on actions to be undertaken during specific catastrophic events. Table 7-3 provides a summary of actions cross-referenced against specific catastrophes for three of the most common possible catastrophic events: regional power outage, earthquake, and malevolent acts.

In addition to specific actions to be undertaken during a catastrophic event, GSWC performs maintenance activities, such as annual inspections for earthquake safety, and budgets for spare items, such as auxiliary generators, to prepare for potential events.

Table 7-3
Summary of Actions for Catastrophic Events

Possible Catastrophe	Summary of Actions
Regional power outage	<ul style="list-style-type: none"> • Isolate areas that will take the longest to repair and/or present a public health threat. Arrange to provide emergency water. • Establish water distribution points and ration water if necessary. • If water service is restricted, attempt to provide potable water tankers or bottled water to the area. • Make arrangements to conduct bacteriological tests, in order to determine possible contamination. • Utilize backup power supply to operate pumps in conjunction with elevated storage.
Earthquake	<ul style="list-style-type: none"> • Assess the condition of the water supply system. • Complete the damage assessment checklist for reservoirs, water treatment plants, wells and boosters, system transmission and distribution. • Coordinate with OES utilities group or fire district to identify immediate fire fighting needs. • Isolate areas that will take the longest to repair and/or present a public health threat. Arrange to provide emergency water. • Prepare report of findings, report assessed damages, advise as to materials of immediate need and identify priorities including hospitals, schools and other emergency operation centers. • Take actions to preserve storage. • Determine any health hazard of the water supply and issue any “Boil Water Order” or “Unsafe Water Alert” notification to the customers, if necessary. • Cancel the order or alert information after completing comprehensive water quality testing. • Make arrangements to conduct bacteriological tests, in order to determine possible contamination.
Malevolent acts	<ul style="list-style-type: none"> • Assess threat or actual intentional contamination of the water system. • Notify local law enforcement to investigate the validity of the threat. • Get notification from public health officials if potential water contamination • Determine any health hazard of the water supply and issue any “Boil Water Order” or “Unsafe Water Alert” notification to the customers, if necessary. • Assess any structural damage from an intentional act. • Isolate areas that will take the longest to repair and or present a public health threat. Arrange to provide emergency water.

Notes

1. This table is based on the DWR Guidebook Table 25.

Prohibitions, Penalties, and Consumption Reduction Methods

The Act requires an analysis of mandatory prohibitions, penalties, and consumption reduction methods against specific water use practices which may be considered excessive during water shortages. Given that GSWC is an investor owned entity, it does not have the authority to pass any ordinances enacting specific prohibitions or penalties. In order to enact or rescind any prohibitions or penalties, GSWC would seek approval from CPUC to enact or rescind Rule No. 14.1, Mandatory Conservation and Rationing, which is presented in Appendix F. When Rule No. 14.1 has expired or is not in effect, mandatory conservation and rationing measures will not be in force.

Rule No. 14.1 details the various prohibitions and sets forth water use violation fines, charges for removal of flow restrictors, as well as establishes the period during which mandatory conservation and rationing measures will be in effect. The prohibitions on various wasteful water uses, include, but are not limited to, the hose washing of sidewalks and driveways using potable water, and cleaning for filling decorative fountains. Table 7-4 summarizes the various prohibitions and the stages during which the prohibition becomes mandatory.

Table 7-4
Summary of Mandatory Prohibitions

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Uncorrected plumbing leaks	II, III, IV
Watering which results in flooding or run-off in gutters, waterways, patios, driveway, or streets	II, III, IV
Washing aircraft, cars, buses, boats, trailers, or other vehicles without a positive shut-off nozzle on the outlet end of the hose	II, III, IV
Washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas in a manner which results in excessive run-off	II, III, IV
Irrigation of non-permanent agriculture	II, III, IV
Use of water for street watering with trucks or for construction purposes unless no other source of water or other method can be used	II, III, IV
Use of water for decorative fountains or the filling or topping off of decorative lakes or ponds	II, III, IV
Filling or refilling of swimming pools	II, III, IV
Notes	
1. This table is based on the DWR Guidebook Table 26.	

In addition to prohibitions during water supply shortage events requiring a voluntary or mandatory program, GSWC will make available to its customers water conservation kits as required by GSWC's Rule No. 20. GSWC will notify all customers of the availability of conservation kits.

In addition to prohibitions, Rule No. 14.1 provides penalties and charges for excessive water use. The enactment of these penalties and charges is contingent on approval of Rule 14.1 implementation by the CPUC. When the rule is in effect, violators receive one verbal and one written warning after which a flow-restricting device may be installed in the violator's service for a reduction of up to 50 percent of normal flow or 6 ccf per month, whichever is greater. Table 7-5 summarizes the penalties and charges and the stage during which they take effect.

Table 7-5
Summary of Penalties and Charges for Excessive Use

Penalties or Charges	Stage When Penalty Takes Effect
Penalties for not reducing consumption	III, IV
Charges for excess use	III, IV
Flat fine; Charge per unit over allotment	III, IV
Flow restriction	III, IV
Termination of Service	III, IV
Notes	
1. This table is based on the DWR Guidebook Table 28.	

In addition to prohibitions and penalties, GSWC can use other consumption reduction methods to reduce water use up to 50 percent. Based on the requirements of the Act, Table 7-6 summarizes the methods that can be used by GSWC in order to enforce a reduction in consumption, where necessary.

Table 7-6
Summary of Consumption Reduction Methods

Consumption Reduction Method	Stage When Method Takes Effect	Projected Reduction Percentage
Demand reduction program	All Stages	N/A
Reduce pressure in water lines; Flow restriction	III, IV	N/A
Restrict building permits; Restrict for only priority uses	II, III, IV	N/A
Use prohibitions	II, III, IV	N/A
Water shortage pricing; Per capita allotment by customer type	II, IV	N/A
Plumbing fixture replacement	All Stages	N/A
Voluntary rationing	II	N/A
Mandatory rationing	III, IV	N/A

Table 7-6
Summary of Consumption Reduction Methods

Consumption Reduction Method	Stage When Method Takes Effect	Projected Reduction Percentage
Incentives to reduce water consumption; Excess use penalty	III, IV	N/A
Water conservation kits	All Stages	N/A
Education programs	All Stages	N/A
Percentage reduction by customer type	III, IV	N/A

Notes
1. This table is based on the DWR Guidebook Table 27.

Revenue Impacts of Reduced Sales

Section 10632(g) of the Act requires an analysis of the impacts of each of the actions taken for conservation and water restriction on the revenues and expenditures of the water supplier. Because GSWC is an investor owned water utility and, as such, is regulated by the CPUC, the CPUC authorizes it to establish memorandum accounts to track expenses and revenue shortfalls caused by both mandatory rationing and voluntary conservation efforts. Utilities with CPUC-approved water management plans are authorized to implement a surcharge to recover revenue shortfalls recorded in their drought memorandum accounts. Table 7-7 provides a summary of actions with associated revenue reductions; while Table 7-8 provides a summary of actions and conditions that impact expenditures. Table 7-9 summarizes the proposed measures to overcome revenue impacts. Table 7-10 provides a summary of the proposed measures to overcome expenditure impacts.

Table 7-7
Summary of Actions and Conditions that Impact Revenue

Type	Anticipated Revenue Reduction
Reduced sales	Reduction in revenue will be based on the decline in water sales and the corresponding quantity tariff rate
Recovery of revenues with CPUC approved surcharge	Higher rates may result in further decline in water usage and further reduction in revenue

Notes
1. This table is based on a DWR Guidebook table on page 59.

Table 7-8
Summary of Actions and Conditions that Impact Expenditures

Category	Anticipated Cost
Increased staff cost	Salaries and benefits for new hires required to administer and implement water shortage program
Increased O&M ⁽²⁾ cost	Operating and maintenance costs associated with alternative sources of water supply
Increased cost of supply and treatment	Purchase and treatment costs of new water supply
Notes	
1. This table is based on a DWR Guidebook table on page 59.	
2. Operations and maintenance.	

Table 7-9
Proposed Measures to Overcome Revenue Impacts

Names of Measures	Summary of Effects
Obtain CPUC approved surcharge	Allows for recovery of revenue shortfalls brought on by water shortage program
Penalties for excessive water use	Obtain CPUC approval to use penalties to offset portion of revenue shortfall
Notes	
1. This table is based on the DWR Guidebook Table 29.	

Table 7-10
Proposed Measures to Overcome Expenditure Impacts

Names of Measures	Summary of Effects
Obtain CPUC approved surcharge	Allows for recovery of increased expenditures brought on by water shortage program
Penalties for excessive water use	Obtain CPUC approval to use penalties to offset portion of increased expenditures
Notes	
1. This table is based on the DWR Guidebook Table 30.	

Water-Use Monitoring Procedures

The Act asks for an analysis of mechanisms for determining actual reduction in water use when the Water Shortage Contingency Plan is in effect. Table 7-11 lists the possible mechanisms used by GSWC to monitor water use and the quality of data expected.

Table 7-11
Water-Use Monitoring Mechanisms

Mechanisms for Determining Actual Reductions	Type and Quality of Data Expected
Customer meter readings	Hourly/daily/monthly water consumption data for a specific user depending on frequency of readings
Production meter readings	Hourly/daily/monthly water production depending on frequency of readings; correlates to water use plus system losses
Notes	
1. This table is based on the DWR Guidebook Table 31.	

In addition to the specific actions that GSWC can undertake to verify level of conservation, GSWC can monitor long-term water use through regular bi-monthly meter readings, which give GSWC the ability to flag exceptionally high usage for verification of water loss or abuse.

Chapter 8. Recycled Water Plan

Section 10633 details the requirements of the Recycled Water Plan to be included in the Act. The Act states the following:

Section 10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area and shall include all of the following:

- (a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.*
- (b) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.*
- (c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.*
- (d) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.*
- (e) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre feet of, recycled water used per year.*
- (f) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.*

Coordination

Table 8-1 summarizes the role of the agencies that participated in the development of recycled water plans that affect the Bay Point System of the GSWC.

Table 8-1
Role of Participating Agencies in the Development of the Recycled Water Plan

Participating Agencies	Role in Plan Development
Water agencies	GSWC works closely with the Delta Diablo Sanitation District in providing data for planning a potential recycled water distribution system and identifying potential recycled water customers. The Delta Diablo Sanitation District, acting as the recycled water wholesaler, would lead the way in implementing the recycled water plan and distribution network.
Wastewater agencies	The Delta Diablo Sanitation District provides a reliable supply of recycled water that meets California recycled water quality standards set forth in Title 22 of the California Code of Regulations.
Groundwater agencies	Not applicable for this CSA.
Planning agencies	Contra Costa County, in conjunction with the Delta Diablo Sanitation District, plays a key role in conducting data and customer assessments, as well as analyzing community and economic impacts.
Notes	
1. This table is based on the DWR Guidebook Table 32.	

Wastewater Quantity, Quality, and Current Uses

Wastewater in the Bay Point System is collected by gravity through sewer mains, trunk sewers, and interceptors. Collected wastewater is transported to the Delta Diablo Wastewater Treatment Plant in Antioch, a secondary treatment plant owned and operated by the Delta Diablo Sanitation District (DDSD). The DDSD serves about 184,000 residents as well as businesses in the communities of Antioch, Bay Point, and Pittsburg. Only a portion of the DDSD customers are also within the Bay Point System. The plant treats an average of 14.2 mgd. The overall plant capacity is 16.5 mgd.

The Delta Diablo Wastewater Treatment Plant has recycled water facilities capable of treating up to 12.8 mgd. At this time, about 7 mgd is treated to meet recycled water standards, with industrial uses accounting for 99 percent and irrigation accounting for one percent of water reuse. The remaining treated effluent is discharged into the New York Slough, a section of the San Joaquin River.

Because the DDSD treats wastewater for a larger population than is accounted for in the Bay Point System, an estimated per capita wastewater generation factor was used to calculate the volume of wastewater generated by the customers in the Bay Point System. The wastewater generation factor is based on the population served and the average DWF for the DDSD's treatment plant. The plant serves approximately 184,000 residents and treats an average of 14.2 mgd, making the average per capita wastewater generation factor for DDSD 77 gallons per day (gpd). This per capita wastewater generation factor was used to estimate the wastewater generation in the Bay Point System; Table 8-2 summarizes the estimates of existing and projected volumes of wastewater collected and treated in the Bay Point System. Of the 14.2 mgd treated, 7 mgd (49.3 percent) of it is treated to meet recycled water

standards; the same percentage was used to estimate the fraction of the wastewater that is collected in the Bay Point System that is treated to meet recycled water standards.

Table 8-3 lists the existing and projected wastewater disposal methods for the DDSD. Currently, 7.2 mgd (50.7 percent) of all the wastewater that is collected and treated by DDSD is discharged into the New York Slough; the same percentage was used to estimate the fraction of the wastewater that is collected in the Bay Point System that is discharged into the Slough. Table 8-4 was intentionally left blank, as there are no existing uses of recycled water by the GSWC customers of the Bay Point System.

Table 8-2

Estimates of Existing and Projected Wastewater Collection and Treatment in ac-ft/yr (mgd) for the Bay Point System

	2000 ⁽²⁾	2005	2010	2015	2020	2025	2030
Projected population in service area	22,394	23,923	25,142	28,087	30,069	31,502	33,184
Wastewater collected & treated in service area	1,936 (1.7 mgd)	2,068 (1.8 mgd)	2,174 (1.9 mgd)	2,428 (2.2 mgd)	2,600 (2.3 mgd)	2,723 (2.4 mgd)	2,869 (2.6 mgd)
Quantity that meets recycled water standard	954 (0.8 mgd)	1,020 (0.9 mgd)	1,072 (1.0 mgd)	1,197 (1.1 mgd)	1,282 (1.1 mgd)	1,343 (1.2 mgd)	1,414 (1.3 mgd)

Notes

1. This table is based on the DWR Guidebook Table 33.
2. Based on actual year.
3. Values of wastewater collected and treated are estimated. For a description of the methodology, refer to the text.

Table 8-3

Estimates of Existing and Projected Disposal of Wastewater In ac-ft/yr (mgd) for the Bay Point System

Method of Disposal	Treatment Level	2000 ⁽²⁾	2005	2010	2015	2020	2025	2030
River Discharge	Secondary	982 (0.9)	1,049 (0.9)	1,102 (0.9)	1,231 (1.1)	1,318 (1.2)	1,381 (1.2)	1,455 (1.3)

Notes

1. This table is based on the DWR Guidebook Table 34.
2. Based on actual year.
3. Volumes of effluent discharged are estimated. For a description of the methodology, refer to the text.

Table 8-4
Existing Recycled Water Use in the Bay Point System

Type of Use	Treatment Level	2004 Use (ac-ft/yr)
N/A	N/A	N/A

Notes
1. This table is based on the DWR Guidebook Table 35a.

Potential and Projected Use

In January of 2005, the DDS D finalized its Recycled Water Project Facilities Plan. This analysis evaluated potential recycled water use within the DDS D service area, looking at several alternatives. The recommended alternative would increase landscape water reuse by about 0.5 mgd. However, the additional recycled water use associated with this alternative would not occur in the Bay Point System.

In the Recycled Water Project Facilities Plan, DDS D identified potential recycled water customers in the Bay Point System. DDS D identified the possibility of using up to 735 ac-ft/yr of reclaimed water within the boundaries of the Bay Point System (refer to Table 8-5) if, and when, recycled water is available to the Bay Point System. However, through the analysis in the Recycled Water Project Facilities Plan, DDS D determined that it is not economically viable at this time to provide recycled water to the Bay Point System. Therefore, because there are no plans in place to provide recycled water to the Bay Point System at this time, Table 8-6 has intentionally been left blank.

In the Urban Water Management Plan for the Bay Point System (2000), there were no projections of recycled water by the year 2005. Therefore, Table 8-7 has intentionally been left blank.

Table 8-5
Potential Future Recycled Water Uses in ac-ft/yr

Type of Use	Treatment Level	2010 ⁽²⁾	2015	2020	2025	2030
Landscape	Secondary	90.3	90.3	90.3	90.3	90.3
Industrial	Secondary	645	645	645	645	645
Total		735.3	735.3	735.3	735.3	735.3

Notes
1. This table is based on the DWR Guidebook Table.
2. Based on actual year.

Table 8-6
Projected Future Recycled Water Use in Service Area in ac-ft/yr

Type of Use	2010	2015	2020	2025	2030
N/A	N/A	N/A	N/A	N/A	N/A

Notes

1. This table is based on the DWR Guidebook Table 36.

Table 8-7
Comparison of Recycled Water Uses—Year 2000 Projections versus 2005 Actual

Type of Use	2000 Projection for 2005	2005 Actual Use
N/A	N/A	N/A

Notes

1. This table is based on the DWR Guidebook Table 37.

Optimization and Incentives for Recycled Water Use

The DDSO is responsible for determining the technical and economic feasibility of increasing supplies of recycled water to the area as the owner and operator of the Delta Diablo Wastewater Treatment Plant. Extension of the recycled water lines within the Bay Point System is also the responsibility of the DDSO.

Because there are no plans in place to provide recycled water to the Bay Point System, there are no actions in place at this time by which GSWC is encouraging the use of recycled water in the CSA. Therefore, Table 8-8 is not applicable for this system and has been intentionally left blank. However, if and when DDSO decides to extend recycled water distribution to the Bay Point System, where possible, GSWC will encourage the use the recycled water by its customers.

Table 8-8
Methods to Encourage Recycled Water Use and the Resulting Projected Use in ac-ft/yr

Actions	2010	2015	2020	2025	2030
N/A	N/A	N/A	N/A	N/A	N/A

Notes

1. This table is based on the DWR Guidebook Table 38.

Chapter 9. Water Quality

Section 10634 of the Act requires an analysis of water quality issues and their impact to supply reliability. The Act states as follows:

Section 10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631 and the manner in which water quality affects water management strategies and supply reliability.

GSWC Measures for Water Quality Regulation Compliance

To facilitate full compliance with water quality laws and regulations, GSWC maintains a water quality department that has independent lines of reporting authority within the organization. The water quality department is headed by a company officer specifically assigned to oversee and manage the company's water quality program. The Vice President of Water Quality has a staff of three managers, located in each of the company's regional offices. Water quality managers, in turn, manage a staff of water quality engineers and technicians that are assigned to district offices. Each district office is assigned one water quality engineer and at least one water quality technician to provide direct support to the local drinking water systems within the district.

The district water quality engineer is the main point of contact for the Department of Health Services as well as other regulatory agencies. The water quality engineer also is responsible for coordinating compliance measures through scheduling required sample collection, preparing water quality related plans, maintaining a water quality database, providing training to operations, implementing a cross connection control program, and preparing and submitting monitoring reports, permit applications and other regulatory related correspondence.

As a whole, the water quality department monitors and participates in the development of new water quality related laws and regulations. Through routine department meetings and training, the district water quality engineers are kept up to date with changing water quality regulations and related technology. These efforts contribute towards maintaining a pool of trained water quality professionals that can be utilized throughout the company. This provides the company the ability to respond to a wide variety of water quality issues or emergencies.

Safe Drinking Water Act (SDWA)

Under the federal SDWA of 1974, EPA established drinking water regulations for 23 contaminants. The SDWA Amendments of 1986 required EPA to set maximum contaminant levels (MCLs) for 83 specific constituents and to set MCLs for an additional 25 constituents every 3 years, indefinitely. The 1996 SDWA amendments retained the requirement to regulate the 83 contaminants imposed by the 1986 amendments but removed

the requirement for 25 additional contaminants every 3 years and established a different process for selecting contaminants for regulation.

Under the 1996 SDWA amendments, EPA must:

- Publish a list of contaminants that may require regulation under the SDWA no later than February 6, 1998, and every 5 years thereafter
- Consult with the scientific community, including the Science Advisory Board, when preparing the list
- Provide notice and opportunity for public comment on the list
- Establish an occurrence database to be considered when EPA makes decisions to regulate contaminants that are known or anticipated to occur in public water systems
- Decide whether to regulate no fewer than five listed contaminants, no later than August 6, 2001, and every 5 years thereafter

To regulate a contaminant, EPA must find that the contaminant has an adverse effect on human health, that it occurs or is likely to occur in public water systems at a frequency and at concentrations of public health concern, and that regulation of the contaminant presents a meaningful opportunity to reduce health risks for those served by public water systems.

The status of the regulations, including the final rules and those that are still being formulated, are discussed below and summarized in Table 9-1. The current national primary drinking water standards, which are those standards related to health, are shown in Table 9-2. EPA considers compliance with secondary standards, which are those standards related to the aesthetic quality of water, to be optional; but, in California, secondary standards are mandatory unless the population served consents otherwise. The California secondary drinking water standards are shown in Table 9-3

Current and Proposed Water Quality Regulations

Environmental Protection Agency (EPA) and the State of California have established, or will develop, the following key primary water quality regulations under the Safe Drinking Water Act (SDWA). The Current and proposed water quality regulations listed below are discussed in the following paragraphs. These regulations apply to community and non-community water systems, which includes those of Golden State Water Company (GSWC) and may affect the GSWC water treatment facilities, treatment processes used, and monitoring requirements. See Table 9-1 for the status of current and proposed water quality regulations.

- Total Coliform Rule (TCR)
- Surface Water Treatment Rules
 - Surface Water Treatment Rule (SWTR)
 - *Cryptosporidium* Action Plan
 - Interim Enhanced SWTR (IESWTR)
 - Long Term 1 Enhanced SWTR (LT1ESWTR)
 - Long Term 2 Enhanced SWTR (LT2ESWTR)

- Disinfectant/Disinfection By-Product Rules
 - Total Trihalomethanes (TTHMs) Rule
 - Disinfectant/Disinfection By-Product (D/DBP) Rule Stage 1
 - Disinfectant/Disinfection By-Product (D/DBP) Rule Stage 2
- Volatile Organic, Synthetic Organic and Inorganic Chemical Rules
 - Volatile Organic Chemicals Rule
 - Phase IIA Fluoride Rule
 - Phase IIA Synthetic Organic Chemicals and Inorganic Chemicals Rule
 - Phase V Synthetic Organic Chemicals and Inorganic Chemicals Rule
- Groundwater Rule
- Filter Backwash Rule
- Lead and Copper Rule
- Arsenic Rule
- Radionuclide Rule
- Radon Rule
- Drinking Water Candidate Contaminant List

Safe Drinking Water Act (SDWA)

Under the federal SDWA of 1974, EPA established drinking water regulations for 23 contaminants. The SDWA Amendments of 1986 required EPA to set maximum contaminant levels (MCLs) for 83 specific constituents and to set MCLs for an additional 25 constituents every 3 years, indefinitely. The 1996 SDWA amendments retained the requirement to regulate the 83 contaminants imposed by the 1986 amendments but removed the requirement for 25 additional contaminants every 3 years and established a different process for selecting contaminants for regulation.

Under the 1996 SDWA amendments, EPA must:

- Publish a list of contaminants that may require regulation under the SDWA no later than February 6, 1998, and every 5 years thereafter
- Consult with the scientific community, including the Science Advisory Board, when preparing the list
- Provide notice and opportunity for public comment on the list
- Establish an occurrence database to be considered when EPA makes decisions to regulate contaminants that are known or anticipated to occur in public water systems
- Decide whether to regulate no fewer than five listed contaminants, no later than August 6, 2001, and every 5 years thereafter

To regulate a contaminant, EPA must find that the contaminant has an adverse effect on human health, that it occurs or is likely to occur in public water systems at a frequency and at concentrations of public health concern, and that regulation of the contaminant presents a meaningful opportunity to reduce health risks for those served by public water systems.

The status of the regulations, including the final rules and those that are still being formulated, are discussed below and summarized in Table 9-1. The current national primary drinking water standards, which are those standards related to health, are shown in Table 9-2. EPA considers compliance with secondary standards, which are those standards related to the aesthetic quality of water, to be optional; but, in California, secondary standards are mandatory unless the population served consents otherwise. The California secondary drinking water standards are shown in Table 9-3

Primacy

EPA has delegated primary enforcement responsibility for drinking water program implementation and enforcement to the state of California. To maintain primacy (authority to enforce drinking water regulations) under the SDWA, the state must adopt drinking water regulations at least as stringent as the federal regulations and meet other relevant criteria. State drinking water regulations may be more stringent than the federal regulations, but not less stringent. In California, the California Department of Health Services (CDHS) is the primacy agency for drinking water regulations.

Table 9-1
Status of Drinking Water Regulations

Regulation	Contaminants	Status
Final Rules		
NIPDWR	18 original contaminants	Rule final 1975
Interim Radionuclides	4 additional radionuclides	Rule final 1976
Total Trihalomethanes	Sum of four trihalomethanes	Rule final 1979
Revised Fluoride	Fluoride	Rule final 1986
VOCs (Phase I)	8 VOCs	Rule final 1987
SWTR	Treatment tech. (<i>Giardia</i> and viruses)	Rule final 1989
TCR	Total coliforms, fecal coliforms, <i>E. coli</i>	Rule final 1989
Lead and Copper Rule	Lead, copper	Rule final 1991
SOCs, IOC (Phase II)	36 IOCs, SOCs, and pesticides	MCLs final 1991
SOCs, IOC (Phase IV)	5 IOCs, 18 SOCs	MCLs final 1992
D/DBP Rule Stage 1	Disinfectants, disinfection by-products	Rule final 1998
IESWTR	Treatment Tech. (<i>Cryptosporidium</i>)	Rule final 1998
Radionuclides	Radionuclides (other than Radon)	Rule final 2000
Arsenic ¹	Arsenic	Rule final 2001, new MCL of 10 µg/L effective January 23, 2006
LT1ESWTR	Extends IESWTR to small utilities	Rule final 2001
Filter Backwash Rule	Regulate Filter Backwash recycle	Rule final 2001
Methyl Tertiary Butyl Ether	MTBE	Rule final 2001
Drinking Water Contaminant Candidate List ¹	No less than 5 Contaminants	Decision to regulate in 2001, revised DWCC in 2003 and every 5 years thereafter
Proposed Rules		
LT2ESWTR ¹	Revision of IESWTR to control <i>Cryptosporidium</i>	Proposed August 2003, missed May 2002 SDWA deadline. Final rule expected 2005

Table 9-1
Status of Drinking Water Regulations

Regulation	Contaminants	Status
D/DBP Rule Stage 2 ¹	Revision of D/DBP Rule Stage 1 for distribution system monitoring	Proposed August 2003, missed May 2002 SDWA deadline. Final rule expected 2005
Groundwater Rule ¹	Virus, groundwater disinfection	Proposed May 2000, missed May 2002 SDWA deadline. Final rule expected 2005
Future Rules		
Radon ¹	Radon	Proposed November 1999, EPA has not indicated a final schedule for promulgation
TCR Revisions ¹	Distribution System Issues	Potentially proposed mid-2006, final rule by 2008
Notes		
1. Regulation with potential future impact to GSWC.		

Table 9-2
Current Federal Drinking Water Standards

Parameter	mg/L (except as noted)
Inorganic Contaminants	
	MCL
Antimony	0.006
Arsenic ¹	0.05
Asbestos	7 x 10 ⁶ Fibers/L
Barium	2
Beryllium	0.004
Bromate	0.010
Cadmium	0.005
Chlorite	0.8
Chromium	0.1
Cyanide	0.2
Fluoride	4
Mercury	0.002
Nickel	0.1
Nitrate (as N)	10
Nitrite (as N)	1
Nitrate plus Nitrite (both as N)	10
Selenium	0.05
Thallium	0.002
Inorganic Contaminants	
	Treatment Technique
Copper	1.3 (Action Level)
Lead	0.015 (Action Level)
Organic Contaminants	
	MCL

Table 9-2
Current Federal Drinking Water Standards

Parameter	mg/L (except as noted)
Alachlor	0.002
Benzene	0.005
Benzo (a) pyrene	0.0002
Carbon Tetrachloride	0.005
Carbonfuran	0.04
Chlordane	0.002
2,4-D	0.07
Dalapon	0.2
Di (2-ethylhexyl) adipate	0.4
Di (2-ethylhexyl) phthalate	0.006
1,2-Dibromo-3-chloropropane (DBCP)	0.0002
p-Dichlorobenzene	0.075
o-Dichlorobenzene	0.6
1,2-Dichloroethane	0.005
1,1-Dichloroethylene	0.007
cis-1,2-Dichloroethylene	0.07
trans-1,2-Dichloroethylene	0.1
Dichloromethane	0.005
1,2-Dichloropropane	0.005
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin ^h	0.002
Ethylbenzene	0.7
Ethylene Dibromide	0.00005
Glyphosate	0.7
Haloacetic Acids (sum of 5 [HAA%])	0.060
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.04
Monochlorobenzene	0.1
Oxamyl (vydate)	0.2
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated biphenyls (PCBs)	0.0005
Simazine	0.004
Styrene	0.1
2,3,7,8-TCDD (dioxin)	5 x 10 ⁻⁸

Table 9-2
Current Federal Drinking Water Standards

Parameter	mg/L (except as noted)
Tetrachloroethylene	0.005
Toluene	1
Toxaphene (revised) ^f	0.003
2,4,5-TP (silvex)	0.05
1,2,4-Trichlorobenzene	0.07
1,1,1-Trichloroethane	0.20
1,1,2-Trichloroethane	0.005
Trichloroethylene	0.005
Trihalomethanes (sum of 4 [TTHM])	0.080
Vinyl Chloride	0.002
Xylenes (total)	10
Organic Contaminants	Treatment Technique
Acrylamide	Restrictions in polymer use
Epichlorohydrin	Restrictions in material use
Microorganisms	Standard
<i>Cryptosporidium</i>	Treatment Tech (99% removal/inactivation)
<i>Escherichia coli</i>	Treatment Tech (0 cfu/100 mL)
Fecal Coliforms	Treatment Technique (0 cfu/100 mL)
<i>Giardia lamblia</i>	Treatment Tech (99.9% removal/inactivation)
Heterotrophic Bacteria	Treatment Tech (500 cfu/mL at end of distribution system or measurable chlorine residual)
<i>Legionella</i>	Treatment Tech
Total Coliforms	5% (presence/absence)
Turbidity	Performance Std (0.3 NTU, 95%)
Viruses	Treatment Tech (99.99% removal/inactivation)
Radionuclides	MCL
Beta-particle and photon emitters	4 mrem
Alpha emitters	15 pCi/L
Radium 226 + 228	5 pCi/L
Uranium	0.030
Notes	
1. Arsenic has been proposed at 10 µg/L in the new rule that is currently being reviewed.	

Table 9-3
Current State Secondary Drinking Water Regulations

Parameter	mg/L (except as noted)		
Contaminants	SMCL or SMCL Ranges		
Aluminum	0.2		
Color	15 Color Units		
Copper	1.0		
Corrosivity	Noncorrosive		
Foaming Agents (MBAs)	0.5		
Iron	0.3		
Manganese	0.05		
Methyl tertiary butyl ether (MTBE)	0.005		
Odor	3 Threshold Odor Number		
Silver	0.1		
Thiobencarb (Bolero)	0.001		
Turbidity	5 units		
Zinc	5		
	Recommended	Upper	Short Term
Total Dissolved Solids	500	1,000	1,500
Specific Conductance, micromhos	900	1,600	2,200
Chloride	250	500	600
Sulfate	250	500	600

Total Coliform Rule (TCR)

The TCR is the latest version of one of the oldest drinking water regulations. Coliform bacteria are organisms that have one or more biochemical reactions similar to *Escherichia coli* (*E. coli*). *E. coli* are bacteria that are commonly found in the digestive tract of warm-blooded animals. The total coliform test, then, is a test for bacteria, with similar biochemistry to *E. coli*, but which are capable of growing at 35 degrees Celsius (°C). The total coliform group includes several genera of bacteria belonging to the family Enterobacteriaceae. Some of these bacteria are not pathogenic. Total coliform testing is commonly used in drinking water treatment to determine the effectiveness of source water, treatment, and distribution system barriers to bacterial contamination.

The TCR was promulgated by the EPA in 1989 and DHS enacted its companion TCR that became effective on June 30, 1992. The TCR changed the basic principle of regulating bacterial quality. Instead of having an MCL based on average concentrations, total coliforms are now regulated based on presence/absence. For systems that collect 40 or more samples per month (more than 33,000 of the population) to be in compliance, no more than 5 percent of the samples taken for coliforms in a month can be coliform positive. A sample is considered positive if 1 of the 10 tubes is positive.

Other significant provisions of the TCR are:

- In the event of a coliform-positive sample, the utility must resample that location as well as the nearest upstream and downstream services for coliforms the following day and continue to analyze on consecutive days until either all three samples are negative, or the TCR is violated.
- Coliform-positive samples must be further examined for the presence of fecal coliforms or *E. coli*.
- If two consecutive samples from the same sample point are positive and one of those samples is positive for fecal coliforms, the system is out of compliance for that month.

All distribution system zones must be included in the routine sampling program, and some of the sample locations must be rotated throughout the year.

TCR Potential Revisions and Distribution System Requirements

The 1996 amendments to the SDWA require EPA to review and revise, as appropriate, each national primary drinking water regulation at least every 6 years. EPA published as part of its National Primary Drinking Water Regulation (NPDWR) Review its decision to revise the TCR in July, 2003.

EPA is in the process of reviewing available data and research on distribution system risks. These efforts will result in the review and possible revision of the TCR, as well as the potential for requirements for finished water quality in the distribution system. The potential rule revisions could be proposed in 2006 with the rule final by 2008.

EPA has been working with distribution system experts to compile existing information regarding potential health risks that may be associated with distribution systems in “white papers” on the following nine distribution system issues:

- Intrusion
- Cross-connection control
- Aging infrastructure and corrosion
- Permeation and leaching
- Nitrification
- Biofilms/growth
- Covered storage
- Decay in water quality over time
- New or repaired watermains

EPA is also involved in the development of a series of ten TCR issue papers on the following issues:

- Distribution system indicators of water quality
- The effectiveness of disinfectant residuals in the distribution system
- Analysis of compliance and characterization of violations of the TCR
- Evaluating HACCP strategies for distribution system monitoring, hazard assessment and control
- Inorganic contaminant accumulation in distribution systems

- Distribution system inventory and condition assessment
- Optimization of distribution system monitoring strategies
- Effect of treatment on nutrient availability
- Causes of Total Coliform positive samples and contamination events in distribution systems
- Total Coliform sample invalidation

Distribution system white papers and TCR issue papers are intended to inform EPA and stakeholders of areas of potential TCR revisions and distribution system requirements.

Surface Water Treatment Rules

A series of rules has been or is currently being developed to provide control of microbial contaminants from surface water or groundwater that is under the direct influence of surface water.

The Surface Water Treatment Rule (SWTR)

The SWTR is primarily a microbiological regulation and codified the use of the multiple barrier concept for control of pathogenic organisms. The SWTR became effective in June 1993, and required all but the most pristine water sources to provide filtration of their surface water (or groundwater under the direct influence of surface water). It also required all systems having a surface water source to provide some level of disinfection.

In further defining the physical barrier of filtration, the SWTR reduced the MCL for finished water turbidity from 1 NTU to 0.5 NTUs (95 percent of the monthly samples, measured daily), and set a limit of 5 NTUs on the maximum finished water turbidity.

For disinfection, the SWTR required 99.9 percent (3 logs) for the combination of removal and inactivation of *Giardia* cysts and 99.99 percent (4 logs) for the combination of removal and inactivation of enteric viruses. The SWTR gave credit for 99.7 percent (2½ logs) removal of *Giardia* cysts and 99 percent (2 logs) removal of viruses in a “well-operated” conventional surface water treatment plant. The SWTR, then, required an additional ½-log of inactivation of *Giardia* cysts and an additional 2 logs of inactivation of viruses. Credit for the inactivation (or disinfection) requirements for *Giardia* and viruses was given for chlorine, chloramines, ozone, and chlorine dioxide. The credit was based upon achieving the product of disinfectant concentration and contact time, known as CT. The concentration (C) used was normally the concentration exiting the reactor used for primary disinfection and the time (T) was the time it took for 10 percent of the influent flow to exit the reactor (T₁₀). T₁₀ was to be determined using tracer testing in the plants using different flow rates. Tables of CT required for each of the disinfectants at different temperatures, and in some cases, different pH values were published in the *Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources* (American Water Works Association, Denver, CO, 1991).

As an additional barrier to organisms, the SWTR required that a measurable disinfectant residual be present or heterotrophic plate counts be less than 500 colony-forming units at the farthest ends of the distribution system. The measurable residual was defined as a minimum of 0.2 mg/L of free or combined chlorine.

Cryptosporidium Action Plan

In April 1995, the California DHS adopted a *Cryptosporidium* Action Plan that is intended to facilitate comprehensive compliance with the SWTR. The plan does not include any requirements beyond the existing regulations but, instead, clarifies the existing requirements to optimize the treatment process and reduce the risk of a waterborne illness outbreak. The plan includes six elements:

1. Conduct watershed sanitary surveys
2. Submission of available data to CDHS
3. Review of alternative technologies
4. Prepare operations plan/optimized treatment
5. Prepare reliable removal treatment processes
6. Inform the public

The plan acknowledges that seasonal raw water turbidity and coliform data are a necessary part of any watershed sanitary survey. If cattle, sheep, or other livestock are allowed on a watershed, the survey must identify their location and number as well as steps that are taken to prevent contamination from the animal waste. Measures that will prevent runoff from any animal containment site reaching the water source should also be identified.

As part of the plan, the DHS completed a comprehensive review of the operations by water systems that use an alternative treatment system. The review focused on compliance with the turbidity standard during normal operations and after backwashing or other interruptions in service. It also included a review of the engineering report required 60 days after the first year of operation.

The *Cryptosporidium* Action Plan states that “DHS agrees with and endorses” the American Water Works Association’s (AWWA) goal of 0.1 NTU for effluent turbidity from all surface water treatment plants. The plan recommends that all water systems with a surface water supply “adopt a philosophy of always optimizing their surface water treatment plant operations in a manner designed to achieve the maximum turbidity removal.” CDHS believes that, by striving to meet these goals, water systems will be minimizing their customers’ risk of exposure to pathogens, including *Cryptosporidium*. The plan identifies the following elements that should be included in the operations plan of a system for treatment optimization:

- Including a statement at the beginning of the operations plan stating that it is the goal of the water utility to optimize plant performance and maximize turbidity removal.
- Monitoring all unit processes closely and responding immediately to any malfunction.
- Operating unit processes at hydraulic loading rates to meet optimization goals.
- Establishing procedures to optimize coagulation, flocculation, and sedimentation to enable maximum turbidity removal in the pretreatment units with a turbidity goal of 1 to 2 NTUs in the sedimentation basin effluent at all times. The proper pretreatment chemical and dose should be determined from results of jar tests or particle counters.

- Expanding turbidity monitoring of individual filters on both a continuous basis and intermittent grab samples and, if possible, turbidity monitoring of all sedimentation processes.
- Calibrating turbidimeters frequently.
- Establishing procedures for optimizing filter operations to avoid turbidity spikes after service interruptions and attempting to achieve turbidity values of 0.3 NTU or less after backwash.
- Operating the plant to avoid sudden increases in flow through a filter.
- Optimizing the performance of backwash water recovery systems. Establishing a goal of less than 2.0 NTUs for the reclaimed backwash water and sludge reclamation system effluent.

The *Cryptosporidium* Action Plan states that all water treatment plants should install a continuous turbidity analyzer and chart recorder to monitor the plant effluent. The monitor should be inspected and standardized regularly. Additionally, all water utility systems should be capable of quickly replacing or repairing failed equipment including:

- Filter media and filter underdrains
- Backwash pumps and surface wash systems
- Pretreatment chemical feed and mixing facilities
- Turbidity monitoring units

Finally, the CDHS suggests that water utilities should provide an informational notification to its customers if they do not have a treatment process in place that provides for physical removal of pathogens. Those plants that are hydraulically overloaded or unable to achieve the effluent turbidity goals until improvements are made may also inform the customers of the system.

Interim Enhanced Surface Water Treatment Rule

The two main purposes of the IESWTR are to improve control of microbial pathogens in drinking water, particularly for the protozoan, *Cryptosporidium*, and to guard against significant increases in microbial risk that might otherwise occur when systems implement the Stage 1 D/Disinfectant By-Product (DBP) Rule (discussed below). The IESWTR was finalized in December 1998, but enforcement began in 2002.

Because of the resistance of *Cryptosporidium* oocysts to inactivation by chlorine and chloramine and a lack of data concerning other disinfectants, the IESWTR concentrated its efforts on improving the physical barrier (filtration). This was done by further reducing the MCL for finished water turbidity from 0.5 NTU to 0.3 NTU and the maximum single sample finished water turbidity limit was reduced to 1 NTU. A facility is deemed to be in compliance with the MCL if 95 percent of the daily values per month are at or below 0.3 NTU. Since the limit is 0.3 NTU and not 0.30 NTU, the plant is in compliance as long as the values stay at or below 0.34 NTU. Additionally, individual filter monitoring was required and exception reports to the state are required for:

- Any individual filter with a turbidity level greater than 1.0 NTU based on two consecutive measurements 15 minutes apart, and
- Any individual filter with a turbidity greater than 0.5 NTU at the end of the first 4 hours of filter operation based on the two consecutive measurements 15 minutes apart

Also, if an individual filter turbidity level is greater than 1.0 NTU, based on two consecutive measurements 15 minutes apart at any time in each of 3 consecutive months, the system must provide an exceptions report (within 30 days of the exceedance) and conduct a self-assessment of the filter (according to the EPA guidance for Comprehensive Performance Evaluation). And, if an individual filter has turbidity greater than 2.0 NTU, based on two consecutive measurements 15 minutes apart at any time in each of 2 consecutive months, the system must provide an exceptions report (within 30 days of the exceedance) and arrange for a Comprehensive Performance Evaluation (CPE) by the state or a third party approved by the state.

To guard against an increase in microbial risk due to implementation of the DBP Rule, disinfectant profiling and benchmarking are required. Systems having total trihalomethane (TTHM) concentrations exceeding 0.064 mg/L or total haloacetic acid (HAA5) concentrations exceeding 0.048 mg/L are required to produce disinfectant profiles for 3 years of existing data showing the CT that was actually achieved, divided by the CT required for inactivation of *Giardia* and viruses. If the data do not exist, the system was required to collect 1 year of data by March 16, 2000. The data were analyzed; and the month having the lowest ratio of CT to CT required became the “critical period,” and the average value of the ratio became the “benchmark.” Systems have to consult with the state before changing disinfection practices, which could result in a log inactivation less than the benchmark value.

Long Term 1 Enhanced Surface Water Treatment Rule

The LT1ESWTR extends the IESWTR to systems serving fewer than 10,000 people.

Long Term 2 Enhanced Surface Water Treatment Rule

The LT2ESWTR is also designed to control risk from *Cryptosporidium*. An Agreement in Principle was reached by the Federal Advisory Committee for this rule and the Disinfectant/Disinfection By-Product Rule Stage 2 (discussed below) in August 2003. In this Agreement, the major microbial issues were addressed as follows:

- **Monitoring for Bin Classification.** A two year monitoring program is required for systems serving 10,000 or more people for *Cryptosporidium*, *E. coli*, and turbidity. The water system will be classified into a bin for *Cryptosporidium* risk based upon this monitoring.
- **Action Bins.** Table 9-4 illustrates the bin classification system for *Cryptosporidium* risk.
- **Toolbox.** A toolbox approach was recommended that would receive log-credit given in Table 9-5.
- **Reassessment and Future Monitoring.** Systems that provide a total of 2.5 logs of treatment (99.7 percent) for *Cryptosporidium* in addition to conventional treatment are

exempt from reassessment and future monitoring. Six years after initial bin characterization, another round of monitoring will be held.

- **Unfiltered Systems.** Unfiltered systems must continue to meet filtration avoidance criteria, provide 4-log virus inactivation, 3-log *Giardia* inactivation, and 2-log *Cryptosporidium* inactivation.

Table 9-4

Bin Requirements Table (from Microbial/Disinfection Byproducts [M/DBP] Federal Advisory Committee Stage 2 M-DBP Agreement in Principle)

Bin Number	Average <i>Cryptosporidium</i> Concentration	Additional treatment requirements for systems with conventional treatment that are in full compliance with the IESWTR
1	<i>Cryptosporidium</i> <0.075/L	No Action
2	$0.075/L \leq \textit{Cryptosporidium} < 1.0/L$	1-log treatment (systems may use any technology or combination of technologies from toolbox as long as total credit is at least 1 log)
3	$1.0/L \leq \textit{Cryptosporidium} < 3.0/L$	2.0-log treatment (systems must achieve at least 1-log of the required 2-log treatment using ozone, chlorine dioxide, UV, membranes, bag/cartridge filters, or in-bank filtration)
4	<i>Cryptosporidium</i> $\geq 3.0/L$	2.0-log treatment (systems must achieve at least 1-log of the required 2.5-log treatment using ozone, chlorine dioxide, UV, membranes, bag/cartridge filters, or in-bank filtration)

Disinfectant/Disinfection By-Product Rules

Total Trihalomethanes (TTHM) Rule

The TTHM Rule was the first rule to recognize that a risk of cancer may be connected to the use of chlorine to inactivate pathogenic organisms. The TTHM Rule was effective in 1981.

Chlorine reacts with naturally occurring organic matter (NOM) present in water to form chlorinated organic compounds. Four of these – chloroform, dichlorobromo-methane, dibromochloromethane, and bromoform – were selected to serve as indicators for the cancer risk due to chlorinated disinfection by-products. The MCL for the total of these four compounds was set at 0.1 mg/L. This historic rule changed the manner in which many water plants in the U.S. performed disinfection. Prior to the rule, chlorine was added liberally to raw water to improve plant operations which maximized contact time available through the treatment plant. After this rule took effect, many utilities changed to applying chlorine after much of the NOM had been removed through coagulation, flocculation, and sedimentation. Also, the use of chloramines, which limit the formation of trihalomethanes, was increased as a disinfectant for the distribution system.

Table 9-5

Microbial Toolbox Components (from Microbial/Disinfection Byproducts [M/DBP] Federal Advisory Committee Stage 2 M-DBP Agreement in Principle)

APPROACH	Potential Log Credit			
	0.5	1	2	>2.5
Watershed Control				
Watershed Control Program (1)	X			
Reduction in oocyst concentration (3)		As Measured		
Reduction in viable oocyst concentration (3)		As Measured		
Alternative Source				
Intake Relocation (3)		As Measured		
Change to Alternative Source of Supply (3)		As Measured		
Mgmt. of Intake to Reduce Capture of Oocysts in Source Water (3)		As Measured		
Managing Timing of Withdrawal (3)		As Measured		
Managing Timing of Withdrawal in Water Column (3)		As Measured		
Pretreatment				
Off-Stream Raw Water Storage w/Detention ~ X days (1)	X			
Off-Stream Raw Water Storage w/Detention ~ Y weeks (1)		X		
Presettling Basin w/Coagulant (1)	X	-->		
Lime Softening (1)	----->			
In-Bank Filtration (1)		X	----->	
Improved Treatment				
Lower Finished Water Turbidity (0.15 NTU 95%tile Combined Filter Effluent)	X			
Slow Sand Filters (1)				X
Roughing Filters (1)	X	----->		
Membranes (MF, UF, NF, RO) (1)				X
Bag Filters (1)		X	----->	
Cartridge Filters (1)			X	
Improved Disinfection				
Chlorine Dioxide (2)	X	X		
Ozone (2)	X	X	X	
UV (2)				X
Peer Review/Other Demo./Validation or System Performance				
Peer Review Program (ex. Partnership Phase IV)		X		
Performance Studies demonstrating reliable specific log removals for technologies not listed above. This provision does not supersede other inactivation requirements.		As demonstrated		
Notes				
X indicates potential log credit based on proper design and implementation in accordance with EPA guidance. Arrow indicates estimation of potential log credit based on site-specific or technology-specific demonstration of performance.				
1. Criteria to be specified in guidance to determine allowed credit				
2. Inactivation dependent on dose and source water characteristics				
3. Additional monitoring for <i>Cryptosporidium</i> after this action would determine new bin classification and whether additional treatment is required.				

Disinfectant/Disinfection By-Product (D/DBP) Rule Stage 1

Stage 1 of the D/DBP Rule was enacted to reduce the health risk due to disinfection practice. To accomplish this, the Rule reduced the MCL for TTHM, enacted MCLs for haloacetic acids (HAA5) (Table 9-6), bromate (an ozone by-product), and chlorite (a chlorine dioxide by-product), enacted maximum residual disinfectant levels (MRDLs) for chlorine, chloramines, and chlorine dioxide (Table 9-7), and enacted a treatment technique called “enhanced coagulation” (EC) to limit the amount of unknown by-products that may be formed during chlorination.

Table 9-6
Disinfection By-Product MCLs from Stage 1 of the D/DBP Rule

Compound or Group	MCL, mg/L
Trihalomethanes (TTHM)	0.08
Haloacetic Acids (HAA5)	0.06
Bromate	0.01
Chlorite	1.0

Table 9-7
Disinfectant MRDLs from Stage 1 of the D/DBP Rule

Compound or Group	MCL, mg/L
Chlorine	4.0
Chloramines	4.0
Chlorine Dioxide	0.8

EC defines a requirement for removal of total organic carbon (TOC) in the coagulation, flocculation, sedimentation portion of the conventional treatment plant. A system does not have to implement enhanced coagulation if any of the following are true:

1. Source water TOC is less than 2.0 mg/L.
2. Treated water TOC is less than 2.0 mg/L.
3. Source water TOC < 4.0 mg/L, raw water alkalinity > 60 mg/L as CaCO₃, distribution system TTHM and HAA5 concentrations are less than or equal to 40 mg/L and 30 mg/L, respectively.
4. Distribution system TTHM and HAA5 concentrations are less than or equal to 40 mg/L and 30 mg/L, respectively, and the system uses only free chlorine for disinfection.
5. Source-water-specific ultraviolet absorbance (SUVA) is less than 2.0 L/mg-m. SUVA is calculated by dividing UV absorbance (m⁻¹) at 254 nm by the concentration (mg/L) of dissolved organic carbon (DOC).

6. Treated water SUVA is less than 2.0 L/mg-m.

If none of these conditions are met, Step 1 of EC takes effect. Step 1 establishes targets for additional precursor removals to be achieved based on raw water TOC and alkalinity. These targets are shown in Table 9-8. If a utility can satisfy the TOC percent removals specified in Step 1, the EC criterion for Stage 1 is satisfied.

Table 9-8
Required Removal of TOC by Enhanced Coagulation, Step 1

Source Water TOC mg/L	Source Water Alkalinity , mg/L as CaCO ₃		
	0 to 60	>60 to 120	>120
>2.0 to 4.0	35	25	15
>4.0 to 8.0	45	35	25
>8.0	50	40	30

If a system is unable to meet the Step 1 TOC removal requirements, an alternative percent TOC removal requirement may be selected by Step 2 procedures as follows:

1. Bench or pilot tests are performed in which alum or an equivalent dose of ferric coagulant is added in 10 mg/L increments until the pH is lowered to the target pH value. The target pH values are given in Table 9-9 for varying source water alkalinity.
2. Once the bench or pilot test is complete, the TOC removal (mg/L) is then plotted versus coagulant dose (mg/L).
3. The alternative TOC removal percentage is set at the point on the TOC versus coagulant dose plot where the slope changes from greater than 0.3 mg TOC/L / 10 mg alum/L to less than 0.3/10 and remains less than 0.3/10.

If the TOC removal versus coagulant dose plot does not reach this point of diminishing returns, the water is considered not amenable to enhanced coagulation; and a waiver from the enhanced coagulation requirements must be obtained from the state.

Table 9-9
Target pH Values for Enhanced Coagulation, Step 2 Bench Testing

Raw Water Alkalinity, mg/L as CaCO ₃	Target pH
0 to <60	5.5
60 to <120	6.3
120 to <240	7.0
240	7.5

D/DBP Rule Stage 2

Stage 2 of the D/DBP Rule is designed to reduce DBP occurrence peaks in the distribution system. An Agreement in Principle was reached by the Federal Advisory Committee for this rule and the Long Term 2 Enhanced Surface Water Treatment Rule (discussed above) in August 2003. This rule is expected to be finalized in 2005. In this Agreement, the major DBP issues were addressed as follows:

- Compliance monitoring will be preceded by an initial distribution system monitoring study to select optimal sampling points for capturing peaks.
- Compliance with each MCL (TTHM and HAA5) will be determined based upon a Locational Running Annual Average (a running annual average calculated at each sample location).
- Systems will comply with the Stage 2 D/DBP Rule in two phases—3 years after promulgation all systems must comply with a 120- $\mu\text{g}/\text{L}$ TTHM / 100- $\mu\text{g}/\text{L}$ HAA5 locational running annual average based on Stage 1 monitoring sites and continue to comply with the 80- $\mu\text{g}/\text{L}$ TTHM / 60- $\mu\text{g}/\text{L}$ HAA5 system running annual average from Stage 1.
- Six years after rule promulgation (with an additional 2-year extension available for systems requiring capital improvements) large and medium systems must comply with an 80- $\mu\text{g}/\text{L}$ TTHM / 60- $\mu\text{g}/\text{L}$ HAA5 based upon the new sample sites identified in the initial distribution system monitoring described above.
- Small systems must comply with the 80- $\mu\text{g}/\text{L}$ TTHM / 60- $\mu\text{g}/\text{L}$ HAA5 locational running annual average in either 7.5 or 8.5 years (with an additional 2-year extension available for systems requiring capital improvements) depending upon whether the system is required to do *Cryptosporidium* monitoring as part of the LT2ESWTR.
- The bromate MCL will remain at 0.010 mg/L. EPA commits to review the bromate MCL as part of the 6-year review to determine whether the bromate MCL should be reduced to 0.005-mg/L or a lower concentration.

Volatile Organic, Synthetic Organic and Inorganic Chemical Rules

Volatile Organic Chemicals Rule

The Phase I Volatile Organic Chemicals (VOCs) Rule established MCLGs and MCLs for eight VOCs. The rule was promulgated in July 1987 and became effective in January 1989. All public water systems (PWS) were required to complete initial VOC monitoring by December 1991. Monitoring requirements include sampling at each entry point to the distribution system. If no VOCs were detected during the initial monitoring, repeat monitoring is required every three to five years, depending on the vulnerability of the source. If VOCs are detected, quarterly samples must be analyzed. Compliance requires that VOC levels be lower than the MCLs, based on the annual average of quarterly samples.

The Phase I VOC Rule also required monitoring of 51 additional unregulated VOCs. All systems were required to complete the initial monitoring for these contaminants by December 1991. Repeat monitoring is required every five years; however, USEPA revises

the list of unregulated contaminants thereby changing the constituents to be monitored. Monitoring requirements for Phase I contaminants were revised in the Phase II Synthetic Organic Chemicals and Inorganic Chemicals Rule (Phase II SOC/IOC Rule) to conform with the standardized monitoring.

The Phase IIA Fluoride Rule applies to all public water systems. The rule was finalized in April 1986 and became effective in October 1987. The primary purpose of the Phase IIA Fluoride Rule was to protect the public from crippling skeletal fluorosis. The rule established an MCLG and MCL for fluoride at 4 mg/L. A secondary contaminant level (SMCL) of 2 mg/L was established to protect against dental fluorosis. Monitoring of fluoride concentration is required yearly for surface water sources and every three years for groundwater sources. For systems practicing fluoridation, daily monitoring of fluoride at the entrance to the distribution system is recommended.

Phase II Synthetic Organic Chemicals and Inorganic Chemicals Rule

The Phase II SOC/IOC Rule applies to all public water systems. The rule was promulgated in June 1991 (33 contaminants) and July 1991 (5 contaminants). This rule established MCLs and treatment techniques for 38 contaminants. Monitoring for the Phase II contaminants occurs in a standardized 3 year cycle, which began in January 1993. Compliance with the Phase II MCLs is based on the average of quarterly samples.

Phase V Synthetic Organic Chemicals and Inorganic Chemicals Rule

The Phase V Rule was promulgated in July 1992 and set MCLGs and MCLs for 23 contaminants. Compliance monitoring for these contaminants follows the same standardized monitoring framework introduced with the Phase II rule. Some of the Phase V contaminants were previously on the unregulated contaminants monitoring (UCM) lists under other rules. To eliminate duplication, these contaminants were withdrawn from the UCM lists.

Groundwater Rule

The EPA is currently in the process of developing the Groundwater Rule (GWR), formerly known as the Groundwater Disinfection Rule. The rule name was changed to reflect a more holistic regulatory approach to addressing ground water issues. The rule applies to public ground water systems and to systems that mix surface water and ground water if the ground water is added directly to the distribution system and provided to consumers without treatment. This includes untreated stand-alone ground water wells and untreated ground water plants that have their own entry points to the distribution system as well as untreated groundwater blended with treated surface water prior to the entry point to the distribution system. Treatment in this case is defined as 4-log inactivation/removal of viruses.

The proposed Groundwater Rule was published in the Federal Register on May 10, 2000. The final rule is expected in late 2005. Specific requirements proposed in the rule include:

1. System sanitary surveys conducted by the state and identification of significant deficiencies.
2. Hydrogeologic sensitivity assessments for undisinfected systems.

3. Source water microbial monitoring by systems that do not disinfect and draw from hydrogeologically sensitive aquifers or have detected fecal indicators within the system's distribution system.
4. Corrective action by any system with significant deficiencies or positive microbial samples indicating fecal contamination.
5. Compliance monitoring for systems which disinfect to ensure that they reliably achieve 4-log inactivation or removal of viruses.

EPA missed the May 2002 deadline to promulgate, and the final rule was expected in early 2005, but was withdrawn for further review. The schedule for the release of the final GWR is uncertain at this time.

Filter Backwash Rule

The Filter Backwash Rule is a regulation for filtered surface water supplies that recycle some or all of filter backwash into the plant. The purpose of the rule is to require systems to review their recycle practices and, where appropriate, work with the State to make any necessary changes to current practices that may compromise microbial control. The proposed rule was published in April 2000, with the final rule promulgated in April 2001. It will apply to all systems that use filter recycle streams. The final rule contained the following key provisions:

- Return of all recycle-flows prior to the point of the primary coagulant addition.
- Direct filtration plants to provide information to the state on their current recycle practice.
- A requirement for systems meeting criteria to perform a one-time self assessment of their recycle practice and consult with their primacy agency to address and correct high risk recycle operations.

The first element would require that all systems using surface water or groundwater under the direct influence of surface water return all recycle flows to the process prior to the point of the primary coagulant addition. Waivers to this requirement would be available from state primacy agencies for unique treatment conditions.

The second element would require all direct filtration plants to report to the state primacy agency whether flow equalization or treatment is provided for recycle flow prior to its return to the treatment process. The state would use that information to determine the plants that need to change their current recycle practice in order to provide additional public health protection.

The third element would require that all plants using 20 or fewer filters and directly recycling flows to the treatment process without any form of treatment on the recycle flow complete a self-assessment. The self-assessment would be used to determine the effect of untreated recycle flows to the plant process. The State primacy agency would use the results of the self-assessment to determine the appropriate level of treatment of recycle flows.

Systems were to notify the State of their recycle practices by October 2003, modify their recycle return location as required by June 2004, and complete the necessary capital improvements to comply with all rule requirements by June 2006.

Lead and Copper Rule

The Lead and Copper Rule was promulgated in June 1991 and went into effect in December 1992, with minor revisions released in April 2000. The rule applies to all community and non-transient non-community water systems. The rule developed MCLGs and action levels for both lead and copper in drinking water. The major difference between this regulation and most others is that the water is to be monitored at the customer's tap, not the treatment plant discharge point. Lead and copper must be monitored at the customer's taps every 6 months and twice each calendar year at the highest risk locations. The highest risk locations are defined as:

- Piping with lead solder installed after 1982,
- Lead water service lines,
- Lead interior piping.

For compliance, the samples at the customer's tap must not exceed the following action levels:

- Lead concentration of 0.015 mg/L detected in the 90th percentile of all samples.
- Copper concentration of 1.3 mg/L detected in the 90th percentile of all samples.

If action levels are exceeded, water systems must collect source water samples and submit all data to the state with a treatment recommendation to reduce concentrations below the action level. In addition, the water system must also provide a public education program to its customers within 60 days of the action level exceedance. The education program must be continued until the samples are found to be below the lead action levels.

All water systems that exceed the lead or copper action levels are also required to conduct a corrosion control study. Corrosion control studies must compare the effectiveness of pH and alkalinity adjustment, calcium adjustment, and addition of a phosphate or silica-based corrosion inhibitor. Large and medium systems are also required to monitor many other water quality parameters at the plant discharge and customer's tap.

After a corrosion control study is completed, a water system must develop a corrosion control program and submit it for approval to the primacy agency. Once approval of the plans is received, water systems have 24 months to install and implement the treatment methods for corrosion control and 12 additional months to collect follow-up samples. After this time, the water system must comply with the action levels for both lead and copper.

In 2000, minor revisions to the lead and copper rule were promulgated to streamline requirements and reduce some burdens on water systems. No changes to the MCLs or the MCLGs were made. Small changes were made to reduce the frequency of monitoring for systems with low lead and copper tap levels and to update the analytical methods used for compliance. Further revisions to the lead and copper rule are expected to be proposed in late 2005, but no information as to what will be included in the potential revisions to the rule has been released.

Arsenic Rule

The original arsenic MCL of 50µg/L was set by the EPA in 1975 based on Public Health Service Standard originally published in 1942. A new proposed Arsenic Rule was released in June 2000. The EPA was originally under a court-imposed deadline to promulgate this rule by November 1992. However, the EPA has received extensions to examine health effects and occurrence data. EPA succeeded in finalizing the Arsenic Rule on January 16, 2001, during the final days of the Clinton administration. The final rule was published in the Federal Register on January 22, 2001 and became effective on February 22, 2002.

The following is a summary of the major provisions and requirements of the rule:

- A MCLG for arsenic in drinking water is set at zero.
- The MCL for arsenic is revised from 50 µg/L down to 10 µg/L by January 23, 2006.
- Beginning with Consumer Confidence Reports (CCRs) due by July 1, 2002, all community water systems (CWSs) will begin providing health information and arsenic concentrations in the annual reports for water that exceeds 5 µg/L (one half of the MCL).
- Both CWSs and non-transient non-community water systems (NTNCWSs) are required to meet the revised arsenic standard.
- Two compliance requirements for inorganic contaminants (IOCs), volatile organic contaminants (VOCs), and synthetic organic contaminants (SOCs). Specifically, when a system fails to collect the required number of samples, compliance averages will be based on the actual number of samples collected. Also, new public water systems and systems using new sources of water must demonstrate compliance within state-specified time and sampling frequencies. These provisions apply to arsenic.

All CWSs and NTNCWSs that exceed the MCL of 10µg/L are required to come into compliance 5 years after the publication of the final rule.

Radionuclide Rule

The original Radionuclide Rule was proposed in July 1991, but court action delayed its final promulgation. The final Radionuclides Rule was published in the Federal Register on December 7, 2000. The rule became effective in December 2003. New monitoring requirements have been phased-in the publication date of the final rule and the beginning of the next Standardized Monitoring Framework period on December 31, 2007. "Phased-in monitoring" refers to the fact that States will require some fraction of water systems to complete their initial monitoring requirements each year of the period between the effective date (December 8, 2003) and the beginning of the new cycle (December 31, 2007). Water systems will determine initial compliance under the new monitoring requirements using the average of four quarterly samples or, at state discretion, using appropriate grandfathered data. Compliance will be determined immediately based on the annual average of the quarterly samples for that fraction of systems required by the state to monitor in any given year or based on the results from the grandfathered data. Water systems with existing

radionuclides monitoring data demonstrating that the system is out of compliance with new provisions will be out of compliance on the effective date of December 8, 2003.

In the final rule, EPA set the MCL for uranium at 30 μ g/L, using its authority under the SDWA for the first time to set a standard at a higher than the feasible level based on cost-benefit considerations. The standard for combined radium-226/228 remains at 5 picoCuries per liter (pCi/L). However, the rule requires improved monitoring for radium. The final rule retains the interim standards for gross alpha particles at 15 pCi/L and for beta and photon emitters at 4 millirems (mrem).

A summary of the final Radionuclides Rule is provided below. Table 9-10 also lists the existing (1979) and the revised MCLs of the final Radionuclide Rule.

- Affected Systems: Community Water Systems (CWSs); non-CWSs, including transient and non-transient, are exempt.
- MCL Goals (MCLGs) for radionuclides: MCLGs of zero; includes combined radium-226/228; gross alpha, beta particle and photon radioactivity, and uranium
- Radium MCL: Combined Ra-226 and Ra-228 MCL of 5 pCi/L; based on new risk levels.
- Beta/Photon Radioactivity MCL:
 - ≤ 4 mrem/yr to the total body or any given internal organ except for H-3 and Sr-90
 - H-3 = 20,000 pCi/L; Sr-90 = 8 pCi/L
 - Total dose from co-occurring beta/photon emitters must be ≤ 4 mrem/yr to the total body of any internal organ;
 - This MCL will be reviewed within 2 to 3 years based on a need for further re-evaluation of the risk management issues.
- Gross alpha MCL: 15 pCi/L excluding uranium and radon, but including Ra-226; maintain current MCL.
- Uranium MCL: 30 μ g/L; new MCL.
- Polonium-210: Part of gross alpha; monitoring required under the UCMR rule; further action may be proposed at a later date.
- Lead-210: Not regulated; monitoring required under the UCMR rule; further action may be proposed at a later date.

Register in March 1998 and included 60 contaminants under consideration for regulation. A second version of the CCL was published in February 2005. The second version of the CCL carries forward 51 of the original 60 unregulated contaminants from the first version of the CCL. The CCL includes both microbiological and chemical contaminants. The CCL published in February 2005 includes 42 chemical contaminants and 9 microbiological contaminants/contaminant groups. Table 9-11 lists the contaminants published in the CCL in February 2005.

Contaminants included in the CCL are studied to develop analytical methods for detecting the contaminants, determine whether they occur in drinking water, and evaluate treatment technologies to remove them from drinking water. In addition, the health effects of the contaminants are studied to help determine if actions such as drinking water guidance, health advisories, or regulation need to be developed. The CCL alone does not impose any requirements on public water system.

Table 9-11
Contaminant Candidate List (CCL)

Microbiological Contaminants

Adenoviruses
Aeromonas hydrophila
Caliciviruses
Coxsackieviruses
Cyanobacteria (blue-green algae), other freshwater algae, and their toxins
Echoviruses
Helicobacter pylori
Microsporidia (Enterocytozoon & Septata)
Mycobacterium avium intracellulare (MAC)

Chemical Contaminants

1,2,2,2-tetrachloroethane
1,2,4-trimethylbenzene
1,1-dichloroethane
1,1-dichloropropene
1,2-diphenylhydrazine
1,3-dichloropropane
1,3-dichloropropene
2,4,6-trichlorophenol
2,2-dichloropropane
2,4-dichlorophenol
2,4-dinitrophenol

Table 9-11
Contaminant Candidate List (CCL)

2,4-dinitrotoluene
2,6-dinitrotoluene
2-methyl-Phenol (o-cresol)
Acetochlor
Alachlor ESA & other acetanilide pesticide degradation products
Aluminum
Boron
Bromobenzene
DCPA mono-acid degradate
DCPA di-acid degradate
DDE
Diazinon
Disulfoton
Diuron
EPTC (s-ethyl-dipropylthiocarbamate)
Fonofos
p-Isopropyltoluene (p-cymene)
Linuron
Methyl bromide
Methyl-t-butyl ether (MTBE)
Metolachlor
Molinate
Nitrobenzene
Organotins
Perchlorate
Prometon
RDX
Terbacil
Terbufos
Triazines and degradation products of triazines (including, but not limited to Cyanazine, and atrazine-desethyl)
Vanadium

Water Quality Issues

Surface Water Quality

Surface water is supplied to the water system from the Contra Costa Canal, owned and operated by the Contra Costa Water District (CCWD). The canal is supplied water from the Sacramento/San Joaquin Delta through three intake locations; from Rock Slough near Oakley, Old River near Discovery Bay, and Mallard Slough near Pittsburg. Water can also be stored from the Old River intake in the off-stream Los Vaqueros Reservoir.

Water quality fluctuates throughout the year and from year to year at each of the three intake locations and Los Vaqueros Reservoir. The variation in water quality of the canal water is partially compensated for by selecting or changing the flow rates of these four water sources into the canal. A partial list of constituents and their variation since January 2000 in the raw surface water supply affecting treatment operations for the water system are provided in Table 9-12.

Table 9-12
Contra Costa Canal Water Quality Parameter Variations (January 2000 to Present)

Constituent	Units	Range
Alkalinity	mg/L	61 - 120
Turbidity	NTU	2.0 – 18.5
TOC	mg/L	2.6 – 4.5
TDS	mg/L	120 – 450
EC	umhos/cm	180 – 600
Chlorides	mg/L	12 - 88

CCWD has an extensive monitoring program covering various aspects of the canal operation. The program helps assure early detection of possible water quality issues and constituents of concern. These constituents include pathogens and disinfection byproducts. According to the May 2002 CCWD Watershed Sanitary Survey, potential contamination sources to the canal water supplies included the following:

- Agricultural drainage near the Old River and Rock Slough intakes,
- Industrial NPDES permit holder discharges,
- Landfills and hazardous waste sites in the watershed study area,
- Grazing activity near Rock Slough,
- Influences of the Ironhouse Sanitation District near Pumping Plant #1,
- Urban runoff into the canal

Historical data has not identified any chronic problems with contamination to date. However, increased development is expected within the watershed and may lead to

increased urban runoff. CCWD continues to monitor the canal water supplies and evaluates for potential problems. This includes working with the Ironhouse SD to determine potential corrective measures of impacts to the canal, review of CEQA and NPDES documents to identify potential new sources of watershed contaminants, explore possible relocation of agricultural drain outfalls to mitigate their impacts on the Old River and Rock Slough intakes, mitigate storm water and urban runoff away from the canal, limit grazing in District controlled watershed lands, and limit body contact recreation in all water supply reservoirs.

Conventional treatment methods are used by the water system's Hill Street Water Treatment Plant to treat the raw water supply from the Contra Costa Canal. These methods consist of coagulation, flocculation, sedimentation, filtration, and disinfection unit processes. Water produced by the plant consistently meets drinking water standards under the current regulations. This could change with the lowering of the future TTHM limits set in the Stage 2 D-DBP Rule., or with adoption of limits set for constituents listed on the Contaminant Candidate List. Treatment modifications are being planned for the filtered water at the Hill Street Treatment Plant to reduce the precursors which form TTHMs prior to the implementation of the Stage 2 D-DBP Rule. Other future chemical contaminant regulations for disinfection by-products, endocrine disrupters, and pharmaceutical chemicals entering the surface water supply, have been discussed but are unknown at this time.

The water system is also served treated surface water through an inter-tie with the CCWD. This water also originates from the Contra Costa Canal and is treated by the CCWD using similar treatment unit processes, with the addition of ozone for disinfection. The surface water source is supplied to the water system at a constant rate of 40 gpm, and can be increased to 1,400 gpm during short emergency periods.

Groundwater Quality

In addition to a surface water supply, the water system is supplied ground water from three wells. All three well water supplies meet primary drinking water standards. However, one of the wells has elevated nitrate levels and occasionally exceeds the recommended secondary drinking water standards. Nitrate level for this well water is above the trigger level of 22.5 mg/L but below the primary drinking waters standard of 45 mg/L. Water from this well is discharged directly into the distribution system without treatment, other than disinfection with free chlorine. The remaining two well water supplies are blended with the filtered surface water supply at a ratio of at least 10:1. The blending action reduces the concentration of secondary drinking water constituents to below the secondary drinking water standards. The raw groundwater supply from these wells occasionally exceeds the secondary drinking water levels as follows:

- Well #1 raw groundwater occasionally exceeds the recommended secondary MCL for sulfate, total dissolved solids (TDS), and specific conductance (EC) prior to blending.
- Well #2 occasionally exceeds the secondary MCL for Aluminum and the recommended secondary MCL for sulfate, TDS, and EC prior to blending.
- Well #3 occasionally exceeds the recommended secondary MCL for TDS and EC.

The ranges for these constituents since 2000 are listed in Table 9-13 below.

Table 9-13
Bay Point System – Range for Secondary MCL Constituents

Constituent	SMCL	Units	Well #1	Well #2	Well #3
Aluminum	200	µg/l	< 50	< 50	< 50
Sulfate	250	mg/L	350	440	73
TDS	500	mg/L	930-1000	1000-1200	680
EC	900	umhos/cm	1400-1600	1600-1800	1000-1100
Cl	250	mg/L	150	150	110

Although unregulated, boron is a contaminant being monitored in the three wells and has been found to exceed the CDHS Notification Level of 1.0 mg/L in Well #1 and #2. Due to the blending of these water sources with the filtered surface water supply, boron levels in the blended water supply remain below the Notification Level.

Table 9-14 summarizes water quality issues and recommendations for the wells within the water system.

Table 9-14
Summary of Assessment

Well	Capacity (gpm)	Status	Water Quality Issue/Concern	Existing Treatment	Recommendations
Well #1	100	Active	Sulfate, TDS, EC, Boron	Blended with Filtered Surface Water	Continue to Monitor
Well #2	60	Active	Sulfate, TDS, EC, Boron	Blended with Filtered Surface Water	Continue to Monitor
Well #3	30	Active	Nitrate, TDS, EC, Boron	None	Develop a controlled blend plan

Projected Impact of Water Quality

Impacts to the water supplies of the water system due to water quality issues may be insignificant relative to the known and proposed drinking water regulations. Of the proposed rules, only the Stage 2 D-DBP rule will have an impact on the unit processes used currently to treat the surface water supply from the Contra Costa Canal. With the lowering of the DBP levels at site specific locations throughout the water system's treated distribution system brought about by the ruling, additional treatment of the filtered water at the Hill Street Treatment Plant will be necessary to remove the precursors which develop into THMs. Treatment options to provide the precursor removals are being planned by the water system at this time. No change in the quantity of delivered surface water is projected due to water quality issues.

Groundwater sources do not appear to be impacted by known or proposed drinking water regulations as they relate to water quality issues. The Groundwater Rule is not expected to impact the groundwater supply to the water system.

The limited sources of water supply to the water system are not viewed to change in either quality or supply in the projected future. This is summarized in Table 9-15 below:

Table 9-15
Summary of Projected Water Supply Changes Due to Water Quality Issues

Water Source	2005	2010	2015	2020	2025	2030
Surface Water – Contra Costa Canal Projected Change (percent)	0	0	0	0	0	0
Surface Water – Treated CCWD Projected Change (percent)	0	0	0	0	0	0
Groundwater – (total of 3 wells) Projected Change (percent)	0	0	0	0	0	0

Notes

1. Table format based on DWR Guidance Document Table 39

Distribution System Water Quality

Distribution system water quality monitoring is performed for several water quality parameters in the Bay Point System, including general physical parameters, presence of coliform bacteria, disinfectants and disinfection by-product levels, and corrosivity of the water by monitoring lead and copper levels at customers' water taps. All monitoring parameters and levels currently meet drinking water standards. The ability to continue to meet these standards is not expected to change in the foreseeable future, with the exception of disinfection byproducts. Drinking water standard levels for disinfection by-products will be lowering in the future in accordance with the Stage 2 D-DBP Rule. A treatment process is being planned by the water system as previously discussed, and will be added to the filtered surface water supply to reduce the precursors which eventually develop into disinfection byproducts in the distribution system.

Emerging Water Quality Issues

The California Legislature required the CDHS to adopt a new drinking water standard for arsenic by June 30, 2004. In advance of the requirement, the Office of Environmental Health Hazard Assessment (OEHHA) set a public health goal for arsenic at 0.004 µg/L. This is based on lung and urinary bladder cancer risk. Monitoring results from drinking water sources throughout the state reflect its natural occurrence. They also show that considerably more sources have arsenic detections above the federal 10µg/L MCL compared to the current MCL of 50 µg/L. Arsenic levels in the water system's water sources range from less than 2.0 to 4.7µg/L. The CDHS continue to assess where they will set the new state MCL for arsenic MCL.

In 2000, there was significant interest in the detection and possible health effects of chromium +6 in drinking water supplies throughout the state. In 2001, the OEHHA withdrew their previously established Public Health Goal (risk assessment level) of 2.5µg/L for total chromium. The current MCL enforced by the CDHS is 50µg/L for total chromium, and OEEHA is in the process of establishing a specific Public Health Goal for chromium +6. The water system initiated sampling of all its water sources for total chromium and chromium +6 in 2001. Total Chromium and chromium +6 ranged from less than 10 to 11µg/L and from less than 1 to 7.9µg/L, respectively. Total chromium and chromium +6 were non-detectable in the raw surface water source.

Source water protection is important for all of California. The CDHS requires large water systems supplying surface water to complete a watershed Sanitary Survey every five years to examine possible sources of drinking water contamination. The last Survey, performed by CCWD in May 2002 did not identify any persistent constituents requiring additional treatment processes at the time. Since the surface water supply for the water system is taken from the lowest end of the San Joaquin Valley's natural drainage system, prior to the water entering the San Francisco Bay, the surface water has the potential to be exposed to numerous activities within the broad area of the watershed, including the direct and indirect effects from urban and industrial development, recreational activities, and changes in agricultural practices. Stewardship projects in the watershed are being formulated and implemented to reduce these potential concerns to the water system's surface water supply.

A similar requirement from the USEPA called for all utilities to complete a Source Water Assessment for all water sources. The water system completed the Assessments in August 2000. The ground water sources are considered most vulnerable to possible contaminating activities associated with dry cleaners, storm drain discharge points, transportation corridors, high density housing, other water supply wells, and drinking water treatment plants. Contaminants associated with these activities have not been detected in the water supply.

Until recently, MTBE was the primary oxygenate in virtually all gasoline used in California. It was introduced to surface water bodies from motor exhaust of recreational watercraft, and into groundwater supplies by leaking underground storage tanks. The CDHS adopted a primary MCL of 13µg/L for MTBE based on carcinogenicity studies in animals. They also established a secondary MCL for MTBE at 5µg/L, based upon taste and odor concerns. MTBE has been non-detectable in all water sources serving the water system to date. However, this could change in time as known leaking storage tanks and other MTBE plumes find their way into the water system's well water supply. According to the 2000 Drinking Water Source Assessment for the water system, all three well water sources were not within the sphere of influence of known leaky underground storage tanks, gasoline service stations, auto repair shops, or petroleum pipelines.

The change in the national and international security situation has led to an increased concern about the ability to protect the nation's water supply. In coordination with its parent company, the water system added new security measures in 2001 and continues to upgrade and refine procedures. Changes have included added surveillance equipment, increases in water quality tests, as well as developing contingency plans that coordinate with the Homeland Security Office's multicolored tiered risk alert system.

Chapter 10. Water Service Reliability

Section 10635 of the Act requires that an assessment of water service reliability for various climatic conditions be undertaken. The Act states:

Section 10635

- (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.*
- (b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.*
- (c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.*
- (d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.*

This chapter provides a water supply and demand assessment for the Bay Point System for a normal year, a single-dry year, and multiple-dry years. The following is a summary of the water supply sources and reliability of those sources for the Bay Point System. The details of water supply sources and the reliability of these supplies are provided in Chapter 3. Water demand projections are documented in Chapter 4.

The Bay Point System gets its water supply from local groundwater and imported water from CCWD. Purchased water from CCWD makes up between 92 and 94 percent of the available supply, whereas the remainder is ground water supplies. Due to these different sources of supplies, conditions in local and distant areas can impact the reliability of supplies.

CCWD expects to be 100 percent reliable during normal years for the next twenty-five years. However, CCWD anticipates shortages in supply during multiple-dry years. CCWD estimates that at least 85 percent of demand will be met in a second or third dry year during multiple dry-years. The remaining 15 percent would be met by short-term water purchases and a voluntary short-term conservation program.

CCWD has taken steps to identify improvements that will support the reliability of their water source. These efforts are described in the Future Water Supply Study (FWSS) as adopted by the CCWD Board of Directors. The FWSS was updated in 2002. The FWSS includes a Preferred Alternative that provides drought reliability and operational flexibility in the short-term while maintaining long-term supply targets to meet projected demands.

This preferred alternative includes, a) Re-negotiation of the CCWD's existing Central Valley Project (CVP) Amendatory contract (I75r-3401), b) implementation of expanded District wide conservation program, which would achieve a target of at least 5 percent District-wide savings by the year 2040, and c) potentially two or more water transfers that would strengthen the reliability of supplies and provide drought protection for existing customers and bridge the gap between water supplies and projected demands. The water supply reliability goal adopted as part of the FWSS under CVP is to provide 100 percent of demand in normal years and minimum of 85 percent of demand in the second and third years of a multiple dry-year period. Up to 15 percent of demand during an extended drought may be met with short-term water transfers or demand management (CCWD 2005).

Water transfers are identified in the FWSS as a preferred means of strengthening drought protection for existing customers and meeting supply shortfalls. The purchase of water transfers would follow an incrementally stepped approach, triggered by increases in demand as a result of approved growth within the Contra Costa County and cities within CCWD. Long and short-term transfers and exchange opportunities are available to CCWD. The February 2000 Agreement with East Contra Costa Irrigation District (ECCID) to transfer surplus irrigation water was the first long-term water transfer for CCWD. Currently, up to 9,700ac-ft/yr (5,700 ac-ft in normal years and 9,700 ac-ft in CVP shortage years) is available under the agreement. In the future, this agreement will provide up to 12,200ac-ft/yr (8,200 ac-ft in normal years and up to 12,200 ac-ft in CVP shortage years). The water transfer opportunities evaluated by CCWD include: conjunctive use, groundwater banking, lease/purchase water rights and remarket surplus supplies, co-invest in agricultural conservation, and fallowing or crop shifting option contract.

CCWD also has experience in implementing short-term water transfers. The goal of the short-term transfer program was to establish relationships with sellers, work through the various institutional issues associated with transfers before a serious water shortage occurs, and to develop water transfer agreements that would allow CCWD to purchase water in shortage years. In addition, if required CCWD would pursue additional short-term water transfers directly from agricultural districts (in Northern California), who participate in the spot market each year.

In addition to the water transfers and purchases, water recycling is a component of CCWD's long-term sustainable water supply strategy. The recycled water would be used for various purposes including urban landscaping and golf course irrigation and for industrial uses. CCWD will continue to work with local wastewater agencies to implement recycled water projects that are financially viable, provide beneficial use and are consistent with appropriate legal, public health and environmental requirements (CCWD, 2005).

Historically, GSWC's Bay Point System has reliably produced approximately 220ac-ft/yr to 550 ac-ft/yr of groundwater. Based on the Basin's reliability, GSWC's groundwater supply for the Bay Point System is expected to continue to be 100 percent reliable.

The following sections present the normal water year, single-dry year, multiple-dry year water supply and demand assessments.

Normal Water Year Analysis

Table 10-1 provides the projected water supply from groundwater and imported water in normal water years (see Chapter 3 for details).

Table 10-1
Projected Normal Water Year Supply

	2010	2015	2020	2025	2030
Total Water Supply	3,076	3,445	3,704	3,909	4,119
Percent of Year 2005	105	118	127	134	141
Notes					
1. Table format based on DWR Guidance Document Table 40					

Table 10-2 provides water demand projections in normal water years (see Chapter 4 for details).

Table 10-2
Summary of Projected Normal Water Year Demands

	2010	2015	2020	2025	2030
Total Water Demand	3,076	3,445	3,704	3,909	4,119
Percent of Year 2005	105	118	127	134	141
Notes					
1. Table format based on DWR Guidance Document Table 41					

Table 10-3 summarizes the service reliability assessment for a normal water year based on water supply and water demand projections. As described in Chapter 3, imported water provided by CCWD, and local groundwater from the Pittsburg Plain Groundwater Basin are expected to be 100 percent reliable to meet the projected demands during normal water year conditions through 2030.

Table 10-3
Comparison of Projected Normal Year Supply and Demand

	2010	2015	2020	2025	2030
Water Supply Total (ac-ft/yr)	3,076	3,445	3,704	3,909	4,119
Water Demand Total (ac-ft/yr)	3,076	3,445	3,704	3,909	4,119
Difference (supply minus demand)	0	0	0	0	0
Difference as Percent of Supply	0	0	0	0	0
Difference as Percent of Demand	0	0	0	0	0
Notes					
1. Table format based on DWR Guidance Document Table 42					

Single Dry-Year Analysis

Table 10-4 presents projected single-dry year water supplies to meet the projected demands.

Table 10-4
Projected Single-Dry Year Water Supply

	Supply (ac-ft/yr)				
	2010	2015	2020	2025	2030
Water Supply	3,076	3,445	3,704	3,909	4,119
Percent of Year 2005	105	118	127	134	141
Notes					
1. Table format based on DWR Guidance Document Table 43					

Table 10-5 provides projected single-dry year water demand. It is assumed that the single-dry year demands are the same as those water demands projected for the normal years.

Table 10-5
Summary of Projected Single-Dry Year Demands

	Demand (ac-ft/yr)				
	2010	2015	2020	2025	2030
Water Demand	3,076	3,445	3,704	3,909	4,119
Percent of Year 2005	105	118	127	134	141
Notes					
1. Table format based on DWR Guidance Document Table 44					

Table 10-6 demonstrates the reliability of water supplies to meet projected annual water demands for the Bay Point System in a single-dry year. As described in Chapter 3, imported water provided by CCWD, and local groundwater from the Pittsburg Plain Groundwater Basin are expected to be 100 percent reliable to meet the projected demands in a single dry-year through 2030.

Table 10-6
Comparison of Projected Supply and Demand for Single Dry Year

	2010	2015	2020	2025	2030
Supply Total (ac-ft/yr)	3,076	3,445	3,704	3,909	4,119
Demand Total (ac-ft/yr)	3,076	3,445	3,704	3,909	4,119
Difference (supply minus demand)	0	0	0	0	0
Difference as Percent of Supply	0	0	0	0	0
Difference as Percent of Demand	0	0	0	0	0
Notes					
1. Table format based on DWR Guidance Document Table 45					

Multiple Dry-Year Analysis

CCWD does not anticipate any water supply deficits in normal year, single-dry year, and the first year of the 3-year multiple-dry year period. CCWD estimates that at least 85 percent of demand will be met in a second or third dry year during multiple dry-years. The remaining 15 percent would be met by short-term water purchases and a voluntary short-term conservation program (with a request for up to 5 and 15 percent in the second and third years of a multiple dry-year period, respectively).

Table 10-7 presents the projected multiple-dry year water supply and demand assessment. The third year of the multiple-dry year water supply projection represents the end of each 3-year multiple-dry year period as required for the multiple-dry year analysis. For calculating the water supplies from CCWD for the multiple-dry years through 2030, the following procedure is applied: 1) The water supplies in the multiple-dry years are assumed to be the same as the water demand in normal years 2) The water supplies from CCWD are reduced by 15 percent from the corresponding normal year supplies in the second and third year of multiple-dry year periods. For example, the water supply from CCWD for 2009 and 2010 has been reduced by 15 percent from the water supply in 2010 in normal years 3) No reduction has been made to the CCWD's water supply in the first year of the multiple-dry year period (i.e., the projected water supply in 2008 in this example). The groundwater supply is expected to continue to be 100 percent reliable under all hydrologic conditions.

In summary, CCWD has implemented and will implement programs and projects to ensure the imported water demands can be met under various hydrologic conditions. CCWD's UWMP indicates that the CVP supplies in conjunction with short-term water purchases and a request for voluntary short-term conservation will be considered to meet demands during the severe water shortage periods.

Table 10-7
Projected Multiple-Dry Year Water Supply and Demand Assessment

Year	Supply (ac-ft/yr)	Demand (ac-ft/yr)	Difference	Difference as Percent of Supply	Difference as Percent of Demand
2006					
2007					
2008	3,076	3,076	0	0	0
2009	2,649	3,076	427	16	14
2010	2,649	3,076	427	16	14
2011					
2012					
2013	3,445	3,445	0	0	0
2014	2,963	3,445	482	16	14
2015	2,963	3,445	482	16	14

Table 10-7
 Projected Multiple-Dry Year Water Supply and Demand Assessment

Year	Supply (ac-ft/yr)	Demand (ac-ft/yr)	Difference	Difference as Percent of Supply	Difference as Percent of Demand
2016					
2017					
2018	3,704	3,704	0	0	0
2019	3,183	3,704	521	16	14
2020	3,183	3,704	521	16	14
2021					
2022					
2023	3,909	3,909	0	0	0
2024	3,357	3,357	552	16	14
2025	3,357	3,357	552	16	14
2026					
2027					
2028	4,119	4,119	0	0	0
2029	3,536	4,119	583	16	14
2030	3,536	4,119	583	16	14

Notes

1. This assessment is based on the 3-year multiple-dry year period ending in 2010, 2015, 2020, 2025, and 2030
2. Table format based on DWR Guidance Document Tables 47 through 57

Chapter 11. References

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Appendix A
Urban Water Management Planning Act

Established: AB 797, Klehs, 1983

Amended: AB 2661, Klehs, 1990

AB 11X, Filante, 1991

AB 1869, Speier, 1991

AB 892, Frazee, 1993

SB 1017, McCorquodale, 1994

AB 2853, Cortese, 1994

AB 1845, Cortese, 1995

SB 1011, Polanco, 1995

AB 2552, Bates, 2000

SB 553, Kelley, 2000

SB 610, Costa, 2001

AB 901, Daucher, 2001

SB 672, Machado, 2001

SB 1348, Brulte, 2002

SB 1384 Costa, 2002

SB 1518 Torlakson, 2002

AB 105, Wiggins, 2003

SB 318, Alpert, 2004

CALIFORNIA WATER CODE DIVISION 6
PART 2.6. URBAN WATER MANAGEMENT PLANNING
CHAPTER 1. GENERAL DECLARATION AND POLICY

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. (a) The Legislature finds and declares all of the following:

- (1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.
- (2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.
- (3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.
- (4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.
- (5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.
- (6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

- (7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.
 - (8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.
 - (9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.
 - (b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.
- 10610.4. The Legislature finds and declares that it is the policy of the state as follows:
- (a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.
 - (b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.
 - (c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

CHAPTER 2. DEFINITIONS

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water

supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

CHAPTER 3. URBAN WATER MANAGEMENT PLANS

Article 1. General Provisions

10620.

- (a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).
- (b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.
- (c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.
- (d)(1) An urban water supplier may satisfy the requirements of this part by participation in area wide, regional, watershed, or basin wide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.
- (2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.
- (e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.
- (f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621.

- (a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.
- (b) Every urban water supplier required to prepare a plan pursuant to this part shall notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.
- (c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

Article 2. Contents of Plans

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

- (1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.
- (2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.
- (3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.
- (4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

- (1) An average water year.
- (2) A single dry water year.
- (3) Multiple dry water years.

For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(e)(1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:

- (A) Single-family residential.
 - (B) Multifamily.
 - (C) Commercial.
 - (D) Industrial.
 - (E) Institutional and governmental.
 - (F) Landscape.
 - (G) Sales to other agencies.
 - (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
 - (I) Agricultural.
- (2) The water use projections shall be in the same five-year increments described in subdivision (a).
- (f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:
- (1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:
- (A) Water survey programs for single-family residential and multifamily residential customers.
 - (B) Residential plumbing retrofit.
 - (C) System water audits, leak detection, and repair.
 - (D) Metering with commodity rates for all new connections and retrofit of existing connections.
 - (E) Large landscape conservation programs and incentives.
 - (F) High-efficiency washing machine rebate programs.
 - (G) Public information programs.
 - (H) School education programs.
 - (I) Conservation programs for commercial, industrial, and institutional accounts.
 - (J) Wholesale agency programs.
 - (K) Conservation pricing.
 - (L) Water conservation coordinator.
 - (M) Water waste prohibition.
 - (N) Residential ultra-low-flush toilet replacement programs.
- (2) A schedule of implementation for all water demand management measures proposed or described in the plan.
- (3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.
- (4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.
- (g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower

incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

- (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.
- (2) Include a cost-benefit analysis, identifying total benefits and total costs.
- (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.
- (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.
- (h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.
- (i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.
- (j) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).
- (k) Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water -year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c). 10631.5. The department shall take into consideration whether the urban water supplier is implementing or scheduled for implementation, the water demand management activities that the urban water supplier identified in its urban water management plan, pursuant to Section 10631, in evaluating applications for grants and loans made available pursuant to Section 79163. The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities.

10632. The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:

- (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.
- (b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.
- (c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.
- (d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.
- (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.
- (f) Penalties or charges for excessive use, where applicable.
- (g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.
- (h) A draft water shortage contingency resolution or ordinance.
- (i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

- (a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.
- (b) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.
- (c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
- (d) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(e) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

(f) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use. 10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Article 2.5 Water Service Reliability

10635. (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

Article 3. Adoption and Implementation of Plans

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to

Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644. (a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the outstanding elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has filed its plan with the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

CHAPTER 4. MISCELLANEOUS PROVISIONS

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

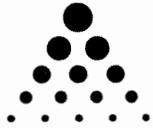
10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

10657. (a) The department shall take into consideration whether the urban water supplier has submitted an updated urban water management plan that is consistent with Section 10631, as amended by the act that adds this section, in determining whether the urban water supplier is eligible for funds made available pursuant to any program administered by the department.

(b) This section shall remain in effect only until January 1, 2006, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2006, deletes or extends that date.

Appendix B
Public Hearing Notice and Meeting Minutes



Golden State
Water Company
A Subsidiary of American States Water Company

Notice of Public Hearing

In conformance with the California Urban Water Management Planning Act, Golden State Water Company (formerly Southern California Water Company) is hosting a public hearing on Monday, November 14, 2005 at 11:00 a.m. at the Ambrose Recreation and Park District Board Room, 3105 Willow Pass Road, Bay Point, CA, to solicit comments on the Urban Water Management Plan (UWMP) for the Bay Point water system. The UWMP is available for public review prior to the public hearing and can be reviewed during normal business hours at:

Bay Point Customer Service Office
Golden State Water Company
53 B Manor Drive
Bay Point, CA 94565

Notice of Public Hearing

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Bay Point Customer Service Office
Golden State Water Company
53 B Manor Drive
Bay Point, CA 94565



**PROOF OF PUBLICATION
(2015.5 C.C.P.)**

STATE OF CALIFORNIA
County of Contra Costa

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter.

I am the Principal Legal Clerk of the Contra Costa Times, a newspaper of general circulation, printed and published at 2640 Shadelands Drive in the City of Walnut Creek, County of Contra Costa, 94598.

And which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Contra Costa, State of California, under the date of October 22, 1934. Case Number 19764.

The notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

October 28, November 11,

all in the year of 2005

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Executed at Walnut Creek, California.
On this 14 day of November, 2005

.....
Signature

Contra Costa Times
P O Box 4147
Walnut Creek, CA 94596
(925) 935-2525

Proof of Publication of:
(attached is a copy of the legal advertisement that published)

Notice of Public Hearing

In conformance with the California Urban Water Management Planning Act, Golden State Water Company (formerly Southern California Water Company) is hosting a public hearing on Monday, November 14, at 11:00 a.m. at the Ambrose Reception and Park District Board Room, 3105 Willow Pass Road, Bay Point, CA, to solicit comments on the Urban Water Management Plans (UWMP) for the Bay Point water system. The UWMP is available for public review prior to the public hearing and can be reviewed during normal business hours at:

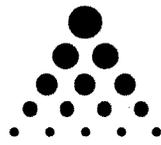
Bay Point Customer Service Office
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Bay Point, CA 94565



**Golden State
Water Company**

A Subsidiary of American States Water Company

Legal CCT 4075; Publish October 28,
November 11, 2005



Golden State

WATER COMPANY

A Subsidiary of American States Water Company

Urban Water Management Plan: Bay Point System

Public Hearing

Monday, November 14, 2005

Ambrose Recreation & Park District

Bay Point

SIGN-IN SHEET

<u>Name</u>	<u>Address</u>	<u>Phone Number</u>	<u>E-Mail</u>
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Paul Schubert	3035 Prospect Park Dr		
Dick Leonard	4675 LA CASA		
Kathy Lawson	3035 Prospect Park Dr.		

No Meeting Minutes were taken since there was no attendance by the public.

Appendix C
Public Comments on the Draft UWMP

No Public Comments received during Public Review Period.

Appendix D
Economic Analysis of Selected
Demand Management Measures

Bay Point System
Table D-1. Assumptions Used for Economic Analysis

BMP 1 – Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers
<p>Assumptions:</p> <ol style="list-style-type: none"> Survey 15% of single- and multi-family units within 10 years of the date implementation is to commence. Surveys will be conducted according to the following schedule: 1.5% by end of the first reporting period, 3.6% by end of second reporting period, 6.3% by end of third reporting period, 9.6% by end of fourth reporting period, and 15% by end of the fifth reporting period. <p>MOU, page 16 and page 17 Section E.d.</p> <ol style="list-style-type: none"> Single-family outdoor water usage = 100 gpd/unit <p>Single-family water usage was estimated by analyzing annual billing data. The monthly indoor water use is assumed to be equivalent to 60 percent of average monthly water use. Outdoor water is calculated as the difference between annual total use and the assumed annual indoor water use.</p> <ol style="list-style-type: none"> Multi-family outdoor water usage = 35 gpd/unit <p>Multi-family water usage was estimated by analyzing annual billing data. The monthly indoor water use is assumed to be equivalent to 70 percent of average monthly water use.</p> <ol style="list-style-type: none"> Water savings from indoor leak detection, not including toilet leaks = 4.1 gpd per residence <p>A & N Technical Services report (2003, page 2-38) (12.4 gpd per household repair; 33 percent of households audited have leaks – based on data from GSWC indoor leak detection program).</p> <ol style="list-style-type: none"> Water surveys decrease outdoor water use by 15% <p>MOU estimate is 10% (page 18).</p> <ol style="list-style-type: none"> Each water survey costs \$35. <p>The estimate includes marketing, contract labor, GSWC labor, overhead and materials. It is assumed that this BMP is done in conjunction with BMP2.</p> <ol style="list-style-type: none"> The life span of a water survey is four years. <p>A & N Technical Services report (2003, page 2-38) gives life spans for various components of a water survey. Four years selected as a reasonable average value.</p> <ol style="list-style-type: none"> Water savings from indoor plumbing retrofits are tracked under BMP 2. Only water savings from decrease in outdoor water use and water savings from indoor leak detection are tracked in BMP 1 to avoid double counting of water savings. Energy Savings of \$37 per ac-ft of water conserved. <p>Based on GSWC data.</p>

Bay Point System
Table D-1. Assumptions Used for Economic Analysis

BMP 2 – Residential Plumbing Retrofit
<p>Assumptions:</p> <p>1. Plumbing retrofit devices will be installed at a minimum of 10% of residences per reporting period until it can be demonstrated that 75% of pre-1992 single-family residences and 75% of pre-1992 multi-family residences have low flow showerheads (LFSHs).</p> <p>MOU, page 19.</p> <p>2. 0% of single-family and 0% of multi-family residences have low-water-use fixtures.</p> <p>Based on GSWC data</p> <p>3. Average number of fixtures per residence includes: 1.3 showers, 2.0 toilets, and 3.0 faucets (1 kitchen faucet and 2 other faucets).</p> <p>4. Water savings from one low-flow showerhead = 5.5 gpd A & N Technical Services report (2003, page 2-38).</p> <p>5. Water savings from one faucet aerator = 1.5 gpd A & N Technical Services report (2003, page 2-38).</p> <p>6. Water savings from one toilet flapper = 8 gpd; assume 20 percent of toilets leak. A & N Technical Services report (2003, page 2-38).</p> <p>7. Water savings from kitchen “flip” faucet aerator = 3.0 gpd. Based on GSWC data.</p> <p>8. Indoor water savings = 16.4 gpd/unit We used the following equation to calculate indoor water savings, based on assumptions 4 through 8: $(1.3*5.5) + (1.0*3.0) + (2*1.5) + (2*8*0.20)$.</p> <p>9. The BMP will cost an average of \$48 per residence. Based on information provided by GSWC.</p> <p>10. The life span of the retrofit devices is four years. A & N Technical Services report (2003, page 2-38) gives life spans for a various components of a water survey. Four years selected as a reasonable average value.</p> <p>11. Base year dwelling units include 4,075 single-family and 2,024 multi-family units.</p>

Bay Point System
Table D-1. Assumptions Used for Economic Analysis

BMP 5 – Large Landscape Conservation Programs and Incentives
<p>Assumptions:</p> <ol style="list-style-type: none"> 1. Develop Eto-based water use budgets for 90 percent of the CII accounts with dedicated irrigation meters and provide irrigation water use surveys to 15 percent of CII accounts with mixed use meters. MOU (Page 28) 2. Base year values include 47 dedicated landscape and 116 CII mixed use accounts. Based on GSWC account summary data. 3. Dedicated landscape accounts are an average size of 1.6 acres <i>CII mixed use account landscape areas are assumed to be an average of 0.1 acre in size</i> 4. Water use prior to the survey is 5.1 ft per year. Irrigation allocation is equal to 100 percent of local evapotranspiration (ET_o), and the MOU estimates that surveys will reduce water usage by 15 percent. Based on California Irrigation Management Information System data. 5. Surveys will reduce water usage by 15%. MOU, page 30. 6. The life span of the large landscape water surveys is four years. A & N Technical Services report (2003) gives a life span of four years for turf audits (page 2-34). <i>Water surveys for large landscapes are assumed to have a similar life span.</i> 7. Each survey will cost \$425 per acre. Minimum cost is \$150 per account. The estimate includes labor, administration, evaluation and overhead.

Bay Point System
Table D-1. Assumptions Used for Economic Analysis

BMP 9 – Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts

Assumptions:

1. Provide water-use surveys to 10% of CII accounts within 10 years of the date implementation is to commence. *MOU, pages 43 and 44.*
2. The life span of a water survey is four years.

The life span for a CII water survey is the same as the life span for a residential survey.

3. The average annual water savings resulting from a commercial and institutional water survey is 0.83 acre-feet per account.

A & N Technical Services report (2003, page 2-51) gives average annual water savings for three types of surveys; "analyst surveys", "consultant surveys" and "water efficiency studies". Analyst surveys are conducted by non-engineers, consultant surveys are conducted by engineers for sites that have process water, and water efficiency studies are conducted at major industrial facilities that use very large quantities of water. For purposes of this economic analysis, only analyst surveys will be conducted for commercial and institutional account surveys. Values for water savings in the A & N report represent the maximum potential water savings that could occur if a customer were to implement every possible water conservation measure. Only 25% of the maximum potential water savings is assumed to be realized.

4. The average annual water savings resulting from an industrial water survey is 1.9 acre-feet per account.

For purposes of this economic analysis, consultant surveys will be conducted for industrial account surveys. Values for water savings in the A & N 2003 report represent the maximum potential water savings that could occur if a customer were to implement every possible water conservation measure. Only 25% of the maximum potential water savings is assumed to be realized.

5. Each analyst survey (for commercial and institutional accounts) will cost an average of \$600 and each consultant survey (for industrial accounts) will cost an average of \$1,500.

A & N Technical Services report (2003, page 2-53).

Bay Point System
Table D-1. Assumptions Used for Economic Analysis

BMP 14 – Residential ULFT Replacement Programs

Assumptions:

1. Water savings from ULFTs are 44.6 gpd/unit for single-family residences and 49 gpd/unit for multi-family residences

MOU, Exhibit 6, Table 1 and Table 2.

2. Homes constructed after 1991 already have ULFTs.

As of January 1992, California legislation requires that ULFTs be installed in all newly constructed homes.

3. Natural toilet replacement rate is 4% per year.

MOU, page 79.

4. The cost of toilets, advertising, administration, overhead, and toilet recycling is \$134 per ULFT. The cost does not include installation, which will be covered by the customer.

Based on GSWC cost data.

Table D-2 Bay Point System
 BMP 1. Water Survey Programs for Single-Family and Multi-Family Customers

Calendar Year	Water Saving Calculations							Benefits (\$)					Costs (\$)					New present Value	
	Single Family Intervention	Multi-Family Intervention	Percent Units Surveyed	Single-Family Outdoor Savings (ac-ft/yr)	Multi-Family Outdoor Savings (ac-ft/yr)	Total Outdoor Savings (ac-ft/yr)	Total Indoor Savings (ac-ft/yr)	Annual Water Savings	Avoided Capital Costs	Avoided Variable Costs	Avoided Purchase Costs	Total Undiscounted Benefits	Total Discounted Benefits	Capital Costs	Financial Incentives	Operating Expenses	Total Undiscounted Costs		Total Discounted Costs
Pre 2005	0	0	0.0%					0.0											
2006	326	154	7.5%	5.5	1.14	6.6	2.2	8.8	\$0	\$326	\$11,430	\$11,756	\$11,756	\$0	\$0	\$16,790	\$16,790	\$16,790	-\$5,033
2007	326	154	7.5%	5.5	1.14	6.6	2.2	17.6	\$0	\$652	\$22,861	\$23,513	\$22,034	\$0	\$0	\$16,790	\$16,790	\$15,734	\$6,301
2008								17.6	\$0	\$652	\$22,861	\$23,513	\$20,649	\$0					\$20,649
2009								17.6	\$0	\$652	\$22,861	\$23,513	\$19,350	\$0					\$19,350
2010								8.8	\$0	\$326	\$11,430	\$11,756	\$9,067	\$0					\$9,067
2011																			
2012																			
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2030																			
Totals	651	308	15%	11	2	13	4	71	\$0	\$2,609	\$91,443	\$94,052	\$82,857	\$0	\$0	\$33,579	\$33,579	\$32,523	\$50,334

Credit Table for Previously Performed Surveys					
Year	Single Family Units Surveyed	Multi-Family Units Surveyed	% Credit	Single Family Credits	Multi-Family Credits
Pre-1990			0.0%	0	0
1990			12.5%	0	0
1991			25.0%	0	0
1992			37.5%	0	0
1993			50.0%	0	0
1994			62.5%	0	0
1995			75.0%	0	0
1996			87.5%	0	0
1997			100.0%	0	0
1998-2004			100.0%	0	0
Total	0	0		0	0

Value of conserved water (\$/ac-ft) =	1297	Benefit cost ratio =	2.5
Discount rate (real) =	6.71%	Simple pay-back period (years) =	2
Indoor water savings (gpd/unit) =	4.1	Discounted cost/water saved (\$/acre-foot) =	461
Outdoor water savings =	15%	NPV/ water saved (acre-feet) =	714
Single family outdoor water usage (gpd/unit) =	100		
Multi-family outdoor water usage (gpd/unit) =	44		
Conservation measure unit cost (\$) =	35		
1997 Single family units =	4,343		
1997 Multi-family units =	2,053		
Life span of water survey (years) =	4		
Energy savings (\$/ac-ft) =	37		

Table D-2 Bay Point System
BMP 2. Residential Plumbing Retrofit

Calendar Year	Water Saving Calculations						Benefits (\$)					Costs (\$)					New present Value
	Single-Family Intervention	Multi-Family Intervention	Percent Units Surveyed Single-Family	Percent Units Surveyed Multi-Family	Incremental Water Savings (ac-ft/yr)	Annual Water Savings	Avoided Capital Costs	Avoided Variable Costs	Avoided Purchase Costs	Total Undiscounted Benefits	Total Discounted Benefits	Capital Costs	Financial Incentives	Operating Expenses	Total Undiscounted Costs	Total Discounted Costs	
Pre 2005			0%	0%													
2006	204	101	5.0%	5.0%	6.1	6.1	\$0	\$225	\$7,885	\$8,110	\$8,110	\$0	\$0	\$14,638	\$14,638	\$14,638	-\$6,528
2007	204	101	5.0%	5.0%	6.1	12.2	\$0	\$450	\$15,770	\$16,220	\$15,200	\$0	\$0	\$14,638	\$14,638	\$13,717	\$1,483
2008	204	101	5.0%	5.0%	6.1	18.2	\$0	\$675	\$23,655	\$24,330	\$21,366	\$0	\$0	\$14,638	\$14,638	\$12,855	\$8,511
2009	204	101	5.0%	5.0%	6.1	24.3	\$0	\$900	\$31,540	\$32,439	\$26,697	\$0	\$0	\$14,638	\$14,638	\$12,046	\$14,650
2010	204	101	5.0%	5.0%	6.1	24.3	\$0	\$900	\$31,540	\$32,439	\$25,018	\$0	\$0	\$14,638	\$14,638	\$11,289	\$13,729
2011	204	101	5.0%	5.0%	6.1	24.3	\$0	\$900	\$31,540	\$32,439	\$23,445	\$0	\$0	\$14,638	\$14,638	\$10,579	\$12,866
2012	204	101	5.0%	5.0%	6.1	24.3	\$0	\$900	\$31,540	\$32,439	\$21,971	\$0	\$0	\$14,638	\$14,638	\$9,914	\$12,057
2013	204	101	5.0%	5.0%	6.1	24.3	\$0	\$900	\$31,540	\$32,439	\$20,589	\$0	\$0	\$14,638	\$14,638	\$9,290	\$11,299
2014	204	101	5.0%	5.0%	6.1	24.3	\$0	\$900	\$31,540	\$32,439	\$19,294	\$0	\$0	\$14,638	\$14,638	\$8,706	\$10,588
2015	204	101	5.0%	5.0%	6.1	24.3	\$0	\$900	\$31,540	\$32,439	\$18,081	\$0	\$0	\$14,638	\$14,638	\$8,159	\$9,922
2016	204	101	5.0%	5.0%	6.1	24.3	\$0	\$900	\$31,540	\$32,439	\$16,944	\$0	\$0	\$14,638	\$14,638	\$7,646	\$9,299
2017	204	101	5.0%	5.0%	6.1	24.3	\$0	\$900	\$31,540	\$32,439	\$15,879	\$0	\$0	\$14,638	\$14,638	\$7,165	\$8,714
2018	204	101	5.0%	5.0%	6.1	24.3	\$0	\$900	\$31,540	\$32,439	\$14,880	\$0	\$0	\$14,638	\$14,638	\$6,714	\$8,166
2019	204	101	5.0%	5.0%	6.1	24.3	\$0	\$900	\$31,540	\$32,439	\$13,945	\$0	\$0	\$14,638	\$14,638	\$6,292	\$7,652
2020	204	101	5.0%	5.0%	6.1	24.3	\$0	\$900	\$31,540	\$32,439	\$13,068	\$0	\$0	\$14,638	\$14,638	\$5,897	\$7,171
2021						18.2	\$0	\$675	\$23,655	\$24,330	\$9,185	\$0	\$0	\$0	\$0	\$0	\$9,185
2022						12.2	\$0	\$450	\$15,770	\$16,220	\$5,738	\$0	\$0	\$0	\$0	\$0	\$5,738
2023						6.1	\$0	\$225	\$7,885	\$8,110	\$2,689	\$0	\$0	\$0	\$0	\$0	\$2,689
2024																	
2025																	
2026																	
2027																	
2028																	
2029																	
2030																	
Totals	3056	1518	75%	75%	91	365	\$0	\$13,496	\$473,095	\$486,591	\$292,097	\$0	\$0	\$219,564	\$219,564	\$144,907	\$147,191

Percent of Residences Having Low-Water-Use Fixtures			Value of conserved water (\$/ac-ft) = 1297				Benefit cost ratio = 2.0		
Year	Single-Family	Multi-Family	Discount rate (real) = 6.71%				Simple pay-back period (years) = 9		
Year	Single-Family	Multi-Family	Water savings (gpd/unit) = 17.8				Discounted cost/water saved (\$/acre-foot) = 397		
Pre-2005	0%	0%	Conservation measure unit cost (\$) = 48				NPV/ water saved (acre-feet) = 404		
Annual Replacement			Percent units receiving retrofits = 5%						
2006	5%	5%	1991 Single family units = 4,075						
2007	5%	5%	1991 Multi-family units = 2,024						
2008	5%	5%	Life span of retrofit devices (years) = 4						
2009	5%	5%	Energy savings (\$/ac-ft) = 37						
2010	5%	5%							
2011	5%	5%							
2012	5%	5%							
2013	5%	5%							
2014	5%	5%							
2015	5%	5%							
2016	5%	5%							
2017	5%	5%							
2018	5%	5%							
2019	5%	5%							
2020	5%	5%							
2021	0%	0%							

Table D-2 Bay Point System
BMP 5. Large Landscape Conservation Programs and Incentives

Calendar Year	Water Saving Calculations						Benefits					Costs					Net Present Value
	CII Accounts w/Dedicated Irr. Meters Interventions	CII Accounts w/Mixed Use Meters Offered Surveys	CII Accounts w/Mixed Use Meters % Surveyed	CII Accounts w/Mixed Use Meters Interventions	Incremental Water Savings (ac-ft/Yr)	Cumulative Water Savings (ac-ft/Yr)	Avoided Capital Costs	Avoided Variable Costs	Avoided Purchase Costs	Total Undiscounted Benefits	Total Discounted Benefits	Capital Costs	Financial Incentives	Operating Expenses	Total Undiscounted Costs	Total Discounted Costs	
2005	0	0	0.00%	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
2006	21	12	4.80%	6	26	26	\$0	\$974	\$34,129	\$35,102	\$32,895	\$0	\$0	\$15,217	\$15,217	\$14,260	\$18,635
2007	21	12	4.80%	6	26	53	\$0	\$1,947	\$68,257	\$70,205	\$61,653	\$0	\$0	\$15,217	\$15,217	\$13,364	\$48,289
2008	0	12	1.95%	2	0	53	\$0	\$1,954	\$68,482	\$70,435	\$57,966	\$0	\$0	\$339	\$339	\$279	\$57,687
2009	0	12	1.95%	2	0	53	\$0	\$1,960	\$68,706	\$70,666	\$54,499	\$0	\$0	\$339	\$339	\$262	\$54,238
2010		12	0.75%	1	0	27	\$0	\$989	\$34,664	\$35,653	\$25,767	\$0	\$0	\$131	\$131	\$94	\$25,673
2011		12	0.75%	1	0	0	\$0	\$18	\$622	\$639	\$433	\$0	\$0	\$131	\$131	\$88	\$345
2012		12	0.00%	0	0	0	\$0	\$11	\$397	\$408	\$259	\$0	\$0	\$0	\$0	\$0	\$259
2013		12	0.00%	0	0	0	\$0	\$5	\$173	\$178	\$106	\$0	\$0	\$0	\$0	\$0	\$106
2014		12	0.00%	0	0	0	\$0	\$2	\$86	\$89	\$49	\$0	\$0	\$0	\$0	\$0	\$49
2015																	
2016																	
2017																	
2018																	
2019																	
2020																	
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2029																	
2030																	
Totals:	42	104	15%	17	53	212	\$0	\$7,860	\$275,515	\$283,375	\$233,628	\$0	\$0	\$31,374	\$31,374	\$28,348	\$205,281

Credit Table for Previously Performed Surveys			
Year	# of Surveys	% Credit	Credits
Prior to 7/1/96 with follow up inspection		100%	0
Prior to 7/1/96 without follow up inspection		50%	0
ac-ftter 7/1/96		100%	0
TOTAL			0

Value of Conserved Water (\$/ac-ft) =	\$1,297	Benefit Cost Ratio:	8.2
Discount Rate (Real) =	6.71%	Simple Pay-Back Period (years):	1.1
Acres/CII accounts with dedicated irrigation meters =	1.6	Discounted Cost / Water Saved (\$/ac-ft):	\$133
Acres/CII accounts with mixed use meters =	0.1	NPV / Water Saved (\$/ac-ft):	\$966
Annual water use (ac-ft/acre) =	5.1		
Water Savings =	15%		
Conservation Measure Unit Cost (\$/Acre) =	\$425		
Minimum Conservation Measure Unit Cost (\$/Account) =	\$150		
Number of CII accounts with dedicated irrigation meters in 1997 =	47		
Number of CII accounts with mixed use meters in 1997 =	116		
Lifespan of Benefit (Years) =	4		
Energy savings (\$/ac-ft) =	37		

Table D-2 Bay Point System
 BMP 9. Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts

Calendar Year	Percent Surveyed	Commercial Interventions	Industrial Interventions	Institutional Interventions	Incremental Savings (Surveys) (ac-ft/yr)	Annual Savings Total (ac-ft/yr)	Benefits (\$)					Costs (\$)					Net Present Value	
							Avoided Capital Costs	Avoided Variable Costs	Avoided Purchase Costs	Total Undiscounted Benefits	Total Discounted Benefits	Capital Costs	Financial Incentives	Operating Expenses	Total Undiscounted Costs	Total Discounted Costs		
Pre 1998		0	0	0														
2006	5.00%	3.5	0.85	1.5	5.9	5.9	\$0	\$218	\$7,644	\$7,862	\$7,862	\$0	\$0	\$4,245	\$4,245	\$4,245	\$3,617	
2007	5.00%	3.5	0.85	1.5	5.9	11.8	\$0	\$436	\$15,288	\$15,724	\$14,735	\$0	\$0	\$4,245	\$4,245	\$3,978	\$10,757	
2008						11.8	\$0	\$436	\$15,288	\$15,724	\$13,809	\$0	\$0	\$0	\$0	\$0	\$13,809	
2009						11.8	\$0	\$436	\$15,288	\$15,724	\$12,940	\$0	\$0	\$0	\$0	\$0	\$12,940	
2010						5.9	\$0	\$218	\$7,644	\$7,862	\$6,063	\$0	\$0	\$0	\$0	\$0	\$6,063	
2011																		
2012																		
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2030																		
Totals	10%	7	2	3	12	47	\$0	\$1,744	\$61,151	\$62,895	\$55,409	\$0	\$0	\$8,490	\$8,490	\$8,223	\$47,186	

Credit for Previously Completed Surveys				Value of conserved water (\$/ac-ft) =	1297	Benefit cost ratio =	6.74
				Discount rate (real) =	6.71%	Simple pay-back period (years) =	1
				Annual survey - Annual water savings (ac-ft/unit) =	0.83	Discounted cost/water saved (\$acre-feet) =	174
				Annual survey - Conservation measure unit cost (\$) =	600	NPV/ water saved (acre-feet) =	1001
				Consultant survey - Annual water savings (ac-ft/unit) =	2.1		
				Consultant survey - Conservation measure unit cost (\$) =	1,500		
				Number of commercial accounts in 1997 =	69		
				Number of industrial accounts in 1997 =	17		
				Number of institutional accounts in 1997 =	30		
				Percent units surveyed =	10%		
				Life span of water survey (years) =	4		
				Energy savings (\$/ac-ft) =	37		

Table D-2 Bay Point System
 BMP 14. Residential ULFT Replacement Programs (page 1 of 3)

Determination of Water Conservation Goal: Single-Family Units											
Calendar Year	Single-Family Units	SF Units Naturally Retrofitted	SF Toilets Naturally Retrofitted	Water Savings from Natural Replacement SF (ac-ft/yr)	Single-Family Units	Single-Family Retrofitted	Single-Family Turnover	Combined SF Homes Retrofitted	Combined SF Toilets Retrofitted	Water Savings from Natural Replacement and Turnover SF (ac-ft/yr)	Water Savings from Natural Turnover SF (ac-ft/yr)
1998	3062	0	0	0	3062	0	0	0	0	0	0
1999	2940	122	282	6	2780	122	159	282	648	12.9	7
2000	2822	118	270	5	2525	111	145	256	588	11.7	6
2001	2709	113	260	5	2292	101	131	232	534	10.6	5
2002	2601	108	249	5	2081	92	119	211	485	9.6	5
2003	2497	104	239	5	1890	83	108	191	440	8.8	4
2004	2397	100	230	5	1716	76	98	174	400	7.9	3
2005	2301	96	221	4	1558	69	89	158	363	7.2	3
2006	2209	92	212	4	1415	62	81	143	330	6.6	2
2007	2121	88	203	4	1285	57	74	130	299	5.9	2
2008	2036	85	195	4	1166	51	67	118	272	5.4	2
2009	1954	81	187	4	1059	47	61	107	247	4.9	1
2010	1876	78	180	4	962	42	55	97	224	4.5	1
2011	1801	75	173	3	873	38	50	88	204	4.0	1
2012	1729	72	166	3	793	35	45	80	185	3.7	0
2013	1660	69	159	3	720	32	41	73	168	3.3	0
2014	1594	66	153	3	654	29	37	66	152	3.0	0
2015	1530	64	147	3	594	26	34	60	138	2.7	0
2016	1469	61	141	3	539	24	31	55	126	2.5	0
2017	1410	59	135	3	489	22	28	50	114	2.3	0
2018	1353	56	130	3	444	20	25	45	104	2.1	0
2019	1299	54	125	2	403	18	23	41	94	1.9	0
Totals		1,763	4,054	81		1,156		2,659	6,115	121	43

Credit Table for Previously Installed ULFT				
Year	Single Family	Multi-family	Incremental Total Water Savings (ac-ft/Yr)	Cumulative Total Water Savings (ac-ft/Yr)
1991				
1992				
1993				
1994				
1995				
1996				
1997				
1998	746	4	15	15
1999				15
2000				15
2001				15
2002				15
2003				15
2004				15
Total	746	4	15	105

Table D-2 Bay Point System
 BMP 14. Residential ULFT Replacement Program (page 2 of 3)

Calendar Year	Determination of Water Conservation Goal: Multi-Family Units											Conservation Goal - Combined	
	Multi-Family Units	MF Units Naturally Retrofitted	MF Toilets Naturally Retrofitted	Water Savings from Natural Replacement MF (ac-ft/yr)	Multi-Family Units	MF Units Naturally Retrofitted	Multi-Family Turnover	Combined MF Homes Retrofitted	Combined MF Toilets Retrofitted	Water Savings from Natural Replacement and Turnover	Water Savings from Natural Turnover MF (ac-ft/yr)	Annual Water Savings from Turnover (ac-ft/yr)	Cummulative Water Savings from Turnover (ac-ft/yr)
1998	1521	0	0	0	1521	0	0	0	0	0	0	0	0
1999	1460	61	91	4	1387	61	73	134	201	8.1	4	12	12
2000	1402	58	88	4	1265	55	67	122	183	7.4	4	22	34
2001	1346	56	84	3	1154	51	61	111	167	6.8	3	31	64
2002	1292	54	81	3	1052	46	55	102	152	6.2	3	38	103
2003	1240	52	78	3	960	42	51	93	139	5.6	2	45	147
2004	1191	50	74	3	875	38	46	84	127	5.1	2	50	198
2005	1143	48	71	3	798	35	42	77	116	4.7	2	55	253
2006	1097	46	69	3	728	32	38	70	105	4.3	1	59	311
2007	1053	44	66	3	664	29	35	64	96	3.9	1	62	373
2008	1011	42	63	3	605	27	32	58	88	3.6	1	64	438
2009	971	40	61	2	552	24	29	53	80	3.2	1	66	504
2010	932	39	58	2	504	22	27	49	73	3.0	1	68	572
2011	895	37	56	2	459	20	24	44	66	2.7	0	69	641
2012	859	36	54	2	419	18	22	40	61	2.5	0	70	710
2013	824	34	52	2	382	17	20	37	55	2.2	0	70	780
2014	791	33	49	2	348	15	18	34	50	2.0	0	70	850
2015	760	32	47	2	318	14	17	31	46	1.9	0	70	920
2016	729	30	46	2	290	13	15	28	42	1.7	0	70	990
2017	700	29	44	2	264	12	14	25	38	1.6	0	70	1060
2018	672	28	42	2	241	11	13	23	35	1.4	0	70	1130
2019	645	27	40	2	220	10	12	21	32	1.3	0	70	1200
Totals	22,534	876	1313	53.2		591		1,301	1,952	79	26.9	1,200	11,288

Table D-2 Bay Point System
 BMP 14. Residential ULFT Replacement Programs (page 3 of 3)

Calendar Year	Water Savings							Benefits (\$)					Costs (\$)					Net Present Value	
	No. of SF Toilets Required to be Replaced	Incremental Water Savings SF (ac-ft/yr)	No. of MF Toilets Required to be Replaced	Incremental Water Savings (ac-ft/yr)	Annual Water Savings (ac-ft/yr)	Incremental Total Water Savings (ac-ft/yr)	Cumulative Total Water Savings (ac-ft/yr)	Avoided Capital Costs	Avoided Variable Costs	Avoided Purchase Costs	Total Undiscounted Benefits	Total Discounted Benefits	Capital Costs	Financial Incentives	Operating Expenses	Total Undiscounted Costs	Total Discounted Costs		
Pre 2005	746	15	4	0	15	15	105	0	3,882	136,063	139,944	139,944	0	0	100,500	100,500	100,500	39,444	
2005	755	15	378	15	45	45	150	0	1,676	58,747	60,423	60,423	0	0	151,755	151,755	151,755	-91,332	
2006	755	15	378	15	76	76	226	0	2,797	98,057	100,854	94,512	0	0	151,755	151,755	142,213	-47,700	
2007	755	15	378	15	106	106	332	0	3,919	137,367	141,285	124,076	0	0	151,755	151,755	133,270	-9,194	
2008						106	438	0	3,919	137,367	141,285	116,274	0	0	0	0	0	116,274	
2009						106	544	0	3,919	137,367	141,285	108,962	0	0	0	0	0	108,962	
2010						106	649	0	3,919	137,367	141,285	102,111	0	0	0	0	0	102,111	
2011						106	755		3,919	137,367	141,285	95,690	0	0	0	0	0	95,690	
2012						106	861		3,919	137,367	141,285	89,673	0	0	0	0	0	89,673	
2013						106	967		3,919	137,367	141,285	84,034	0	0	0	0	0	84,034	
2014						106	1073		3,919	137,367	141,285	78,750	0	0	0	0	0	78,750	
2015						106	1179		3,919	137,367	141,285	73,798	0	0	0	0	0	73,798	
2016						106	1285		3,919	137,367	141,285	69,158	0	0	0	0	0	69,158	
2017						106	1391		3,919	137,367	141,285	64,809	0	0	0	0	0	64,809	
2018						106	1497		3,919	137,367	141,285	60,734	0	0	0	0	0	60,734	
2019						106	1603		3,919	137,367	141,285	56,915	0	0	0	0	0	56,915	
2020						106	1709		3,919	137,367	141,285	53,336	0	0	0	0	0	53,336	
2021						106	1814		3,919	137,367	141,285	49,982	0	0	0	0	0	49,982	
2022						106	1920		3,919	137,367	141,285	46,839	0	0	0	0	0	46,839	
2023						106	2026		3,919	137,367	141,285	43,894	0	0	0	0	0	43,894	
2024						106	2132		3,919	137,367	141,285	41,134	0	0	0	0	0	41,134	
2025						106	2238		3,919	137,367	141,285	38,547	0	0	0	0	0	38,547	
2026						106	2344		3,919	137,367	141,285	36,123	0	0	0	0	0	36,123	
2027						106	2450		3,919	137,367	141,285	33,852	0	0	0	0	0	33,852	
2028						106	2556		3,919	137,367	141,285	31,723	0	0	0	0	0	31,723	
2029						106	2662		3,919	137,367	141,285	29,729	0	0	0	0	0	29,729	
2030						106	2768		3,919	137,367	141,285	27,859	0	0	0	0	0	27,859	
Totals	0.0	0		0.0	241.8	2,678		0	102,404	3,589,666	3,692,070	1,852,883	0	0	555,765	555,765	527,738	1,325,145	
											Value of conserved water (\$/ac-ft) (=	1297						Benefit cost ratio =	3.5
											Discount rate (real) =	6.71%						Simple pay-back period (years) =	7
											Natural toilet replacement rate =	4%						Discounted cost/water saved (\$acre-feet) =	197
											Annual single-family housing turnover rate =	5.2%						NPV/ water saved (acre-feet) =	495
											Annual multi-family housing turnover rate =	4.8%							
											Water savings due to toilet replacement at SF homes (gal/dwelling unit/day) =	40.8							
											Water savings due to toilet replacement at MF homes (gal/dwelling unit/day) =	54.3							
											Number of toilets per SF home =	2.3							
											Number of toilets per MF home =	1.5							
											Cost of conservation measure =	134							
											1991 single-family units =	4,075							
											1991 multi-family units =	2,024							
											Energy savings (\$/ac-ft) =	37							

Table D-3 Definitions of Terms Used in the Economic Analysis

Term	Definition	Comments
Benefits:		
Avoided Capital Costs	Capital costs that are avoided by implementing the BMP	Example is the cost of a well that would not have to be installed due to implementation of the BMP.
Avoided Variable Costs	Variable costs that are avoided by implementing the BMP.	Example is the cost of electricity that would be saved if the BMP were implemented.
Avoided Purchase Costs	Purchase costs that are avoided by implementing the BMP.	Example is the cost of purchasing water that would not be required due to implementation of the BMP.
Total Undiscounted Benefits	The sum of avoided capital, variable, and purchase costs.	
Total Discounted Benefits	The present value of the sum of avoided capital, variable, and purchase costs.	The discount rate is used to calculate the present value of avoided costs.
Costs:		
Capital Costs	Capital costs incurred by implementing the BMP.	
Financial Incentives	Financial incentives paid to customers.	Example is the rebate for purchasing low-flow plumbing devices.
Operating Expenses	Operating expenses incurred implementing the BMP.	Example is the administrative cost of conducting surveys.
Total Undiscounted Costs	The sum of capital, financial incentives and operating expenses.	
Total Discounted Costs	The present value of the sum of capital, financial incentives and operating expenses.	The discount rate is used to calculate the present value of incurred costs.
Results:		
Net Present Value	Total discounted benefits minus total discounted costs.	A value greater than zero indicates an economically justifiable BMP.
Benefit/Cost Ratio	The sum of the total discounted benefits divided by the sum of the total discounted costs.	A ratio greater than one indicates an economically justifiable BMP.
Simple Pay-Back Period	The sum of the total discounted costs divided by the average annual total discounted benefits.	Indicates the number of years required for the benefits to pay back the costs of the BMP.
Discounted Cost/Water Saved	The sum of the total discounted costs divided by the total acre-feet of water saved over the study period.	Indicates the present-value cost to save one acre-foot of water. A low value is considered economically attractive.
Net Present Value/Water Saved	The sum of the net present value divided by the total acre-feet of water saved over the study period.	Indicates the net value of saving one acre-foot of water. A high value is considered economically attractive.

Appendix E
Council Annual Reports for
Demand Management Measures

CUWCC

Bay Point
Annual Report 2004

Reported as of 2/17/05

Water Supply & Reuse

Reporting Unit:

Year:

2004

Water Supply Source Information

Supply Source Name

Quantity (AF) Supplied

Supply Type

Total AF:

Reported as of 2/17/05

Accounts & Water Use

Reporting Unit Name:	Submitted to	Year:
So. California Water Company - California Cities - Bay Point	CUWCC 02/17/2005	2004

A. Service Area Population Information:

1. Total service area population	20130
----------------------------------	-------

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No. of Accounts	Water Deliveries (AF)
1. Single-Family	4900	1375	0	0
2. Multi-Family	183	232	0	0
3. Commercial	70	44	0	0
4. Industrial	17	395	0	0
5. Institutional	30	86	0	0
6. Dedicated Irrigation	47	110	0	0
7. Recycled Water	0	0	0	0
8. Other	48	151	0	0
9. Unaccounted	NA	236	NA	0
Total	5295	2629	0	0
	Metered		Unmetered	

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:

So. California Water Company - California Cities - Bay Point

BMP Form Status:

100% Complete

Year:

2004

A. Implementation

- | | |
|--|------------|
| 1. Based on your signed MOU date, 12/11/1991, your Agency STRATEGY DUE DATE is: | 12/10/1993 |
| 2. Has your agency developed and implemented a targeting/marketing strategy for SINGLE-FAMILY residential water use surveys? | no |
| a. If YES, when was it implemented? | |
| 3. Has your agency developed and implemented a targeting/marketing strategy for MULTI-FAMILY residential water use surveys? | no |
| a. If YES, when was it implemented? | |

B. Water Survey Data

Survey Counts:	Single Family Accounts	Multi-Family Units
1. Number of surveys offered:	0	0
2. Number of surveys completed:	0	0

Indoor Survey:

3. Check for leaks, including toilets, faucets and meter checks	yes	yes
4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary	yes	yes
5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as necessary; replace leaking toilet flapper, as necessary	yes	yes

Outdoor Survey:

6. Check irrigation system and timers	yes	yes
7. Review or develop customer irrigation schedule	yes	yes
8. Measure landscaped area (Recommended but not required for surveys)	no	no
9. Measure total irrigable area (Recommended but not required for surveys)	no	no
10. Which measurement method is typically used (Recommended but not required for surveys)		Other
11. Were customers provided with information packets that included evaluation results and water savings recommendations?	yes	yes
12. Have the number of surveys offered and completed, survey results, and survey costs been tracked?	no	no
a. If yes, in what form are surveys tracked?		

b. Describe how your agency tracks this information.

C. Water Survey Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

BMP 02: Residential Plumbing Retrofit

Reporting Unit:

So. California Water Company - California Cities - Bay Point

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts? no
 - a. If YES, list local jurisdictions in your service area and code or ordinance in each:

2. Has your agency satisfied the 75% saturation requirement for single-family housing units? no
3. Estimated percent of single-family households with low-flow showerheads: %
4. Has your agency satisfied the 75% saturation requirement for multi-family housing units? no
5. Estimated percent of multi-family households with low-flow showerheads: %
6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices? no
 - a. If YES, when did your agency begin implementing this strategy?
 - b. Describe your targeting/ marketing strategy.

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed:	0	0
3. Number of toilet-displacement devices distributed:	0	0
4. Number of toilet flappers distributed:	0	0
5. Number of faucet aerators distributed:	0	0
6. Does your agency track the distribution and cost of low-flow devices? no		
<ol style="list-style-type: none"> a. If YES, in what format are low-flow devices tracked? b. If yes, describe your tracking and distribution system : 		

C. Low-Flow Device Distribution Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective"

as."

E. Comments

Reported as of 2/17/05

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:

**So. California Water Company -
California Cities - Bay Point**BMP Form Status:
100% CompleteYear:
2004**A. Implementation**

- | | |
|--|------|
| 1. Has your agency completed a pre-screening system audit for this reporting year? | yes |
| 2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production: | |
| a. Determine metered sales (AF) | 2400 |
| b. Determine other system verifiable uses (AF) | 0 |
| c. Determine total supply into the system (AF) | 2745 |
| d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required. | 0.87 |
| 3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production? | no |
| 4. Did your agency complete a full-scale audit during this report year? | no |
| 5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit? | no |
| 6. Does your agency operate a system leak detection program? | yes |
| a. If yes, describe the leak detection program: | |

Handled on a company wide basis.

B. Survey Data

- | | |
|--|----|
| 1. Total number of miles of distribution system line. | 31 |
| 2. Number of miles of distribution system line surveyed. | 0 |

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

- | | |
|--|----|
| 1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? | No |
| a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as." | |

E. Comments

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:

**So. California Water
Company - California Cities
- Bay Point**

BMP Form Status:
100% Complete

Year:
2004

A. Water Use Budgets

- | | |
|--|----|
| 1. Number of Dedicated Irrigation Meter Accounts: | 47 |
| 2. Number of Dedicated Irrigation Meter Accounts with Water Budgets: | 0 |
| 3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF): | 0 |
| 4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF): | 0 |
| 5. Does your agency provide water use notices to accounts with budgets each billing cycle? | no |

B. Landscape Surveys

- | | |
|--|----|
| 1. Has your agency developed a marketing / targeting strategy for landscape surveys? | no |
| a. If YES, when did your agency begin implementing this strategy? | |
| b. Description of marketing / targeting strategy: | |
| 2. Number of Surveys Offered. | 0 |
| 3. Number of Surveys Completed. | 0 |
| 4. Indicate which of the following Landscape Elements are part of your survey: | |
| a. Irrigation System Check | no |
| b. Distribution Uniformity Analysis | no |
| c. Review / Develop Irrigation Schedules | no |
| d. Measure Landscape Area | no |
| e. Measure Total Irrigable Area | no |
| f. Provide Customer Report / Information | no |
| 5. Do you track survey offers and results? | no |
| 6. Does your agency provide follow-up surveys for previously completed surveys? | no |
| a. If YES, describe below: | |

C. Other BMP 5 Actions

- | | |
|---|----|
| 1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program. Does your agency provide mixed-use accounts with landscape budgets? | no |
| 2. Number of CII mixed-use accounts with landscape budgets. | 0 |
| 3. Do you offer landscape irrigation training? | no |
| 4. Does your agency offer financial incentives to improve landscape water use efficiency? | no |

Type of Financial Incentive:	Budget	Number	Total
------------------------------	--------	--------	-------

	(Dollars/ Year)	Awarded to Customers	Amount Awarded
a. Rebates	0	0	0
b. Loans	0	0	0
c. Grants	0	0	0
5. Do you provide landscape water use efficiency information to new customers and customers changing services?			yes
a. If YES, describe below:			
Verbally and Brochures			
6. Do you have irrigated landscaping at your facilities?			yes
a. If yes, is it water-efficient?			yes
b. If yes, does it have dedicated irrigation metering?			no
7. Do you provide customer notices at the start of the irrigation season?			no
8. Do you provide customer notices at the end of the irrigation season?			no

D. Landscape Conservation Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

E. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

F. Comments

Reported as of 2/17/05

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:

**So. California Water Company -
California Cities - Bay Point**

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Do any energy service providers or waste water utilities in your service area offer rebates for high-efficiency washers? no

a. If YES, describe the offerings and incentives as well as who the energy/waste water utility provider is.

2. Does your agency offer rebates for high-efficiency washers? no

3. What is the level of the rebate?

4. Number of rebates awarded.

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 07: Public Information Programs

Reporting Unit:

So. California Water Company - California Cities - Bay Point

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes
- a. If YES, describe the program and how it's organized.

Handled through customer service area office

2. Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	no	
b. Public Service Announcement	no	
c. Bill Inserts / Newsletters / Brochures	no	
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	no	
f. Special Events, Media Events	no	
g. Speaker's Bureau	no	
h. Program to coordinate with other government agencies, industry and public interest groups and media	no	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No
- a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 2/17/05

BMP 08: School Education Programs

Reporting Unit:

**So. California Water Company -
California Cities - Bay Point**BMP Form Status:
100% CompleteYear:
2004**A. Implementation**

1. Has your agency implemented a school information program to promote water conservation? no

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	0	0	0
Grades 4th-6th	no	0	0	0
Grades 7th-8th	no	0	0	0
High School	no	0	0	0

3. Did your Agency's materials meet state education framework requirements? no

4. When did your Agency begin implementing this program? 1/1/91

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	10000	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 2/17/05

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:

**So. California Water
Company - California
Cities - Bay Point**BMP Form Status:
100% CompleteYear:
2004**A. Implementation**

- | | |
|--|-----|
| 1. Has your agency identified and ranked COMMERCIAL customers according to use? | yes |
| 2. Has your agency identified and ranked INDUSTRIAL customers according to use? | yes |
| 3. Has your agency identified and ranked INSTITUTIONAL customers according to use? | yes |

Option A: CII Water Use Survey and Customer Incentives Program

- | | |
|---|----|
| 4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option? | no |
|---|----|

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	0	0	0
b. Number of New Surveys Completed	0	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0
CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	no	no	no
f. Evaluation of all water-using apparatus and processes	no	no	no
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives	no	no	no
Agency CII Customer Incentives	Budget (\$/Year)	No. Awarded to Customers	Total \$ Amount Awarded
h. Rebates	0	0	0
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

Option B: CII Conservation Program Targets

- | | |
|---|----|
| 5. Does your agency track CII program interventions and water | no |
|---|----|

savings for the purpose of complying with BMP 9 under this option?

6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings? no

7. Estimated annual savings (AF/yr) from site-verified actions taken by agency since 1991. 0

8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991. 0

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

none

BMP 09a: CII ULFT Water Savings

Reporting Unit:

**So. California Water Company
- California Cities - Bay Point**

BMP Form Status:
100% Complete

Year:
2004

1. Did your agency implement a CII ULFT replacement program in the reporting year? No
If No, please explain why on Line B. 10.

A. Targeting and Marketing

1. What basis does your agency use to target customers for participation in this program? Check all that apply.
- a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.
2. How does your agency advertise this program? Check all that apply.
- a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

B. Implementation

1. Does your agency keep and maintain customer participant information? (Read the Help information for a complete list of all the information for this BMP.) no
2. Would your agency be willing to share this information if the CUWCC did a study to evaluate the program on behalf of your agency? No
3. What is the total number of customer accounts participating in the program during the last year ? 0

CII Subsector	Number of Toilets Replaced			
	Standard Gravity Tank	Air Assisted	Valve Floor Mount	Valve Wall Mount
4.				
a. Offices	0	0	0	0
b. Retail / Wholesale	0	0	0	0
c. Hotels	0	0	0	0
d. Health	0	0	0	0
e. Industrial	0	0	0	0
f. Schools: K to 12	0	0	0	0
g. Eating	0	0	0	0
h. Government	0	0	0	0
i. Churches	0	0	0	0
j. Other	0	0	0	0

5. Program design.
6. Does your agency use outside services to implement this

program?

a. If yes, check all that apply.

7. Participant tracking and follow-up.

8. Based on your program experience, please rank on a scale of 1 to 5, with 1 being the least frequent cause and 5 being the most frequent cause, the following reasons why customers refused to participate in the program.

- a. Disruption to business 0
- b. Inadequate payback 0
- c. Inadequate ULFT performance 0
- d. Lack of funding 0
- e. American's with Disabilities Act 0
- f. Permitting 0
- g. Other. Please describe in B. 9. 0

9. Please describe general program acceptance/resistance by customers, obstacles to implementation, and other issues affecting program implementation or effectiveness.

10. Please provide a general assessment of the program for this reporting year. Did your program achieve its objectives? Were your targeting and marketing approaches effective? Were program costs in line with expectations and budgeting?

Not Budgeted

C. Conservation Program Expenditures for CII ULFT

1. CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	Actual Expenditure
a. Labor		
b. Materials		
c. Marketing & Advertising		
d. Administration & Overhead		
e. Outside Services		
f. Total	0	0

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution		
b. State agency contribution		
c. Federal agency contribution		
d. Other contribution		
e. Total		0

D. Comments

Reported as of 2/17/05

BMP 11: Conservation Pricing

Reporting Unit:

**So. California Water Company -
California Cities - Bay Point**

BMP Form

Status:

100% Complete

Year:

2004**A. Implementation****Rate Structure Data Volumetric Rates for Water Service by Customer Class****1. Residential**

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$1804053
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

2. Commercial

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$106120
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

3. Industrial

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$106120
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

4. Institutional / Government

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$53060
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

5. Irrigation

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$53060
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

6. Other

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$53060
d. Total Revenue from Non-Volumetric	

Charges, Fees and other Revenue Sources \$0

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 2/17/05

BMP 12: Conservation Coordinator

Reporting Unit:

**So. California Water Company -
California Cities - Bay Point**BMP Form Status:
100% CompleteYear:
2004**A. Implementation**

1. Does your Agency have a conservation coordinator? yes
2. Is this a full-time position? no
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ? no
4. Partner agency's name:
5. If your agency supplies the conservation coordinator:
 - a. What percent is this conservation coordinator's position? 5%
 - b. Coordinator's Name Dick Leonard
 - c. Coordinator's Title Superintendent
 - d. Coordinator's Experience and Number of Years 18
 - e. Date Coordinator's position was created (mm/dd/yyyy) 01/01/1991
6. Number of conservation staff, including Conservation Coordinator. 1

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

None

Reported as of 2/17/05

BMP 13: Water Waste Prohibition

Reporting Unit:

**So. California Water Company -
California Cities - Bay Point**BMP Form Status:
100% CompleteYear:
2004**A. Requirements for Documenting BMP Implementation**

1. Is a water waste prohibition ordinance in effect in your service area? yes
- a. If YES, describe the ordinance:
- PUC Tariff Rule 14-1
2. Is a copy of the most current ordinance(s) on file with CUWCC? no
- a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:
- N/A N/A

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.
- a. Gutter flooding yes
- b. Single-pass cooling systems for new connections no
- c. Non-recirculating systems in all new conveyor or car wash systems yes
- d. Non-recirculating systems in all new commercial laundry systems yes
- e. Non-recirculating systems in all new decorative fountains yes
- f. Other, please name yes
- Hosing of hard surfaces in restaurant except on request.
2. Describe measures that prohibit water uses listed above:
- None

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:
- a. Allow the sale of more efficient, demand-initiated regenerating DIR models. yes
- b. Develop minimum appliance efficiency standards that:
- i.) Increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used. no
- ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced. no
- c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply. no
4. Does your agency include water softener checks in home water audit programs? no
5. Does your agency include information about DIR and exchange-type water softeners in educational efforts to encourage replacement of less efficient timer models? no

C. Water Waste Prohibition Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

None

Reported as of 2/17/05

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:

**So. California Water Company -
California Cities - Bay Point**BMP Form Status:
100% CompleteYear:
2004**A. Implementation**

	Single-Family Accounts	Multi-Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	no	no

Number of Toilets Replaced by Agency Program During Report Year

Replacement Method	SF Accounts	MF Units
2. Rebate	0	0
3. Direct Install	0	0
4. CBO Distribution	0	0
5. Other	0	0
Total	0	0

6. Describe your agency's ULFT program for single-family residences.

Rebates

7. Describe your agency's ULFT program for multi-family residences.

Rebates

8. Is a toilet retrofit on resale ordinance in effect for your service area? no

9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

B. Residential ULFT Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 7/1

BMP 01 Coverage: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:
So. California Water Company - California Cities - Bay Point

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

A Reporting Unit (RU) must meet three conditions to satisfy strict compliance for BMP 1.

Condition 1: Adopt survey targeting and marketing strategy on time

Condition 2: Offer surveys to 20% of SF accounts and 20% of MF units during report period

Condition 3: Be on track to survey 15% of SF accounts and 15% of MF units within 10 years of implementation start date.

Test for Condition 1

So. California Water Company - California Cities - Bay Point to Implement Targeting/Marketing Program by: 1999

Single-Family Multi-Family

Year So. California Water Company - California Cities - Bay Point Reported Implementing Targeting/Marketing Program:

So. California Water Company - California Cities - Bay Point Met Targeting/Marketing Coverage Requirement: NO NO

Test for Condition 2

			<u>Single-Family</u>	<u>Multi-Family</u>
Survey Program to Start by:	1998	Residential Survey Offers (%)		
Reporting Period:	03-04	Survey Offers ≥ 20%	NO	NO

Test for Condition 3

Completed Residential Surveys

Single Family Multi-Family

Total Completed Surveys 1999 - 2004:
 Past Credit for Surveys Completed Prior to 1999
 (Implementation of Reporting Database):

Total + Credit		
Residential Accounts in Base Year	4,343	2,053
So. California Water Company - California Cities - Bay Point Survey Coverage as % of Base Year Residential Accounts		
Coverage Requirement by Year 7 of Implementation per Exhibit 1	7.90%	7.90%
So. California Water Company - California Cities - Bay Point on Schedule to Meet 10-Year Coverage Requirement	NO	NO

BMP 1 COVERAGE STATUS SUMMARY:

Water supplier has not met one or more coverage requirements for this BMP.

Reported as of 7/1

BMP 02 Coverage: Residential Plumbing Retrofit

Reporting Unit:
**So. California Water Company - California Cities
 - Bay Point**

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one of three conditions to satisfy strict compliance for BMP 2.

Condition 1: The agency has demonstrated that 75% of SF accounts and 75% of MF units constructed prior to 1992 are fitted with low-flow showerheads.

Condition 2: An enforceable ordinance requiring the replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts is in place for the agency's service area.

Condition 3: The agency has distributed or directly installed low-flow showerheads and other low-flow plumbing devices to not less than 10% of single-family accounts and 10% of multi-family units constructed prior to 1992 during the reporting period.

Test for Condition 1

Report Year	Report Period	Single-Family		Multi-Family	
		Reported Saturation	Saturation > 75%?	Reported Saturation	Saturation > 75%?
1999	99-00		NO		NO
2000	99-00		NO		NO
2001	01-02		NO		NO
2002	01-02		NO		NO
2003	03-04		NO		NO
2004	03-04		NO		NO

Test for Condition 2

Report Year	Report Period	So. California Water Company - California Cities - Bay Point has ordinance requiring showerhead retrofit?
1999	99-00	NO
2000	99-00	NO
2001	01-02	NO
2002	01-02	NO
2003	03-04	NO
2004	03-04	NO

Test for Condition 3

Reporting Period: 03-04

1992 SF Accounts	Num. Showerheads Distributed to SF Accounts	Single-Family Coverage Ratio	SF Coverage Ratio > 10%
4,075			NO
1992 MF	Num. Showerheads Distributed to	Multi-Family	MF Coverage

<u>Accounts</u>	<u>MF Accounts</u>	<u>Coverage Ratio</u>	<u>Ratio > 10%</u>
2,024			NO

BMP 2 COVERAGE STATUS SUMMARY:

Water supplier has not met one or more coverage requirements for this BMP.

Reported as of 7/1

BMP 03 Coverage: System Water Audits, Leak Detection and Repair

Reporting Unit:
**So. California Water Company - California Cities
 - Bay Point**

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one of two conditions to be in compliance with BMP 3:

Condition 1: Perform a prescreening audit. If the result is equal to or greater than 0.9 nothing more needs be done.

Condition 2: Perform a prescreening audit. If the result is less than 0.9, perform a full audit in accordance with AWWA's Manual of Water Supply Practices, Water Audits, and Leak Detection.

Test for Conditions 1 and 2

<u>Report Year</u>	<u>Report Period</u>	<u>Pre-Screen Completed</u>	<u>Pre-Screen Result</u>	<u>Full Audit Indicated</u>	<u>Full Audit Completed</u>
1999	99-00	YES	91.1%	No	NO
2000	99-00	YES	1156.6%	No	NO
2001	01-02	YES	91.4%	No	NO
2002	01-02	YES	91.0%	No	NO
2003	03-04	YES	91.0%	No	NO
2004	03-04	YES	87.4%	Yes	NO

BMP 3 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

Reported as of 7/1

BMP 04 Coverage: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:

**So. California Water
Company - California
Cities - Bay Point**

Reporting Period:

03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective
as" implementation during report
period?

No

An agency must be on track to retrofit 100% of its unmetered accounts within 10 years to be in compliance with BMP 4.

Test for Compliance

Total Meter Retrofits

Reported through 2004

No. of Unmetered Accounts
in Base YearMeter Retrofit Coverage as
% of Base Year Unmetered
AccountsCoverage Requirement by
Year 6 of Implementation per
Exhibit 1

42.0%

RU on Schedule to meet 10
Year Coverage Requirement

YES

BMP 4 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

Reported as of 7/1

BMP 05 Coverage: Large Landscape Conservation Programs and Incentives

Reporting Unit:
So. California Water Company - California Cities - Bay Point

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet three conditions to comply with BMP 5.

Condition 1: Develop water budgets for 90% of its dedicated landscape meter accounts within four years of the date implementation is to start.

Condition 2: (a) Offer landscape surveys to at least 20% of its CII accounts with mixed use meters each report cycle and be on track to survey at least 15% of its CII accounts with mixed use meters within 10 years of the date implementation is to start OR (b) Implement a dedicated landscape meter retrofit program for CII accounts with mixed use meters or assign landscape budgets to mixed use meters.

Condition 3: Implement and maintain customer incentive program(s) for irrigation equipment retrofits.

Test for Condition 1

Year	Report Period	BMP 5 Implementation Year	No. of Irrigation Meter Accounts	No. of Irrigation Accounts with Budgets	Budget Coverage Ratio	90% Coverage Met by Year 4
1999	99-00	1	47			NA
2000	99-00	2	47			NA
2001	01-02	3	47			NA
2002	01-02	4	47			No
2003	03-04	5	47			No
2004	03-04	6	47			No

Test for Condition 2a (survey offers)

Select Reporting Period: 03-04
 Large Landscape Survey Offers as % of Mixed Use Meter CII Accounts
 Survey Offers Equal or Exceed 20% Coverage Requirement NO

Test for Condition 2a (surveys completed)

Total Completed Landscape Surveys Reported through Credit for Surveys Completed Prior to Implementation of Reporting Database
 Total + Credit 116
 CII Accounts in Base Year
 RU Survey Coverage as a % of Base Year CII Accounts
 Coverage Requirement by Year of Implementation per Exhibit 1 6.3%

RU on Schedule to Meet 10 Year Coverage Requirement NO

Test for Condition 2b (mixed use budget or meter retrofit program)

<u>Report Year</u>	<u>Report Period</u>	<u>BMP 5 Implementation Year</u>	<u>Agency has mix-use budget program</u>	<u>No. of mixed-use budgets</u>
1999	99-00	1	NO	
2000	99-00	2	NO	
2001	01-02	3	NO	
2002	01-02	4	NO	
2003	03-04	5	NO	
2004	03-04	6	NO	

<u>Report Year</u>	<u>Report Period</u>	<u>BMP 4 Implementation Year</u>	<u>No. of mixed use CII accounts</u>	<u>No. of mixed use CII accounts fitted with irrig. meters</u>
1999	99-00	1	119	
2000	99-00	2	119	
2001	01-02	3	119	
2002	01-02	4	119	
2003	03-04	5	119	
2004	03-04	6	119	

Test for Condition 3

<u>Report Year</u>	<u>Report Period</u>	<u>BMP 5 Implementation Year</u>	<u>RU offers financial incentives?</u>	<u>No. of Loans</u>	<u>Total Amt. Loans</u>
1999	99-00	1	NO		
2000	99-00	2	NO		
2001	01-02	3	NO		
2002	01-02	4	NO		
2003	03-04	5	NO		
2004	03-04	6	NO		

<u>Report Year</u>	<u>Report Period</u>	<u>No. of Grants</u>	<u>Total Amt. Grants</u>	<u>No. of rebates</u>	<u>Total Amt. Rebates</u>
1999	99-00				
2000	99-00				
2001	01-02				
2002	01-02				
2003	03-04				
2004	03-04				

BMP 5 COVERAGE STATUS SUMMARY:

Water supplier has not met one or more coverage requirements for this BMP.

Reported as of 7/1

BMP 06 Coverage: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:
So. California Water Company - California Cities - Bay Point

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 6.

Condition 1: Offer a cost-effective financial incentive for high-efficiency washers if one or more energy service providers in service area offer financial incentives for high-efficiency washers.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 6 Implementation Year</u>	<u>Rebate Offered by ESP?</u>	<u>Rebate Offered by RU?</u>	<u>Rebate Amount</u>
1999	99-00	1	NO	NO	
2000	99-00	2	NO	NO	
2001	01-02	3	NO	NO	
2002	01-02	4	NO	NO	
2003	03-04	5	NO	NO	
2004	03-04	6	NO	NO	

<u>Year</u>	<u>Report Period</u>	<u>BMP 6 Implementation Year</u>	<u>No. Rebates Awarded</u>	<u>Coverage Met?</u>
1999	99-00	1		YES
2000	99-00	2		YES
2001	01-02	3		YES
2002	01-02	4		YES
2003	03-04	5		YES
2004	03-04	6		YES

BMP 6 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

Reported as of 7/1

BMP 07 Coverage: Public Information Programs

Reporting Unit:

So. California Water Company - California Cities - Bay Point

Reporting Period:

03-04**MOU Exhibit 1 Coverage Requirement**

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 7.

Condition 1: Implement and maintain a public information program consistent with BMP 7's definition.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 7 Implementation Year</u>	<u>RU Has Public Information Program?</u>
1999	99-00	2	YES
2000	99-00	3	YES
2001	01-02	4	YES
2002	01-02	5	YES
2003	03-04	6	YES
2004	03-04	7	YES

BMP 7 COVERAGE STATUS SUMMARY:**Water supplier is meeting coverage requirements for this BMP.**

Reported as of 7/1

BMP 08 Coverage: School Education Programs

Reporting Unit:

So. California Water Company - California Cities - Bay Point

Reporting Period:

03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 8.

Condition 1: Implement and maintain a school education program consistent with BMP 8's definition.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 8 Implementation Year</u>	<u>RU Has School Education Program?</u>
1999	99-00	2	YES
2000	99-00	3	YES
2001	01-02	4	YES
2002	01-02	5	NO
2003	03-04	6	NO
2004	03-04	7	NO

BMP 8 COVERAGE STATUS SUMMARY:

Water supplier has not met one or more coverage requirements for this BMP.

Reported as of 7/1

BMP 09 Coverage: Conservation Programs for CII Accounts

Reporting Unit:

So. California Water Company - California Cities - Bay Point

Reporting Period:

03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet three conditions to comply with BMP 9.

Condition 1: Agency has identified and ranked by use commercial, industrial, and institutional accounts.

Condition 2(a): Agency is on track to survey 10% of commercial accounts, 10% of industrial accounts, and 10% of institutional accounts within 10 years of date implementation to commence.

OR

Condition 2(b): Agency is on track to reduce CII water use by an amount equal to 10% of baseline use within 10 years of date implementation to commence.

OR

Condition 2(c): Agency is on track to meet the combined target as described in Exhibit 1 BMP 9 documentation.

Test for Condition 1

Year	Report Period	BMP 9 Implementation Year	Ranked Com. Use	Ranked Ind. Use	Ranked Inst. Use
1999	99-00	1	YES	YES	YES
2000	99-00	2	YES	YES	YES
2001	01-02	3	YES	YES	YES
2002	01-02	4	YES	YES	YES
2003	03-04	5	YES	YES	YES
2004	03-04	6	YES	YES	YES

Test for Condition 2a

	Commercial	Industrial	Institutional
Total Completed Surveys Reported through 2004			
Credit for Surveys Completed Prior to Implementation of Reporting Databases			
Total + Credit			
CII Accounts in Base Year	69	17	30
RU Survey Coverage as % of Base Year CII Accounts			
Coverage Requirement by Year 6 of Implementation per Exhibit 1	4.2%	4.2%	4.2%
RU on Schedule to Meet 10 Year Coverage Requirement	NO	NO	NO

Test for Condition 2a

<u>Year</u>	<u>Report Period</u>	<u>BMP 9 Implementation Year</u>	<u>Performance Target Savings (AF/yr)</u>	<u>Performance Target Savings Coverage</u>	<u>Performance Target Savings Coverage Requirement</u>	<u>Coverage Requirement Met</u>
1999	99-00	1			0.5%	NO
2000	99-00	2			1.0%	NO
2001	01-02	3			1.7%	NO
2002	01-02	4			2.4%	NO
2003	03-04	5			3.3%	NO
2004	03-04	6			4.2%	NO

Test for Condition 2c

Total BMP 9 Surveys + Credit
 BMP 9 Survey Coverage
 BMP 9 Performance Target Coverage
 BMP 9 Survey + Performance Target Coverage
 Combined Coverage Equals or Exceeds Coverage Requirement? NO

BMP 9 COVERAGE STATUS SUMMARY:
Water supplier has not met one or more coverage requirements for this BMP.

Reported as of 7/1

BMP 11 Coverage: Conservation Pricing

Reporting Unit:

So. California Water Company - California Cities - Bay Point

Reporting Period:

03-04**MOU Exhibit 1 Coverage Requirement**

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 11.

Agency shall maintain rate structure consistent with BMP 11's definition of conservation pricing. Implementation methods shall be at least as effective as eliminating non-conserving pricing and adopting conserving pricing. For signatories supplying both water and sewer service, this BMP applies to pricing of both water and sewer service. Signatories that supply water but not sewer service shall make good faith efforts to work with sewer agencies so that those sewer agencies adopt conservation pricing for sewer service.

a) Non-conserving pricing provides no incentives to customers to reduce use. Such pricing is characterized by one or more of the following components: rates in which the unit price decreases as the quantity used increases (declining block rates); rates that involve charging customers a fixed amount per billing cycle regardless of the quantity used; pricing in which the typical bill is determined by high fixed charges and low commodity charges.

b) Conservation pricing provides incentives to customers to reduce average or peak use, or both. Such pricing includes: rates designed to recover the cost of providing service; and billing for water and sewer service based on metered water use. Conservation pricing is also characterized by one or more of the following components: rates in which the unit rate is constant regardless of the quantity used (uniform rates) or increases as the quantity used increases (increasing block rates); seasonal rates or excess-use surcharges to reduce peak demands during summer months; rates based upon the longrun marginal cost or the cost of adding the next unit of capacity to the system.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>RU Employed Non Conserving Rate Structure</u>	<u>RU Meets BMP 11 Coverage Requirement</u>
1999	99-00	NO	YES
2000	99-00	YES	NO
2001	01-02	NO	YES
2002	01-02	NO	YES
2003	03-04	NO	YES
2004	03-04	NO	YES

BMP 11 COVERAGE STATUS SUMMARY:**Water supplier is meeting coverage requirements for this BMP.**

Reported as of 7/1

BMP 12 Coverage: Conservation Coordinator

Reporting Unit:

So. California Water Company - California Cities - Bay Point

Reporting Period:

03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

Agency shall staff and maintain the position of conservation coordinator and provide support staff as necessary.

Test for Compliance

<u>Report Year</u>	<u>Report Period</u>	<u>Conservation Coordinator Position Staffed?</u>	<u>Total Staff on Team (incl. CC)</u>
1999	99-00	YES	1
2000	99-00	YES	1
2001	01-02	YES	1
2002	01-02	YES	1
2003	03-04	YES	1
2004	03-04	YES	1

BMP 12 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

Reported as of 7/1

BMP 13 Coverage: Water Waste Prohibition

Reporting Unit:

So. California Water Company - California**Cities - Bay Point**

Reporting Period:

03-04**MOU Exhibit 1 Coverage Requirement**

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 13.

Implementation methods shall be enacting and enforcing measures prohibiting gutter flooding, single pass cooling systems in new connections, non-recirculating systems in all new conveyer car wash and commercial laundry systems, and non-recycling decorative water fountains.

Test for Condition 1**Agency or service area prohibits:**

<u>Year</u>	<u>Gutter Flooding</u>	<u>Single-Pass Cooling Systems</u>	<u>Single-Pass Car Wash</u>	<u>Single-Pass Laundry</u>	<u>Single-Pass Fountains</u>	<u>Other</u>	<u>RU has ordinance that meets coverage requirement</u>
1999	yes	no	yes	yes	yes	yes	NO
2000	yes	no	yes	yes	yes	yes	NO
2001	yes	no	yes	yes	yes	yes	NO
2002	yes	no	yes	yes	yes	yes	NO
2003	yes	no	yes	yes	yes	yes	NO
2004	yes	no	yes	yes	yes	yes	NO

BMP 13 COVERAGE STATUS SUMMARY:**Water supplier has not met one or more coverage requirements for this BMP.**

Reported as of 7/1

BMP 14 Coverage: Residential ULFT Replacement Programs

Reporting Unit: **So. California Water Company - California**

Cities - **Bay Point**

MOU Exhibit 1 Coverage Requirement

A Reporting Unit (RU) must meet one of the following conditions to be in compliance with BMP 14.

Condition 1: Retrofit-on-resale (ROR) ordinance in effect in service area.

Condition 2: Water savings from toilet replacement programs equal to 90% of Exhibit 6 coverage requirement.

An agency with an exemption for BMP 14 is not required to meet one of the above conditions. This report treats an agency with missing base year data required to compute the Exhibit 6 coverage requirement as out of compliance with BMP 14.

Status: Water supplier has not met one or more coverage requirements for this BMP. as of 2004

<u>Coverage</u> <u>Year</u>	<u>BMP 14 Data</u> <u>Submitted to</u> <u>CUWCC</u>	<u>Exemption</u> <u>Filed with</u> <u>CUWCC</u>	<u>ROR</u> <u>Ordinance</u> <u>In Effect</u>	<u>Exhibit 6</u> <u>Coverage</u> <u>Req'mt</u> <u>(AF)</u>	<u>Toilet</u> <u>Replacement</u> <u>Program</u> <u>Water Savings*</u> <u>(AF)</u>
1998	Yes			12.41	19.91
1999	Yes	No	No	35.64	39.03
2000	Yes	No	No	68.26	57.38
2001	Yes	No	No	108.99	74.99
2002	Yes	No	No	156.68	91.90
2003	Yes	No	No	210.29	108.14
2004	Yes	No	No	268.90	123.72
2005	No	No	No	331.68	
2006	No	No	No	397.89	
2007	No	No	No	466.87	

*NOTE: Program water savings listed are net of the plumbing code. Savings are cumulative (not annual) between 1991 and the given year. Residential ULFT count data from unsubmitted forms are NOT included in the calculation.

BMP 14 COVERAGE STATUS SUMMARY:

Water supplier has not met one or more coverage requirements for this BMP.

BMP 14 Coverage: Residential ULFT Replacement Programs

Reporting Unit: So. California Water Company - California Cities - Bay Point

BMP 14 Coverage Calculation Detail: Retrofit on Resale (ROR) Ordinance Water Savings

	Single Family	Multi-Family
1992 Housing Stock		
Average rate of natural replacement (% of remaining stock)	.04	.04
Average rate of housing demolition (% of remaining stock)	.005	.005
Estimated Housing Units with 3.5+ gpf Toilets in 1997	3326.11	1652.03
Average resale rate	.052	.048
Average persons per unit		
Average toilets per unit		
Average savings per home (gpd; from Exhibit 6)	44.6	49

Single Family Housing Units

Coverage Year	Unretrofitted Houses	Houses Sold	Houses Unsold	Sold and Retrofitted	Sold and Already Retrofitted	Unsold and Retrofitted	Gross ROR Savings (AFY)	Nat'l Replacement Only Savings (AFY)	Net ROR Savings (AFY)
1998	3028.52	172.09	3137.38	172.09		125.50	52.27	44.02	8.25
1999	2757.56	171.23	3121.70	156.70	14.54	114.27	65.81	50.37	15.44
2000	2510.84	170.38	3106.09	142.68	27.70	104.04	78.13	56.47	21.67
2001	2286.19	169.52	3090.56	129.91	39.61	94.73	89.35	62.32	27.03
2002	2081.64	168.68	3075.10	118.29	50.39	86.26	99.57	67.94	31.63
2003	1895.40	167.83	3059.73	107.70	60.13	78.54	108.87	73.34	35.53
2004	1725.82	166.99	3044.43	98.07	68.93	71.51	117.34	78.52	38.82
2005	1571.41	166.16	3029.21	89.29	76.87	65.12	125.06	83.50	41.56
2006	1430.81	165.33	3014.06	81.30	84.02	59.29	132.08	88.28	43.80
2007	1302.80	164.50	2998.99	74.03	90.47	53.99	138.47	92.86	45.61

Multi Family Housing Units

Coverage Year	Unretrofitted Houses	Houses Sold	Houses Unsold	Sold and Retrofitted	Sold and Already Retrofitted	Unsold and Retrofitted	Gross ROR Savings (AFY)	Nat'l Replacement Only Savings (AFY)	Net ROR Savings (AFY)
1998	1510.54	78.90	1564.87	78.90		62.59	28.18	24.02	4.16
1999	1381.16	78.51	1557.05	72.14	6.36	57.23	35.28	27.49	7.79
2000	1262.87	78.11	1549.26	65.96	12.15	52.33	41.77	30.81	10.96
2001	1154.70	77.72	1541.52	60.31	17.41	47.85	47.71	34.01	13.70
2002	1055.80	77.33	1533.81	55.15	22.19	43.75	53.13	37.07	16.06
2003	965.37	76.95	1526.14	50.43	26.52	40.00	58.10	40.02	18.08
2004	882.69	76.56	1518.51	46.11	30.46	36.58	62.63	42.85	19.79
2005	807.09	76.18	1510.92	42.16	34.02	33.44	66.78	45.56	21.22
2006	737.96	75.80	1503.36	38.55	37.25	30.58	70.58	48.17	22.41

2007	674.75	75.42	1495.85	35.24	40.18	27.96	74.04	50.67	23.37
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Appendix F
**Rule No. 14.1: Mandatory Water Conservation,
Restrictions, and Rationing Program**

Rule No. 14.1

MANDATORY WATER CONSERVATION, RESTRICTIONS AND RATIONING PROGRAM (N)

Page 1

A. GENERAL INFORMATION:

If water supplies are projected to be insufficient to meet normal customer demand, and are beyond the control of the Company, the Company may elect to implement voluntary conservation using the portion of this plan set forth in Section C of this rule after notifying the Commission's Water Division of its intent. If, in the opinion of the Company, more stringent water measures are required, the Company shall request Commission authorization to implement the mandatory conservation and rationing measures set forth in Section D.

The Commission shall authorize mandatory conservation and rationing by approving Schedule No. 14.1, Mandatory Water Conservation and Rationing. When Schedule No. 14.1 has expired or is not in effect, mandatory conservation and rationing measures will not be in force. Schedule No. 14.1 will set forth water use violation fines, charges for removal of flow restrictors, and the period during which mandatory conservation and rationing measures will be in effect.

When the applicable Schedule No. 14.1 is in effect and the Company determines that water supplies are again sufficient to meet normal demands, and mandatory conservation and rationing measures are no longer necessary, the Company shall seek Commission approval to rescind Schedule No. 14.1 to discontinue rationing.

In the event of a water supply shortage requiring a voluntary or mandatory program, the Company shall make available to its customers water conservation kits as required by Rule No. 20. The Company shall notify all customers of the availability of conservation kits.

B. DEFINITIONS

As used in this water rationing plan, the word:

1. "Company" means the Southern California Water Company, California Cities Water, and Arden-Cordova Water Service;
2. "Persons" means an individual customer, resident, business, organizations including commercial, industrial, nonprofit, and government organizations or associations;
3. "Customer" means any person who uses water supplied by the Company;
4. "Water" means water supplied by the Company;

(N)

ISSUED BY

Date Filed August 4, 2004

Advice Letter No. 1169-WA

F. E. WICKS

Effective Date September 28, 2004

Decision No. _____

President

Resolution No. W-4496

Rule No. 14.1

(N)

MANDATORY WATER CONSERVATION, RESTRICTIONS AND RATIONING PROGRAM
(Continued)

Page 2

B. DEFINITIONS (Continued)

5. "Water shortage emergency" means the conditions which constitute a determination that deliveries of potable water supplies have reached a level such that continued unrestricted water use would be detrimental to the public welfare.

C. CONSERVATION – NON-ESSENTIAL OR UNAUTHORIZED WATER USE

No customer shall use Company-supplied water for non-essential or unauthorized uses as defined as follows:

1. Use of water through any connection when the Company has notified the customer in writing to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the customer has failed to make such repairs within 5 days after receipt of such notice.
2. Use of water which results in flooding or run-off in gutters, waterways, patios, driveway, or streets.
3. Use of water for washing aircraft, cars, buses, boats, trailers or other vehicles without a positive shut-off nozzle on the outlet end of the hose. Exceptions include washing vehicles at commercial or fleet vehicle washing facilities operated at fixed locations where equipment using water is properly maintained to avoid wasteful use.
4. Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas in a manner which results in excessive run-off or waste.
5. Use of water for watering streets with trucks, except for initial wash-down for construction purposes (if street sweeping is not feasible), or to protect the health and safety of the public.
6. Use of water for construction purposes, such as consolidation of backfill, dust control, or other uses unless no other source of water or other method can be used.
7. Use of water for more than minimal landscaping in connection with any new construction.
8. Use of water for outside plants, lawn, landscape, and turf areas more often than every other day, with even numbered addresses watering on even numbered days of the month and odd numbered addresses watering on the odd numbered days of the month, except that this provision shall not apply to commercial nurseries, golf courses and other water-dependent industries.
9. Use of water for watering outside plants, lawn, landscape and turf areas during certain hours if and when specified in the applicable Schedule No. 14.1 when the schedule is in effect.
10. Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.
11. Use of water for decorative fountains or the filling or topping off of decorative lakes or ponds. Exceptions are made for those decorative fountains, lakes, or ponds which utilize recycled water. (N)

(Continued)

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Rule No. 14.1

(N)

MANDATORY WATER CONSERVATION, RESTRICTIONS AND RATIONING PROGRAM
(Continued)

Page 3

C. CONSERVATION – NON-ESSENTIAL OR UNAUTHORIZED WATER USE (Continued)

12. Use of water for the filling or refilling of swimming pools.
13. Service of water by any restaurant except upon the request of the patron.

D. RATIONING OF WATER USE

In the event the conservation measures required by Section C are insufficient to control the water shortage, the Company shall, upon Commission approval, impose mandatory conservation and rationing. Rationing shall be in accordance with the conditions set forth in the applicable Schedule No. 14.1 as filed at the time such rationing is approved by the Commission.

Before mandatory conservation and rationing is authorized by the Commission, the Company shall hold public meetings and take all other applicable steps required by Sections 350 through 358 of the California Water Code.

E. ENFORCEMENT OF MANDATORY CONSERVATION AND RATIONING

1. The water use restrictions of the conservation program, in Section C of this rule, become mandatory when the rationing program goes into effect. These restrictions are applicable whether or not the customer exceeds the monthly water allocation.
2. The Company may, after one verbal and one written warning, install a flow-restricting device on the service line of any customer observed by Company personnel to be using water for any non-essential or unauthorized use as defined in Section C above.
3. A flow restrictor shall not restrict water delivery by greater than 50% of normal flow and shall provide the premise with a minimum of 6 Ccf/month. The restricting device may be removed only by the Company, only after a three-day period has elapsed, and only upon payment of the appropriate removal charge as set forth in the applicable Schedule No 14.1.
4. After the removal of the restricting device, if any non-essential or unauthorized use of water shall continue, the Company may install another flow-restricting device. This device shall remain in place until water supply conditions warrant its removal and until the appropriate charge for removal has been paid to the Company.
5. Each customer's water allocation shall be shown on the water bill. Water allocations may be appealed in writing as provided in Section F of this Rule. If a customer uses water in excess of the allocated amount, the utility may charge the excess usage penalty shown in the applicable Schedule No. 14.1.

(N)

(Continued)

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F. E. WICKS

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Decision No. _____

President

Resolution No. W-4496

Rule No. 14.1

MANDATORY WATER CONSERVATION, RESTRICTIONS AND RATIONING PROGRAM
(Continued)

(N)

Page 4

E. ENFORCEMENT OF MANDATORY CONSERVATION AND RATIONING (Continued)

6. Any money collected by the Company through water use violation fines shall not be accounted for as income, but shall be accumulated by the Company in a separate account for disposition as directed or authorized from time to time by the Commission.
7. The charge for removal of a flow-restricting device shall be in accordance with the applicable Schedule No. 14.1.

F. APPEAL PROCEDURE

Any customer who seeks a variance from any of the provisions of this water conservation and rationing plan shall notify the Company in writing, explaining in detail the reason for such a variation. The Company shall respond to each such request.

Any customer not satisfied with the Company's response may file an appeal with the staff of the Commission. The customer and the Company will be notified of the disposition of such appeal by letter from the Executive Director of the Commission.

If the customer disagrees with such disposition, the customer shall have the right to file a formal complaint with the Commission. Except as set forth in this Section, no person shall have any right or claim in law or in equity, against the Company because of, or as a result of, any matter or thing done or threatened to be done pursuant to the provisions of this water conservation and rationing plan.

G. PUBLICITY

In the event the Company finds it necessary to implement this plan, it shall notify customers and hold public hearings concerning the water supply situation, in accordance with Chapter 3, Water Shortage Emergencies, Section 350 through 358, of the California Water Code. The Company shall also provide each customer with a copy of this plan by means of billing inserts or special mailings; notifications shall take place prior to imposing any fines associated with this plan. In addition, the Company shall provide customers with periodic updates regarding its water supply status and the results of customers' conservation efforts. Updates may be by bill insert, special mailing, poster, flyer, newspaper, television or radio spot/advertisement, community bulletin board, or other appropriate methods.

(N)

ISSUED BY

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Advice Letter No. 1169-WA

F. E. WICKS

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Decision No. _____

President

Resolution No. W-4496

Appendix G
Rate Schedule

SOUTHERN CALIFORNIA WATER COMPANY

630 E. FOOTHILL BLVD. P. O. BOX 9016
SAN DIMAS, CALIFORNIA 91773-9016

Revised Cal. P.U.C. Sheet No. 4894-W

Canceling Revised Cal. P.U.C. Sheet No. 4864-W

Schedule No. BY-1

Bay Point District

GENERAL METERED SERVICE

APPLICABILITY

Applicable to all metered water service.

TERRITORY

Portions of the City of Pittsburg and vicinity, Contra Costa County.

RATES

	<u>Per Meter</u> <u>Per Month</u>	
Quantity Rates:		
For all water delivered, per 100 cu. ft.....	\$ 2.982	(I)
Service Charge:		
For 5/8 x 3/4-inch meter.....	\$ 23.35	(I)
For 3/4-inch meter.....	35.00	(I)
For 1-inch meter.....	58.40	(I)
For 1 1/2 inch meter.....	116.95	(I)
For 2-inch meter.....	186.95	(I)
For 3-inch meter.....	350.95	(I)
For 4-inch meter.....	583.95	(I)
For 6-inch meter.....	1,168.95	(I)
For 8-inch meter.....	1,869.95	(I)
For 10-inch meter.....	2,687.95	(I)

The Service Charge is a readiness-to-serve charge applicable to all metered service and to which is added the charge for water used computed at the Quantity Rates.

SPECIAL CONDITIONS

1. All bills are subject to the reimbursement fee set forth on Schedule No. UF.
2. New Services: Contra Costa Water District (CCWD) imposes a Facilities Reserve Charge for new or enlarged retail services in this district. An applicant for service must first pay this fee, if applicable, to CCWD before service will be rendered under this schedule.
3. Pursuant to Decision 04-08-052, a surcharge of \$0.0195 per Ccf is to be added to the Quantity Rate for a 12-month period, beginning with the effective date of Advice Letter 1183-W, which is January 9, 2005, to recover the difference between the interim rates and actual rates for the period of January 1, 2004 through September 2, 2004. (N)
(N)

(D)

ISSUED BY

Date Filed June 3, 2005

Advice Letter No. 1194-W

F. E. WICKS

Effective Date June 8, 2005

Decision No. 05-05-025

President

Resolution No. _____

Appendix H
Responses to Public Comments

No Public Comments received during Public Review Period.

Appendix I
Groundwater Basin Water Rights
Stipulation/Judgment

Appendix I

There is no Groundwater Basin Water Rights Stipulation/Judgment currently in place for the Bay Point System

Appendix J
Summary of Population Based on Census Data

Appendix J: Demographic Information for Bay Point System CSA

Table J-1: Census Tracts within the Bay Point System CSA

County	Subregion	City Code	City	Census Tract Number	Percentage of Census Tract
Contra Costa			Bay Point	313202	1%
Contra Costa			Bay Point	314102	1%
Contra Costa			Bay Point	314103	100%
Contra Costa			Bay Point	314104	100%
Contra Costa			Bay Point	314200	100%
Contra Costa			Bay Point	315000	90% for population and households, 0% for employees

Table J-2: Population, Household and Employment Projections for Year 2000, 2005, 2010, 2015, 2020, 2025 and 2030 for Bay Point System CSA

Bay Point System CSA Population, Household and Employment Estimates for 2000

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Contra Costa			Bay Point	313202	90	28	8
Contra Costa			Bay Point	314102	57	16	125
Contra Costa			Bay Point	314103	5468	1590	67
Contra Costa			Bay Point	314104	7272	2355	101
Contra Costa			Bay Point	314200	6270	1730	299
Contra Costa			Bay Point	315000	3236	1072	0

Bay Point System CSA Population, Household and Employment Estimates for 2005

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Contra Costa			Bay Point	313202	94	29	9
Contra Costa			Bay Point	314102	61	17	135
Contra Costa			Bay Point	314103	5691	1642	73
Contra Costa			Bay Point	314104	7565	2431	107
Contra Costa			Bay Point	314200	6525	1786	322
Contra Costa			Bay Point	315000	3988	1328	0

Bay Point System CSA Population, Household and Employment Estimates for 2010

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Contra Costa			Bay Point	313202	97	30	10
Contra Costa			Bay Point	314102	67	19	149
Contra Costa			Bay Point	314103	6100	1766	75
Contra Costa			Bay Point	314104	8109	2615	111
Contra Costa			Bay Point	314200	6636	1821	335
Contra Costa			Bay Point	315000	4134	1382	0

Bay Point System CSA Population, Household and Employment Estimates for 2015

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Contra Costa			Bay Point	313202	108	33	11
Contra Costa			Bay Point	314102	75	21	162
Contra Costa			Bay Point	314103	6847	1991	81
Contra Costa			Bay Point	314104	9099	2949	121
Contra Costa			Bay Point	314200	7457	2053	371
Contra Costa			Bay Point	315000	4501	1508	0

Bay Point System CSA Population, Household and Employment Estimates for 2020

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Contra Costa			Bay Point	313202	118	37	12.21
Contra Costa			Bay Point	314102	80	23	176.4
Contra Costa			Bay Point	314103	7251	2117	120
Contra Costa			Bay Point	314104	9710	3158	180
Contra Costa			Bay Point	314200	7901	2184	411
Contra Costa			Bay Point	315000	5009	1694	0

Bay Point System CSA Population, Household and Employment Estimates for 2025

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Contra Costa			Bay Point	313202	125	39	14
Contra Costa			Bay Point	314102	83	24	199
Contra Costa			Bay Point	314103	7524	2212	187
Contra Costa			Bay Point	314104	10128	3318	280
Contra Costa			Bay Point	314200	8201	2283	476
Contra Costa			Bay Point	315000	5441	1868	0

Bay Point System CSA Population, Household and Employment Estimates for 2030

County	Subregion	City Code	City	Census Tract Number	Total Population	Number of Households	Total Employees
Contra Costa			Bay Point	313202	133	42	16
Contra Costa			Bay Point	314102	88	25	227
Contra Costa			Bay Point	314103	7846	2305	270
Contra Costa			Bay Point	314104	10625	3475	406
Contra Costa			Bay Point	314200	8555	2380	554
Contra Costa			Bay Point	315000	5938	2044	0